



Xiaowen Zhu

Influencing Factors and Mechanisms of Local Government Green
Development Behaviour: Evidence from China

School of Water, Energy and Environment
PhD in Design

PhD
Academic Year: 2020 - 2023

Supervisor: Dr Enes Unal
Associate Supervisor: Professor Philip Longhurst
January 2024



School of Water, Energy and Environment
PhD in Design

PhD

Academic Year 2020 - 2023

Xiaowen Zhu

Influencing Factors and Mechanisms of Local Government Green
Development Behaviour: Evidence from China

Supervisor: Dr Enes Unal
Associate Supervisor: Professor Philip Longhurst
January 2024

This thesis is submitted in partial fulfilment of the requirements for
the degree of PhD

© Cranfield University 2024. All rights reserved. No part of this
publication may be reproduced without the written permission of the
copyright owner.

Academic integrity declaration

I declare that:

- the thesis submitted has been written by me alone.
- the thesis submitted has not been previously submitted to this university or any other.
- that all content, including primary and/or secondary data, is true to the best of my knowledge.
- that all quotations and references have been duly acknowledged according to the requirements of academic research.

I understand that to knowingly submit work in violation of the above statement will be considered by examiners as academic misconduct.

ABSTRACT

Green development has become an important strategy for local governments to achieve greater sustainability, and adopting green development behaviours has significant implications for local governments in addressing the relationship between the environment and the economy. Previous research demonstrated that the unique characteristics of green development practices have received considerable attention from scholars. Most studies have highlighted green development practices in the private sector, although the adoption of green development practices in the public sector remains understudied. Current research on green development behaviour in the public sector primarily reflects, at the individual level, the green behaviour of employees and, at the organisational level, the green purchasing behaviour of a particular government department. The discussion of local government green development behaviour is not predominant. Therefore, this thesis proposes that a detailed understanding of the processes and specific practices of local government green development behaviours may be essential for local governments to improve the effectiveness of implementing sustainable practices.

Although existing studies have addressed the influencing factors that lead to the adoption of sustainable development by local governments, there needs to be a more systematic theoretical analysis of the underlying mechanisms adopted by local governments to achieve green development behaviours. Accordingly, this thesis aims to explore the factors that influence the implementation of green development behaviours by local governments and the mechanisms of influence between the factors. This study draws on mixed methods to develop two studies. The first is a qualitative study that explores local government green development behaviour and its influencing factors. It applies various data collection methods, including semi-structured interviews and document analysis. Fifty-three officials from local government departments related to green development in China's Jiangsu province were interviewed, and the data were analysed using a grounded theory method. The second is a quantitative study. Seven hundred twenty-two valid questionnaires were collected, and the model proposed in the first study

with Structural Equation Modelling (SEM). The findings illustrate how the interactions between various factors shape the green development behaviour of local governments.

The main findings show that: (1) local government green development behaviour is a kind of behavioural change, which can be divided into local government green development policy formulation and implementation. (2) The three main influences on local governments' green development behaviours include internal driving factors, external environmental pressures, and the basis of regional green development. (3) Internal driving factors and external environmental pressure can influence local governments' green development behaviours. (4) Internal driving factors mediate the relationship between external environmental pressure and green development behaviour. The basis of regional green development has a moderating effect on the relationship between internal driving factors and green development behaviours, as well as the relationship between external environmental pressures and green development behaviours.

This thesis provides a framework that supports local government behaviour's decision-making process on the managerial implications. Paper I analyses the specific processes and practices of local government green development behaviour, Paper II constructs a theoretical model of local government green development behaviour, and Paper III examines the mechanisms by which various factors influence local green development behaviour. At a broader level, this thesis enriches and expands the research content of sustainable practices in the public sector. It also provides novel insights for local governments to formulate effective green development policies, which will help them develop green development directions and implement green development behaviours to promote more remarkable sustainable development in the region.

Keywords: local government, green development behaviour, sustainable practices, grounded theory, structural equation modelling

ACKNOWLEDGEMENTS

At this point in my life, with a single keystroke, I have reached the end of five years of doctoral study. Looking back on my two and a half years of study at Cranfield University, the years have been filled with great memories.

First and foremost, I would like to thank Cranfield University and Jiangsu University for offering me the opportunity of a Double Doctorate. This has allowed me to come to Cranfield University and have the pleasure of meeting and getting to know two of my most beloved supervisors, Dr. Enes Unal and Prof. Phil Longhurst. The guidance and assistance of my two supervisors have been essential for every bit of progress in my thesis (paper writing, thesis writing, and revision). At the end of each session, they gave me new insights and ideas about my research questions and made me view the results more systematically while teaching me how to balance study work and life. My two-and-a-half years of PhD study at Cranfield University have been a rewarding and worthwhile experience.

Secondly, I thank my Chinese supervisor, Professor Du Jianguo. Whenever I encountered a complex problem and discussed it with him, his few words were able to enlighten me. During the past five years, Prof. Du has taught me the attitude towards learning and the way to handle things. I will continue to work hard in the following study, work, and life, constantly refining myself, surpassing myself, and becoming more outstanding.

I would like to thank my C4D colleagues, whether formal communication about academics or informal communication in life; from them, I have learnt something that I lacked before. At the moment, I can't help but remember the discussions and activities we had together. My two and a half years at Cranfield have been enriched thanks to their company.

I am grateful to my family, who have provided me with a warm harbour and prepared a sailboat for me to sail away at any time. Throughout my life, I will endeavour to use what I have learned and work hard to provide a better life for them. Finally, I would like to express my heartfelt thanks to the expert professors who reviewed and defended this thesis for their valuable comments.

TABLE OF CONTENTS

Academic integrity declaration.....	i
ABSTRACT	ii
ACKNOWLEDGEMENTS.....	v
LIST OF FIGURES.....	x
LIST OF TABLES	xi
LIST OF ABBREVIATIONS	xii
1 INTRODUCTION.....	1
1.1 Research Background	1
1.2 Aim and Objectives	4
1.3 Structure of the Thesis.....	6
2 LITERATURE REVIEW.....	9
2.1 Green Development Behaviour of Local Governments.....	9
2.2 Research Related to the Green Development Behaviour of Local Governments	11
2.2.1 Research Methods	11
2.2.2 Data Sources	12
2.2.3 Analysis of Basic Characteristics	13
2.2.4 Research Hotpot Analysis	18
2.3 Influencing Factors of Green Development Behaviour of Local Governments	30
2.4 Process Organisation Research	32
2.5 Organisational Motivation Theory	34
2.6 New Institutional Theory	35
3 RESEARCH APPROACH AND METHODOLOGY.....	39
3.1 Overall Research Design	39
3.2 Study A: Qualitative Study-Grounded Theory	43
3.2.1 Research Design.....	43
3.2.2 Data Collection.....	44
3.2.3 Data Analysis	46
3.2.4 Validity Assurance.....	47
3.3 Study B: Quantitative Study-Structural Equation Modelling	48
3.3.1 Overall Approach	48
3.3.2 Research Hypotheses.....	49
3.3.3 Questionnaire Design.....	56
3.3.4 Data Collection	60
3.3.5 Data Analysis	61
4 EXPLAINING THE GREEN DEVELOPMENT BEHAVIOUR OF LOCAL GOVERNMENTS FOR SUSTAINABLE DEVELOPMENT: EVIDENCE FROM CHINA.....	63
4.1 Introduction	65

4.2 Theoretical Background	67
4.2.1 The Role of Local Governments in Green Development	67
4.2.2 Theoretical Analysis of the Green Development Behaviour of Local Governments.....	71
4.3 Method.....	72
4.3.1 Research Design.....	72
4.3.2 Data Collection	72
4.3.3 Data Analysis	74
4.4 Results.....	75
4.4.1 Green Development Policy Formulation of Local Governments.....	78
4.4.2 Green Development Policy Implementation of Local Governments .	84
4.5 Discussion	92
4.6 Conclusions and Implications	97
4.6.1 Conclusions.....	97
4.6.2 Implications	97
4.7 References	99
5 WHAT DRIVES THE GREEN DEVELOPMENT BEHAVIOUR OF LOCAL GOVERNMENTS? A PERSPECTIVE OF GROUNDED THEORY	105
5.1 Introduction	107
5.2 Literature Review.....	109
5.2.1 Green Development behaviour of Local Governments.....	109
5.2.2 Influencing Factors of Local Governments Green Development behaviour	111
5.3 Research and Data Methodology	113
5.3.1 Research Design.....	113
5.3.2 Data Collection	113
5.3.3 Data Analysis	115
5.3.4 Validity Assurance.....	116
5.4 Results.....	116
5.4.1 Internal Driving Factors	117
5.4.2 External Environmental Pressures	120
5.4.3 The Basis of Regional Green Development	124
5.4.4 The Structure of the Analysis	126
5.5 Discussion and Conclusion.....	130
5.5.1 Discussion.....	130
5.5.2 Conclusion	132
5.5.3 Implications	132
5.5.4 Research Limitations and Future Prospects.....	133
5.6 References	134
6 ANALYSING THE MECHANISMS OF INFLUENCING FACTORS ON LOCAL GOVERNMENTS GREEN DEVELOPMENT BEHAVIOUR: EMPIRICAL EVIDENCE FROM CHINA	151

6.1 Introduction	153
6.2 Literature Review and Hypotheses Development	155
6.2.1 External Environmental Pressures and Internal Driving Factors	155
6.2.2 External Environmental Pressures and Green Development Behaviour	156
6.2.3 Internal Driving Factors and Green Development Behaviour	158
6.2.4 The Moderating Effect of Basis of Regional Green Development ..	160
6.3 Method.....	162
6.3.1 Measures	163
6.4 Results.....	165
6.4.1 Descriptive Statistical Analysis.....	165
6.4.2 Exploratory Factor Analysis.....	167
6.4.3 Structural Model Evaluation	167
6.4.4 Regression Analysis.....	170
6.5 Discussion	172
6.6 Conclusion	174
6.7 References	174
7 SYNTHESIS AND INTEGRATED DISCUSSION	181
7.1 Summary of Findings.....	181
7.1.1 Contribution to Knowledge	181
7.2 Research Implications.....	182
8 CONCLUSIONS	187
8.1 Limitations and Future Work.....	188
REFERENCES.....	191
APPENDICES	205

LIST OF FIGURES

Figure1- 1 The structure of the thesis.....	8
Figure2- 1 The number of published articles related to green development behaviour of local governments with time.....	14
Figure2- 2 The cooperation network of the productive countries and institutions	15
Figure2- 3 Co-cited analysis of journals	17
Figure2- 4 Co-reference analysis of references	19
Figure2- 5 Timeline view of the co-citation network of the largest clusters	23
Figure2- 6 Clustering of keyword co-occurrence network	26
Figure2- 7 Top 20 keywords in terms of frequency and centrality	27
Figure3- 1 Mixed method design in this study	41
Figure3- 2 The conceptual model of green development behaviour of local governments.....	56
Figure4- 1 The conceptual model of green development behaviour of local governments.....	94
Figure5- 1 The influencing factors model of local governments' green development behaviour	127
Figure6- 1 The conceptual model of green development behaviour of local governments.....	159

LIST OF TABLES

Table2- 1 Top 10 countries/institutions in number of articles published related to green development behaviour of local governments	16
Table2- 2 Top 10 highly cited journals.....	18
Table2- 3 Top 10 highly cited references	19
Table2- 4 Top 25 Keywords with the Strongest Citation Bursts.....	29
Table3- 1 Summary of methods in papers	42
Table3- 2 Descriptions of Sample Information.....	44
Table3- 3 Interviewees Characteristics	46
Table3- 4 Example of data coding.....	47
Table3- 5 Descriptions of information of participants.....	61
Table4- 1 Research related to green development of local governments in China	70
Table4- 2 Descriptions of sample information	73
Table4- 3 Interviewee's characteristics	75
Table4- 4 Key processes and practices of green development behaviour of local governments.....	76
Table5- 1 Descriptions of Sample Information.....	114
Table5- 2 Interview sample characteristics	115
Table5- 3 Example of data coding.....	116
Table5- 4 The coding interpretation of internal driving factors (example).....	144
Table5- 5 The coding interpretation of external environmental pressures (example).....	147
Table5- 6 The coding interpretation of the basis of regional green development (example).....	150
Table6- 1 Descriptions of information of participants.....	163
Table6- 2 Descriptive statistics and inter-construct correlations.....	166
Table6- 3 Summary of support for hypotheses.....	168
Table6- 4 Mediation effect test results.....	169
Table6- 5 Test results of the moderating effect of the social base of regional green development.....	170
Table6- 6 Test results of the moderating effect of the industrial base of regional green development.....	171

LIST OF ABBREVIATIONS

COG	Local government leaders' green cognition
COM	Local government green development commitment
CAP	Local government green development capacity
SDR	Superior departments regulation
GDD	Green development demands of enterprises and residents
MI	Media influence
GDB	Local government green development behaviour
IDF	Internal driving factors
EEP	External environmental pressures
RGBS	Social green development base
RGBI	Industrial green development base

1 INTRODUCTION

1.1 Research Background

Accelerated industrialisation has led to overexploitation and depletion of resources (Zhao et al., 2022). Climate change has become the dominant environmental issue on the public agenda (Stoddart et al., 2012). Implementing green development practices has become a priority on organisational agendas to cope with global climate change (Crucke et al., 2022). These objective realities emphasise the need for green development. Several countries have taken huge strides towards formulating green development plans (Mombeuil, 2020). Stimulating green development by investing in clean energy was the focus of the climate and energy security act, proposed and passed in the United States (Wang et al., 2018). Similarly, the national strategy “Promoting the Transition to a Green Economy” was launched in the UK (Guo et al., 2017). Other developed countries have also formulated their own green growth goals, strategies, and policies. These actions underscore the essence of green development in the era of globalisation.

Since the beginning of the 21st century, “China Human Development Report 2002: Green Development” was issued by the United Nations (Monks, 2003). The Chinese government has promulgated the Circular Economy Promotion Law (McDowall et al., 2017). In 2011, the Chinese government put forward the concept of green development in the 12th Five-Year Plan. The theoretical frameworks and practices of green development have become indispensable for policymakers to discuss policies (Lin & Benjamin, 2017). Policymakers have implemented many practices regarding emission reduction and the promotion of clean energy (Zeng et al., 2017). Industrial documents such as green manufacturing, green building, green transportation, and green agriculture were formulated to guide the green development of the industry (Ding et al., 2018; Kong et al., 2016; Trappey et al., 2012). In other words, China’s overall level of green development has reached a point where energy utilisation and economic output tend to be more efficient (Wang et al., 2015).

Due to imbalances in economic development (Sun et al., 2020), there are still significant differences in green development among regions. In China, the differences in local government size are mainly determined at the administrative level, and the abilities of local governments to access resources at different organisational levels vary greatly (Liu et al., 2019). Therefore, it is necessary to examine local governments' green development to promote regional green development more effectively. "Local governments" usually refer to democratic structures below the level of central, provincial, or regional governments (Walker & Andrews, 2015). This thesis focuses on the green development behaviours of local governments in the Chinese context, addressing four levels of local government: provincial (municipality directly under the central government), city, county, and township (Zhang, 2016 Chinese). The sample of this thesis comprises city-level and county-level local governments. In a broad sense, local government behaviour refers to all relevant behaviours undertaken by local governments in exercising power and performing duties. In contrast, in a narrow sense, it relates to the behaviour of specific administrative departments of local governments aimed at regulating the economy and initiating institutional changes (Yang, 2021 Chinese). This thesis adopts the narrow sense and explores the green development behaviour of local governments.

According to previous studies, local governments play a crucial role in sustainable development (Llamas-Sanchez et al., 2013). First, local governments can enforce regulations guiding businesses and citizens toward environmentally responsible conduct (Stoddart et al., 2012). Local governments are responsible for promoting local sustainability in response to the requirements and policies of superior governmental levels seeking sustainability goals. Second, local governments can implement the best sustainability practices in response to federal government policies (Laurian et al., 2017) and are more able than the central government to solve these environmental issues (Tevapitak & Helmsing, 2019). Local governments can influence the actions of the private sector through policies, programs, incentives, and regulations. Third, local governments have advantages in obtaining local information, allowing them to provide public goods better suited to residents' preferences than the central government. Similarly, the

central government strongly encourages local governments to fulfil their environmental responsibilities effectively in China. Furthermore, given the environmental and fiscal decentralisation seen in China's environmental governance, local authorities have become the main actors and drivers of regional green development. Their behavioural choices greatly influence the effectiveness of regional green development (Zhang et al., 2020).

Although local governments remain at the core of sustainable development initiatives (Wang et al., 2012), local governments in China are currently facing the following problems in the implementation of green development behaviours: First, local government officials have biased perceptions and understandings of green development policies, which reduces the efficiency of policy docking between central and local governments. Meanwhile, the high threshold of green development and the difficulty of its implementation lead to selective implementation in local governments (Deslatte & Swann, 2016). Second, local governments still show poor regulation and tolerate the behaviours of polluting enterprises in pursuit of their performance interests (Fan et al., 2021; Ye et al., 2021). These behaviours tremendously impede the implementation of local governments and effective green development policies. Third, there is a lack of motivation to implement green development behaviours relevant to the local context (Song et al., 2021). The complexity and uncertainty of the environment in which local governments are located is a crucial factor, as is the fact that green development involves numerous stakeholders. The driving mechanisms that motivate local governments' green development behaviours are unknown, creating a real obstacle for policymakers seeking to implement green development behaviours (Csete & Horváth, 2012). Accordingly, to achieve the localised development of green practices in China, it is necessary to understand local governments' green development behaviours and the fundamental practices and processes of implementation. Additionally, although the adoption rate of green development policies and behaviours in local governments is increasing, most beneficial practices have been seen in for-profit organisations, typically businesses (Li et al., 2022). In contrast, local governments' implementation rate of green development behaviours has been slow (Stoddart

et al., 2012). Therefore, the factors driving green development behaviour in local governments must be examined, and this thesis must deeply analyse the key factors that promote or hinder their implementation.

1.2 Aim and Objectives

Most previous studies have tended to prioritise the effects of local government policy implementation whilst generally lacking a core focus on local government green behaviour in their pursuit of green development. Several scholars have explored studies related to green policies pursued by local governments. Specifically, they have focused on selecting policy instruments (Smedby, 2020). Some have also examined the factors that influence local sustainable practices, which relate to the internal characteristics of local governments (Anessi-Pessina & Sicilia, 2020) and the interaction between local governments and the public and local communities (Krause et al., 2019; Yudarwati & Gregory, 2022). However, the abovementioned studies lack a systematic perspective on integrating factors influencing local governments' green development behaviour. Furthermore, local governments have also become a significant driver of green development strategies due to the acceleration of China's green development strategy.

Accordingly, this thesis aims to explain what the green development of local governments consists of, examine factors potentially influencing green development behaviour and analyse the internal mechanisms mediating between these factors and green development behaviour. This thesis chose local government as a focus as it is the institutional type closest to stakeholders, such as businesses and the public (Awasthi & Walumbwa, 2022). It is thus an appropriate context within which to explore the implementation of green development behaviour. This study has focused on three research questions (RQs):

RQ1: What is the green development behaviour of local governments composed of?

RQ2: What factors influence the green development behaviour of local governments?

RQ3: How do these factors influence the green development behaviour of local governments?

To better answer the three questions above, this study addresses the following issues and undertakes the next steps.

(1) Knowledge and Comprehension

a. A literature review of local government green development behaviour and its current research status is conducted to establish a foundation for an interview design.

b. The theoretical background of this thesis, including the process of organisational research, organisational motivation theory, and new institutionalism theory, is presented to provide a foundation of knowledge and understanding relevant to the analysis.

(2) Application and Analysis

a. To explore the processes and practices critical to local governmental green development behaviour. According to previous process organisation research and new institutionalism theory, the dimension of local governmental green development behaviour is classified here.

b. Drawing on interviews and secondary data, this study probes the factors potentially influencing local governments' green development behaviours and ultimately constructs an influencing factor model.

c. To propose research hypotheses and design research questionnaires. The relevant research hypotheses are developed by analysing the internal driving factors, external environmental pressure, and the bases of regional green development via the influencing factor model. Accordingly, in combination with the relevant theoretical literature, this thesis divides the dimensions of each factor and designs a research questionnaire focusing on the green development behaviour of local governments.

d. To collect, process, and analyse data on the variables of internal driving factors, external environmental pressures, and the bases of regional green development to test the hypothesised relationship between local governments' green development behaviours and these variables.

(3) Synthesis and Evaluation

a. To synthesise and discuss the findings yielded by the different components of this study, emphasising the contributions made to knowledge and the potential scope for future research.

1.3 Structure of the Thesis

This thesis is structured via the publication format, with each chapter being published in or under peer review with a journal. It also follows the same logical order as that laid out in the research aims and objectives.

First, this thesis summarises the current research on local governments' green development behaviours. Second, the theoretical background of this thesis, including knowledge yielded by process organisation research, organisational motivation theory, and new institutionalism theory, is presented to provide a base of understanding. Following the literature review, the study outlines the overall research design and the mixture of methods applied, with a detailed description of the data collection and analysis techniques.

Based on the mixed-methods approach, the thesis subsequently empirically investigated information related to 53 officials from local governmental green development-related departments using a qualitative approach to understand the composition of green development behaviours and the critical processes and practices of local governments in China. New institutionalism theory and previous organisational process research provided reliable insights into green development behaviours.

The next step was to conduct an exploratory study of the factors influencing the green developmental behaviour of local governments. This study collected case data through in-depth interviews. After several stages of open coding, axial

coding, selective coding, and theoretical saturation testing, the research identified the factors influencing local government's green development behaviours, and then constructed a model of influencing factors. Furthermore, the relationships between the model's elements were thoroughly deconstructed by combining previous process organisation research, organisational motivation theory, and new institutionalism theory.

Based on the results of previous qualitative research, the study proposed research hypotheses and constructed a conceptual model. Structural equation modelling was also used to validate each relationship hypothesis outlined in the conceptual model.

Lastly, the results yielded by the different components of the study have been evaluated and discussed, highlighting their contributions to knowledge and potential for further research.

The workflow of this research, as embodied within the chapters, is illustrated in Figure 1-1.

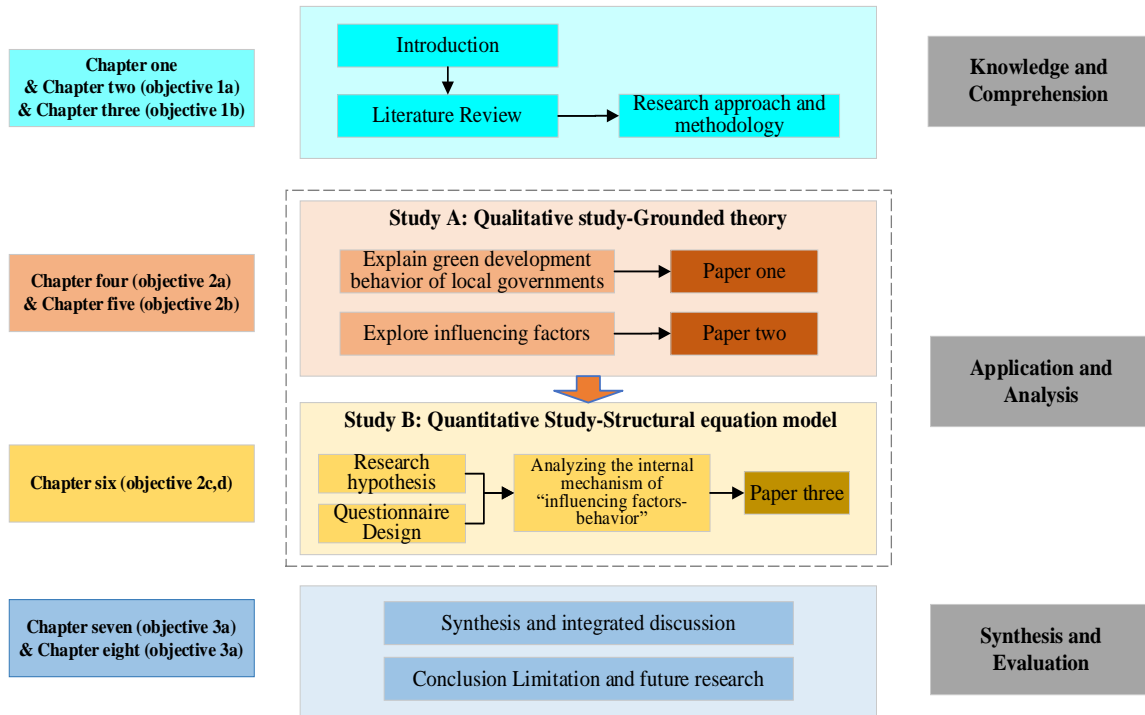


Figure1- 1The structure of the thesis

2 LITERATURE REVIEW

2.1 Green Development Behaviour of Local Governments

Green development was first advocated in the 1980s by British environmental economist David Pearce, who coined the term “green economy”, considered the earliest form of green development. It is defined as a model of economic development that can be sustained by both the natural environment and human beings themselves, without the ecological crises and social disintegration caused by the blind pursuit of economic growth and without the depletion of natural resources that would lead to a mode of economic development that is not sustainable.

There are different conceptions of the meaning of green development in academia (Kennet & Heinemann, 2006; Li et al., 2018). Some academics have argued that green development and sustainable development are inextricably linked. “Green” refers to the harmonious coexistence of man and nature, whereas “development” involves the prosperity and revitalisation of a nation and a people. Green development is a novel concept related to achieving sustainable development by preserving the ecological environment whilst adhering to the environmental carrying capacity and resource capacity restrictions. Li and Liu (2018) explained that the “green” in green development should be understood as referring to “sustainability” or “sustainable development”.

Other scholars have identified a difference between green development and sustainable development. Lin and Benjamin (2017) stated that green development and sustainable development are not synonymous, arguing that green development is active and seeks to benefit future generations. In contrast, sustainable development is passive and seeks to protect future generations. Additionally, green development involves coordinating environmental and economic development, compared to sustainable development, which encompasses numerous development goals. Hu and Zhou (2014) stated that green development emphasises integrating and coordinating economic growth with environmental protection and the sustainable use of resources. Sun et al.

(2018) stressed that our understanding of the relationship between socioeconomics and natural ecosystems has made green development a vital goal.

As critical actors in green development, local governments can influence many key emission sectors, including building, energy supply, transportation, planning, and waste management (Revell, 2013). Meanwhile, local governments serve as facilitators and leaders in guiding the sustainable transformation of business and society (Figueira et al., 2018). Notably, local governments show different approaches when implementing green policies and behaviours depending on the country, administrative level (for example, local versus central), and activities and goals of the organisation (Klein et al., 2022). Therefore, academics do not have a unified definition of local government green development behaviours.

Generally, local governments comprise three levels in federal states, while they usually occupy two or three levels within a single country. Some scholars have also proposed that a local government is a democratic structure below the central, provincial, or regional governmental level and is mainly responsible for providing public services to residents (Walker & Andrews, 2015). This research focuses on Chinese local authorities; therefore, local government refers to local administrative institutions at the provincial, regional, county and township levels. This research targets Chinese local governments, so local governments are here local administrative organisations set up at the provincial, prefecture, county, and township levels. That said, this thesis focuses on the green development behaviours of local governments at the prefecture and county levels.

Some scholars have linked green development behaviours to plans, programs, and goals. Wheeler noted that state and local governments in the US typically implement sustainable practices via planning and that most projects set emission reduction targets, create emission inventories, and seek green public sector operations (Wheeler, 2008). Deslatte and Swann (2016) examined cities' choices regarding green policy tools for meeting organisational goals, such as greenhouse gas emission reductions and energy efficiency. Additionally, local governments often seek environmental goals that exceed minimum state and

federal requirements (Krause et al., 2019). Local governments have tended to adopt comprehensive plans emphasising sustainability and climate action (Cease et al., 2019).

Other scholars have defined green development behaviour as a behavioural change. Revell stated that behavioural change is a policy tool, and it has been widely developed within environmental policy to encourage sustainable lifestyles (Revell, 2013). Accordingly, this article identifies local governments' green development behaviour as a change in behaviour. These behaviours seek a change from the original developmental mode (of pursuing only economic growth) to the green development mode of seeking environmental protection and economic growth. The purpose is to encourage enterprises to enact the greening of their production methods and residents to adopt greener lifestyles.

2.2 Research Related to the Green Development Behaviour of Local Governments

The green development behaviour of local governments that this study is interested in represents an innovative notion, in contrast to the abovementioned definitions. To begin, the thesis collected data from the Web of Science database. In the second step, an analysis of the relevant literature, the topic of which is the green development of local government, was carried out with the help of a literature measurement method. Finally, this research sought to investigate the actions taken by municipal governments in aspiring toward green development.

2.2.1 Research Methods

A typical application of bibliometrics is in investigating the possible knowledge structure of academic publications, with the introduction of visualisations to assess further the issue (Chen, 2006, 2017; Wu et al., 2021). Researchers in this field have employed the CiteSpace software to perform bibliometric analyses such as citation correlations, occurrence analyses (including burst detection), and cluster analyses (Chen, 2006; He et al., 2021). In this context, the approach can be outlined as follows: Firstly, this thesis assessed the most fundamental aspects of the data, such as the total number of papers published, the publishing

institutions, the countries studied, and the primary journals published within. Analyses of research hotspots, such as literature co-citation cluster analyses and keyword co-occurrence analyses, are also included in this section. In the final step, the study conducts a keyword burst analysis to identify the frontiers of the study area of local government green development behaviour.

Furthermore, the CiteSpace software is utilised here to illustrate the results so that readers may intuitively comprehend the evolution of the green development behaviour of local governments. The parameters for CiteSpace employed in this study are as follows: The period was set between January 2000 and December 2021, and the number of time slices was one year. The term sources used were the title, the abstract, author keywords, and the keyword-added value. Superficially, the countries/institutions that cited the journals, keywords/terms, and the cited references represent node types. The location, colour, and ring thickness of the visual nodes created here represent publication time, citation time, and citation frequency, respectively (Chen et al., 2010; Zhang et al., 2021). The greater the thickness of the node ring, the greater the frequency of the word, while the more significant the thickness of the line between nodes, the more closely related they are. Additionally, the lightest purplish-red ring in the outermost circle illustrates the centrality and significance of nodes assessed in the research on local governments' green development behaviour. Chen (2006) provided further details on the settings and procedures used in CiteSpace for constructing knowledge graphs.

2.2.2 Data Sources

The data utilised in this investigation were obtained from the Web of Science (WOS) core collection database. This database contains over 10,000 diverse, highly influential, authoritative and comprehensive international academic periodicals (Zhang et al., 2021). In addition, only journal publications have here been examined as valid sources of information. This is because peer-reviewed studies are frequently of higher quality and provide more comprehensive and reliable information (Braun et al., 2019). Consequently, using the WOS database as the sole data source for this thesis is permissible.

The specific retrieval procedure employed in this investigation is as follows: The thesis first selected the WOS core collection database and configured the citation index to draw from the SCI-Exported and SSCI datasets. Second, this study set out the following criteria: TS (subject search) = (“Green development of local government”). Then, the research set the language to “English”, the document type to “article”, and the document publishing year to “2000-2021”, as the earliest date found in these databases during data screening was 2000. The study then combined the above search criteria using “AND” and chose the articles that fit these criteria. Manually screening and removing extraneous literature records yielded a total of 508 results. The most recent update was performed on May 12, 2022. This thesis selected “full record and reference” in the form of “plain text” as the content to be exported from the WOS record, chose the file format, and manually converted the data file format to “download_.txt”, as approved by CiteSpace. Finally, the literature records were loaded into CiteSpace 5.8 R3, and formal analysis was commenced.

2.2.3 Analysis of Basic Characteristics

2.2.3.1 Analysis of Literature Quantity

Figure 2-1 illustrates the annual distribution of publications from 2000 to 2021. Since 2000, the number of publications on the green development of local governments has been steadily increasing, as shown by the red trend in Figure 1-2. Moreover, the figure also reveals that the number of documents published before 2012 was relatively low. Although there were publications in this period, the research field was in its infancy, with less than 20 publications per year. Nevertheless, between 2012 and 2021, there was a significant increase in the amount of research on the green development of local municipalities. Since 2015, the number of papers published has increased rapidly, which demonstrates that research on the green development of local governments has attracted the attention of many academics. The primary factors determining this include the following: 1) The role played by local authorities in the process of green development has captured the interest of an increasing number of academics (Stoddart et al., 2012; Tevapitak & Helmsing, 2019); 2) The governments of

various nations have issued laws and regulations regarding green development in quick succession. China, for instance, has promoted the concept of green development and initiated some attempts to practice it (McDowall et al., 2017); 3) Stakeholder demands for green development are increasing (Bolton & Landells, 2015; Clarke & MacDonald, 2019). Even though there have been minor fluctuations since 2015, the overall trend of the number of papers has been upward.

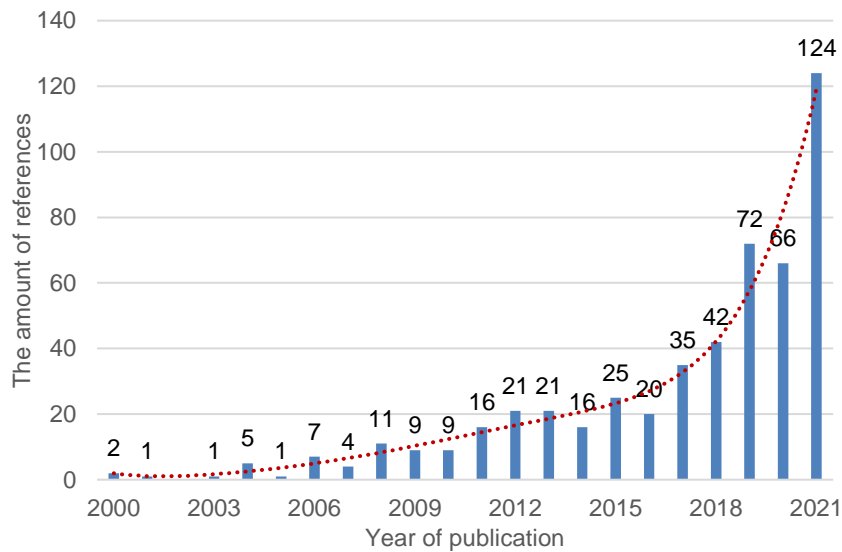


Figure2- 1 The number of published articles related to green development behaviour of local governments with time

2.2.3.2 Analysis of Country and Institution Distribution

This thesis selected country/institution as the node type. Figure 2-2 depicts the relationship diagram generated by the CiteSpace software, which consists of 99 nodes ($n = 99$) and 256 links ($E = 256$). By observing the sizes of nodes and the thickness of the lines, the research levels and contributions of different nations or regions and their scientific research institutions, as regards the green development of local governments, can be approximated (see Table 2-1). Specifically, 99 nations and institutions have contributed to studying local authorities' green development. In addition, the number of partnerships between these nations and organisations is 256. China currently offers a maximum of 185 publications in this field. At the same time, given its centrality of 1.30, China

Table2- 1 Top 10 countries/institutions in number of articles published related to green development behaviour of local governments

Order	Research country	Number of articles published	Research institution	Number of articles published
1	PEOPLES R CHINA	185	Chinese Acad Sci	18
2	USA	78	Univ Chinese Acad Sci	9
3	ENGLAND	29	Beijing Forestry Univ	5
4	AUSTRALIA	22	Harbin Inst Technol	5
5	NETHERLANDS	16	Wageningen Univ	4
6	POLAND	11	China Univ Min & Technol	4
7	SOUTH KOREA	11	Univ Melbourne	4
8	GERMANY	11	Ohio State Univ	4
9	CANADA	11	Zhejiang Univ	4
10	JAPAN	11	Natl Univ Singapore	4

2.2.3.3 Analysis of Cited Journals

Journal co-citation analysis facilitates the visualisation of the internal relationships between journals and the comprehension of the influence and authority of publications in this field (Liu et al., 2019; Wang et al., 2021). The research selected “cited journal” as the node type. A map of journal co-citations was then obtained (Figure 2-3). According to the analysis of the visual results, the thesis found that 263 journals published articles in this field ($n = 263$), and 1810 were cited ($E = 1810$). Moreover, the sizes of the nodes indicate the frequency with which the journals are cited. The greater the size of the node, the greater the number of references in the local government green development field that the journal has published.

Table2- 2 Top 10 highly cited journals

Cited frequency	Journal
165	JOURNAL OF CLEANER PRODUCTION
144	ENERG POLICY
134	SUSTAINABILITY-BASEL
125	JOURNAL OF ENVIRONMENTAL MANAGEMENT
113	ENERGY ECONOMICS
97	LANDSCAPE AND URBAN PLANNING
93	LAND USE POLICY
90	SCIENCE OF THE TOTAL ENVIRONMENT
89	RENEWABLE & SUSTAINABLE ENERGY REVIEWS
68	ECOLOGICAL INDICATORS

2.2.4 Research Hotpot Analysis

2.2.4.1 Analysis of Co-reference Articles

(1) Knowledge base

The cited references were chosen as the node type. After running the software and performing a cluster analysis on the mentioned documents, a network diagram with 194 nodes, 547 links, and a network density of 0.0292 was produced, as shown in Figure 2-4. For much of the cited reference information used in the research field, such as in the core classic literature, literature co-citation analysis can efficiently and conveniently outline the most critical knowledge base. Researchers can gain a preliminary understanding of the core research results relevant to this field by analysing the most highly cited core classic literature. Figure 2-4 demonstrates that the articles of Wu et al. (2020a), Wolch et al. (2014), and Li and Wu (2017) have been highly cited over the past decade and that author contact and collaboration have increased over time. In addition, Table 2-3 lists the top ten journal articles for co-citation frequency or centrality in descending order, representing the ten most important articles to the knowledge base in the field of green development in local government, thereby assisting researchers in gaining a preliminary understanding of the core research results in this field.

CitSpace v. 5.8.R3 (64-bit)
 May 19, 2022, 9:58:20 AM GMT+08:00
 Web: C:\Users\Fred\Desktop\green development of local government\data
 Timezone: 2022/05/19 09:58 (Singapore)
 Selection Criteria: Top 20 per cluster, LRF(0.5), LHM(5), LHM(5), LHM(5), w=2.0
 Network: Modularity Q=0.9171 (Density=0.0022)
 Nodes Labeled: 2.0%
 Pruning: None
 Modularity Q=0.9171
 Weighted Mean Silhouette S=0.8723
 Harmonic Mean Q/S=0.8952

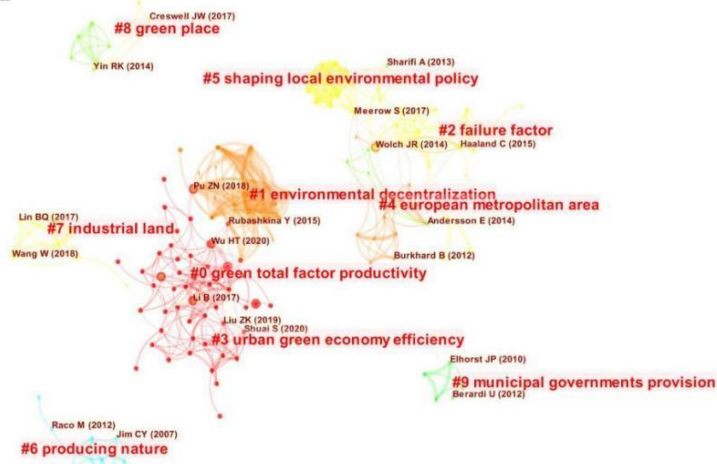


Figure2- 4 Co-reference analysis of references

Table2- 3 Top 10 highly cited references

No.	Cited reference	Journal	DOI
1	Wu (2020a)	SCIENCE OF THE TOTAL ENVIRONMENT	https://doi.org/10.1016/j.scitotenv.2019.135085
2	Wolch (2014)	LANDSCAPE AND URBAN PLANNING	https://doi.org/10.1016/j.landurbplan.2014.01.017
3	Li (2017)	JOURNAL OF CLEANER PRODUCTION	https://doi.org/10.1016/j.jclepro.2016.10.042
4	Wu (2020b)	ENERGY ECONOMICS	https://doi.org/10.1016/j.eneco.2020.104880
5	Song (2018)	INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS	https://doi.org/10.1016/j.ijpe.2018.09.019
6	Zhang (2018)	JOURNAL OF CLEANER PRODUCTION	https://doi.org/10.1016/j.jclepro.2018.02.067
7	Chen (2014)	ENERGY ECONOMICS	https://doi.org/10.1016/j.eneco.2014.04.002
8	Haaland (2015)	URBAN FORESTRY & URBAN GREENING	https://doi.org/10.1016/j.ufug.2015.07.009
9	Pu (2018)	JOURNAL OF CLEANER PRODUCTION	https://doi.org/10.1016/j.jclepro.2017.10.162
10	Shuai (2020)	JOURNAL OF ENVIRONMENTAL MANAGEMENT	https://doi.org/10.1016/j.jenvman.2020.110227

Examining the relevant literature reveals that promoting green development is indispensable to economic modernisation in China. Furthermore, the autonomy of local governments in undertaking pollution control has improved due to the implementation of environmental and fiscal decentralisation systems. At the same time, academic interest in research on environmental management systems influencing regional green development is growing.

On the one hand, from the perspective of green total factor productivity, some scholars have examined the effect of environmental decentralisation and fiscal decentralisation on regional green development. For instance, Song et al. (2018) analysed the impact of budgetary decentralisation and environmental regulation on green total factor productivity by calculating the intensity and degree of fiscal decentralisation. By further categorising environmental decentralisation, researchers discovered that various types of environmental decentralisation have distinct effects on regional green development. While environmental and administrative decentralisation plays a vital role in promoting regional green development, environmental supervision and environmental monitoring have adverse effects on regional green development, according to Wu et al. (2020a). In addition, the innovative concept of green total factor energy efficiency has been proposed based on green total factor productivity. Wu et al. (2020b) investigated the potential non-linear relationship between environmental regulation and enhanced green total factor energy efficiency under various states of environmental decentralisation. Intriguingly, the specific type of environmental decentralisation undertaken determines the non-linear effect of environmental regulation on the improvement of green total factor energy efficiency. In addition, several researchers have focused on the green economy and developed relevant indicator systems to determine the extent and direction of environmental regulation's impact on regional green economic performance (Shuai & Fan, 2020).

On the other hand, as a complex scientific problem, local governments must consider the relevant interests of different subjects related to green development. Including the public and enterprises, these relevant stakeholders have also played a role in promoting regional green development, even in terms of

supervision. Li and Wu (2017) studied the impacts of local and private environmental regulation and its spatial spillover effects on green total factor productivity. It has been pointed out that non-governmental environmental regulation has positive direct and indirect effects in promoting green total factor productivity. Chen and Golley (2014) studied the change mode of green total factor productivity growth in 38 industrial sectors in China. They found that China's industry has not yet begun sustainable low-carbon growth.

Urban green development plays a key role in regional green development. Urban planners, designers, and ecologists have increasingly prioritised urban green space strategies recently. For instance, Wolch et al. (2014) asserted that urban green spaces are essential in providing ecosystem services and explicitly preserving social and ecological sustainability. Some scholars have also proposed using the compact city method, which can be utilised as a planning technique to promote regional sustainable development. However, Haaland et al. (2015) stated that urban densification may threaten urban green space. Consequently, this study might consider enhancing the quality of green space to compensate for the decline in quantity.

Technological innovation is the source of economic growth and a critical factor in achieving regional green development. Li and Wu (2017) noted that environmental regulation inhibits enterprises' original technological innovation, indicating that the government should reduce market intervention and increase enterprise market change flexibility. However, technological innovation is a double-edged sword regarding its impact on urban green development. Zhang et al. (2018) explored the effects of technological innovation on China's urban ecological efficiency. There are significant regional differences in the manner by which technological innovation improves urban ecological efficiency. For example, a more substantial impact of invention patents on urban ecological efficiency indicates a higher administrative level in a city.

The perspectives presented above can be generally categorised as macro. On the other hand, scholars have also gradually come to understand the significance of the behaviours of governmental officials. Several researchers have concluded

that environmental quality appears to have little impact on the careers of politicians. Others believe that environmental issues affect the careers of politicians or their decision-making behaviour (Davis & Wurth, 2003; Nelson, 2002). According to Pu and Fu (2018), the effect of economic performance and environmental quality on the promotion of local politicians in China varies by region. Moreover, public opinion can influence a mayor's advancement.

(2) Research hotspots

Cluster analysis was performed on the network based on the results of the co-reference analysis, and the evolution of research hotspots in the local government green development field was described using these clusters. The clusters have been characterised according to the index terms given in each article, and the log-likelihood algorithm (LLR) was chosen. The results indicate that the Modularity Q was 0.7814, indicating a clustering effect of extreme significance. The Mean Silhouette value was 0.8723, which indicates that the clustering results are highly reliable. Figure 2-5 contains a timeline view of the co-citation network. Based on the timing of each cluster's emergence, the study attempted to classify local government green development-related studies into the initial, developmental, and rising stages. Specifically, the literature contains three initial clusters; the first comprises #2, #6, #8 and #9, which emerged the earliest and around a similar time. Therefore, this cluster is collectively referred to as the initial stage in this study. In order of emergence, the following developmental stages are #1, #4 and #5, followed by #0, #3 and #7. Furthermore, the figure shows the time points at which the significant results emerged in each cluster. For illustration, the time span of #0 covers the period from 2013 to the present, during which time a series of milestone results emerged.

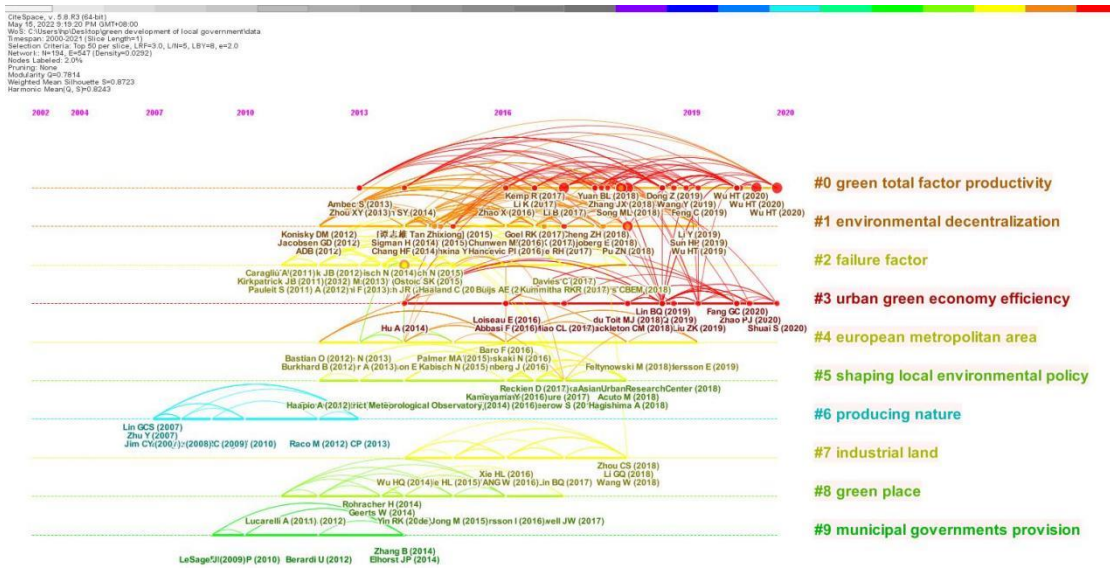


Figure2- 5 Timeline view of the co-citation network of the largest clusters

The first stage (#2, #6, #8, #9) contains the failure factor, producing nature, green space and municipal government provision.

The concept of constructing an “ecological city” emerged in the 1980s (Pow & Neo, 2013). However, the notion of an “ecological city” has been challenged as urbanisation advances. For a substantial period, the urban landscape and its infrastructure have resulted from nature–human interaction (Chen & Hu, 2015). The loss and degradation of green space in surrounding areas harm the ecosystem, human health, and well-being (Tzoulas et al., 2007). Growing numbers of scholars recognise the significance of local government in urban sustainable development. U.S. jurisdictions have created green building policies and incentives (Retzlaff, 2009). Cidell (2015) noted that third-party standards and rating systems are increasingly utilised to evaluate the sustainability of urban policies, including their explicit incorporation into municipal policies, such as the construction of green-certified buildings.

Berardi (2012) proposed a number of sustainable development indicators. In addition, the perception of ecological cities has developed since the conception of urban green spaces. Municipal governments have created a variety of urban public green space strategies to encourage economic expansion (Chen et al., 2017). Irga et al. (2017) discovered that local government policies and guidelines can facilitate the development of green infrastructure in Australian cities.

Based on previous research, this study shows that local governments have developed strategies and policies for urban green spaces. However, implementing these policies has been influenced by multiple factors that cannot be overlooked. According to Caragliu et al. (2011), the quality of the urban environment can influence the development of smart cities. Buijs et al. (2019) found that active citizens can contribute to urban green development, but cooperation between municipalities and active citizens remains challenging. Ordóñez et al. (2020) demonstrated that coordination among stakeholders is essential for local officials to implement their decisions. The views of the public or broader community and the risk-averse culture of municipalities further complicate the implementation of municipal administrators' strategies.

The development stage, containing #1, #4, and #5, includes environmental decentralisation, European metropolitan areas, and shaping local environmental policy.

Environmental policy is an essential tool for local governments seeking to achieve green development. The difference between this research stage and the previous stage is that local governments in various nations have begun to formulate local environmental policies, specifically in European countries such as Germany, Sweden (Andersson & James, 2018), and the United Kingdom (Lazzarini, 2018). In addition, researchers are beginning to evaluate the impact of environmental regulatory policies on ecological governance by employing indicators (Rubashkina et al., 2015). It is worth noting that there are still difficulties in coordinating different local government sectors to achieve long-term development (Mabon et al., 2019). However, Ordóñez (2020) identified intergovernmental coordination as a theme approached by all urban areas. Some scholars even highlighted coordination issues between multiple departments as an essential determinant contributing to suboptimal green infrastructure investment (Mekala & MacDonald, 2018). In the meantime, Shih et al. (2020) stressed the critical role of local government employees in utilising scientific and technological knowledge and participating in policy development.

Green development has become the key to China's economic transformation since the concept of green development was first proposed. Wu et al. (2020a) investigated the influence of environmental decentralisation and local government competition on regional green development in China. From the perspective of strategic interaction between local governments, Song et al. (2018) conducted an empirical analysis of the influence of environmental regulation on industrial structure upgrades. The results indicate that the strategic interaction on the level of environmental regulations among local governments has varying effects on industrial structure upgrades.

The rising stage (#0, #3, #7) includes green total factor productivity, urban green economy efficiency, and industrial land.

In the rising stage, with the proposal of energy conservation and emission reduction, carbon emission reduction and other related policies, the research on regional green development gradually shifted to focus on different industry dimensions. As a result, more emphasis has been placed on the combination of green development and industry. At the same time, this research also pays attention to the interaction between technological innovation and industrial structure. Specifically, green development and industry focus on the "greening" of industrial land and green transformation. The "green" utilisation of industrial land seems more conducive to conserving valuable land resources and protecting the ecological environment (Xie, 2019). Furthermore, numerous research findings have emerged as scholars have focused on green transformation. Peng (2020) investigated the impacts of strategic interaction amongst environmental regulations on green total factor productivity. Zhao et al. (2021) suggested that the green transformation of the manufacturing industry is critical to the high-quality development of the Yangtze River Economic Zone and that technological innovation plays a crucial role in transforming and upgrading the manufacturing industry. The integration of green development with agriculture is reflected in the research on circular agriculture (Zhu et al., 2019).

Green urban development has developed from focusing on urban green space in the initial stage to urban green economic efficiency. Clarifying the relationships

(and their mechanisms) between technological innovation and green economic efficiency, according to Liu and Dong (2021), will help emerging economies develop their green credentials. Yang et al. (2021) explored the influence of green finance and financial technology in promoting high-quality economic development. Green finance positively impacts the environment, economic efficiency, and economic structure. Wang and Yi (2021) pointed out that the new energy development strategy plays a vital role in achieving green urban economic growth. New energy demonstration projects positively impact urban green economic growth from the perspective of technological innovation, industrial structure, and environmental constraints. In addition, the COVID-19 epidemic has posed a severe threat to the development of the world. As a result, policymakers and governments have begun to adopt green growth and development strategies. This progress further promotes the realisation of green economic efficiency to enable economic, social, and environmental development (Yao, 2021).

2.2.4.2 Analysis of Co-occurrence Keywords

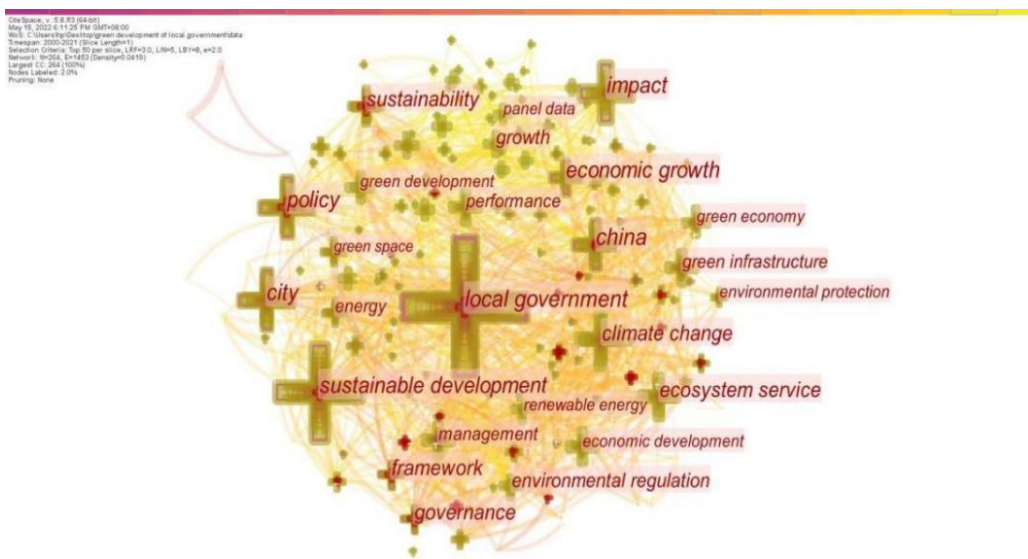


Figure2- 6 Clustering of keyword co-occurrence network

Analyses of keyword frequency can reveal research themes in related fields (Wu et al., 2021). This thesis analyses keywords from 508 publications to identify potential research themes and how they develop by measuring the frequency distribution of keywords expressing the core content of the literature and

developing co-occurrence networks. After selecting terms/keywords as the node type, a total of 264 keywords (N=264) were obtained, and the frequency of connections between them was found to be 1453 (E=1453) (as shown in Figure 2-6). Furthermore, the network density value was 0.0419, the Modularity Q was 0.4578, and the Mean Silhouette was 0.7329, indicating that the clustering results were reliable.

Figure 2-7 summarises the top 20 most frequently used keywords, which include “local government”, “sustainable development”, “impact”, “China”, “climate change”, “city”, “policy”, “ecosystem service”, “economic development”, “economic growth”, and “green development”. This study also indicates the significance of the most common keywords related to their impact (He et al., 2019). Keywords with a centrality greater than 0.1 are associated with trending topics. Figure 2-7 lists some of the keywords with high centrality as “local government”, “sustainable development”, and “China”, which suggests that the sustainable development of local governments in China is an area of research that is receiving much attention. In addition, the terms “city”, “economic growth”, “governance”, and “framework” have been drawing the interest of an increasing number of researchers in recent years.

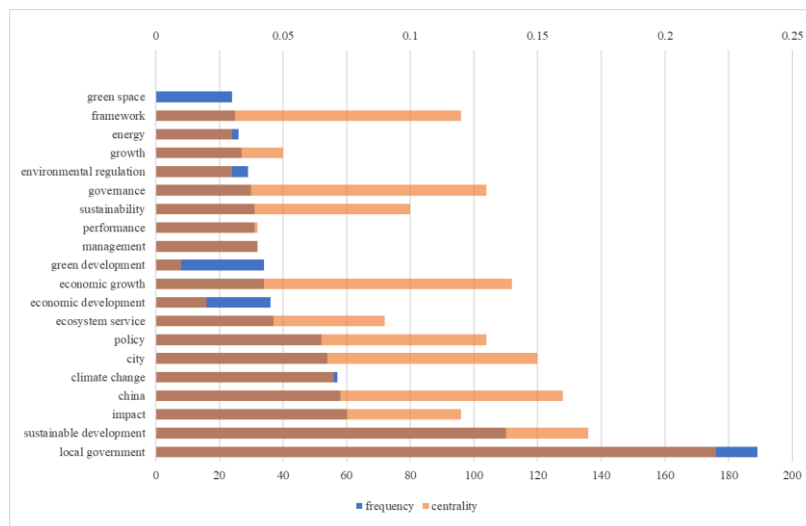


Figure2- 7 Top 20 keywords in terms of frequency and centrality

The examination of keyword bursts came next. From the most-cited keywords, this study identified development opportunities and potential research themes (Zhang et al., 2021). Table 2-4 displays the 25 keywords with the highest citation densities. After 2010, most keywords exploded in popularity. The terms “local government”, “sustainable development”, and “green revolution” displayed the greatest persistence. In addition, Table 2-4 demonstrates that research on green development, such as the greening of cities and green buildings, began in 2011. The development of the “local level” and “national level” in different periods between 2012 and 2016 indicates that scholars have studied the green development of local governments at multiple levels. From 2017 to 2019, researchers tended to examine regional green development issues from the viewpoint of energy efficiency and land use. As public concern for health improved in 2018, researchers began to concentrate on the role of stakeholders in urban green development and employed case study methods to address related topics. Since 2019, research on local environmental governance and ecological diversity preservation has accelerated and continued into 2021.

Table2- 4 Top 25 Keywords with the Strongest Citation Bursts

Keywords	Strength	Begin	End	2000 - 2021
local government	8.74	2004	2010	
sustainable development	4.12	2006	2012	
china	2.42	2006	2011	
framework	3.21	2009	2013	
policy	2.65	2010	2014	
central government	2.46	2010	2015	
governance	3.87	2011	2013	
green revolution	2.5	2011	2017	
conservation	2.81	2012	2015	
local level	2.62	2012	2016	
food security	3.23	2013	2017	
environmental sustainability	2.34	2013	2015	
urban greening	2.36	2014	2016	
green building	2.88	2015	2018	
green	2.37	2015	2019	
national level	2.28	2016	2017	
land use	3.56	2017	2019	
energy efficiency	2.88	2017	2019	
urban development	3.74	2018	2021	
health	2.68	2018	2019	
local community	2.59	2018	2021	
case study	2.55	2018	2021	
urban area	2.49	2018	2019	
environmental governance	2.75	2019	2021	
biodiversity	2.35	2019	2021	

2.3 Influencing Factors of Green Development Behaviour of Local Governments

Despite the key role of local governments in implementing green sustainability behaviours, a stubborn gap between the rhetoric and reality of local sustainability policies remains (Revell, 2013). Academics have conducted extensive research on the factors that influence the green development behaviours of local governments.

Organisational capacity is crucial for implementing green development practices. Homsy and Warner (2015) suggested that internal drivers of municipal action are insufficient and that low policy adoption rates are due to capacity constraints. Capacity building is a crucial initiative for implementing sustainable development in American cities (Wang et al., 2012). Local governments' financial and human resource capacities are also prominent factors that lead cities to adopt more environmentally oriented policies (Krause et al., 2019). Rodriguez-Plesa et al. (2022) argued that organisational capacity and political values may predict local engagement in sustainable practices. Furthermore, managers responsible for implementing sustainable development initiatives face resource reallocation. Consequently, local government managers have a vital influence.

Managers can implement sustainable development by attracting citizen participation, improving expertise, mobilising financial resources, and developing the capacity to drive sustainable development (Wang et al., 2014). Klein et al. (2022) concluded that the chief executive awareness of public sector organisers is an essential element in the organisational transformation to circular development. Support from executive leadership is necessary for implementing green development behaviours in local governments (Rodriguez-Plesa et al., 2022). Bryngemark et al. (2023) observed that green development practices rely on the decisions of strategic documents; however, unobserved factors may include civil servants. Moreover, environmental sustainability frameworks, organisational culture, and structures directly and indirectly affect the implementation of green development behaviours (Figueira et al., 2018).

Stakeholder engagement assists in promoting sustainable development practices among local governments. Citizen engagement is closely related to securing financial support for sustainable development (Wang et al., 2012). Several local authorities have noted that public participation mechanisms influence the formulation of environmental governance policies (Lee & Kim, 2018). Environmental complaints and letters from the public serve to provide regulators with adequate information and reduce regulatory costs (Wu et al., 2018). Different community elements are essential for addressing green sustainability issues (Rodriguez-Plesa et al., 2022). Another factor that influences the actions of local authorities is superior governments (Revell, 2013), including strict environmental regulations, environmental supervision of local governments (Zhang et al., 2018), and appraisal mechanisms for local officials (Chen et al., 2016). Additionally, higher governments usually utilise the information provided by the public to encourage lower levels of government to provide better services to residents through accountability mechanisms (Yan et al., 2021). Moreover, the external environment also impacts green development behaviour; for example, regional heterogeneity moderates the impact of government green development behaviour (Li et al., 2022).

In summary, most existing research on green development practices primarily focuses on Europe and the United States, and the insights gained do not necessarily apply well to the study of local governments' green development behaviours in China. Second, existing studies emphasise the influencing factors dispersed among organisational capacity, local government managers, and stakeholders. However, little is known about the specific factors that influence local governments' green development behaviour. Accordingly, this study explores the driving forces that specifically affect the implementation of green development behaviours by local governments from the internal and external perspectives of organisations. The interaction mechanisms of these factors were systematically and thoroughly analysed. While the stakeholders of existing studies mainly concentrate on the public and superior governments, this study provides a complementary survey of the influence of enterprises' green development demands on implementing green development behaviours.

2.4 Process Organisation Research

Process organisational research refers to the study of processes related to organisational theory, namely, how and why things emerge, develop, grow, or terminate over time, focusing empirically on evolving phenomena and drawing on theories that explicitly focus on the temporal progression of activities as an element of explanation and understanding (Langley, 1999; Langley, 2013). The increased popularity of the process perspective marks an essential shift from traditional organisational perspectives, which tend to favour self-supporting events or discrete entities. In contrast, the process perspective emphasises emergent activities and recursive relationships, taking the ongoing activities of organisational reality seriously. This evolutionary view of organisations is particularly salient today, given the increasing complexity, fragmentation, dynamism, and fluidity of current organisational phenomena. Traditional research approaches premised on stability, separateness, and materiality need help explaining these phenomena. Thus, the process perspective of organisations promises to provide robust critical analyses and insights into the novel experiences of contemporary organisations (Langley & Tsoukas, 2010).

Process research in organisational theory shows that organisations cannot simply copy processes that work well in other organisations. The realisation of green development behaviour of local governments must transform policy content into practical effects to achieve the dynamic realisation of the goals of the policy. It implies a shift from the previous model of pursuing economic growth to pursuing green development. Understanding this shift requires an in-depth understanding of the events that have occurred over time (Langley, 2007; Cloutier & Langley, 2020). This evolutionary perspective addresses how processes emerge, unfold, and end over time (Van de Ven, 1992). Schneider and Spieth (2013) categorised organisational management processes into three flows: antecedents, processes, and outcomes. Awan and Sroufe (2022) suggested that an organisation's change process is related to identifying antecedents and strategies for implementing circular economy practices. Causes and approaches are described. Accordingly, process organisation research is applied in this thesis to analyse the antecedents and processes of local governments' green

development behaviours, specifically in the following areas.

First, there is a need to learn more about the antecedents of greening behaviours for local governments. Existing research suggests that an organisation's change processes are related to identifying antecedents and strategies for implementing green practices (Awan & Sroufe, 2022). However, when organisations shift to green, sustainable practices, more about the factors influencing this must be understood. Identifying, analysing, and understanding these influences and their relationships is a complex task (Schad et al., 2016), and organisational actors need a more direct grasp of this complexity (Tsoukas & Chia, 2002). As Langley and Tsoukas (2010) pointed out, while it may be known that organisational practice B is usually more effective than organisational practice A, more must be understood about how to make the gradual transition from A to B. Furthermore, depending on the nature of the practice in question and the context in which it is applied, the transition process may involve resources, political dynamics, and organisational upheaval, which alters the basis for supporting the need for change. Therefore, the first task of this paper is an exploratory analysis of the potential internal and external factors influencing local governments' green development behaviour.

Secondly, the subsequent evolution of behavioural processes requires exploration (Van de Ven, 1992; Langley, 2007). Foss and Saebi (2017) stated that implementing sustainable management in an organisation requires changing its existing practices. However, developing and implementing these green development policies may be challenging for local governments transitioning to green development behaviours. Local governments may face inertial pressures because their structures, processes, and capabilities only support existing practices and work processes, not new ones (Du et al., 2023). Organisational structures and practices produce coercive, imitative, and normative processes. Therefore, based on organisational process theory, the second key issue of this paper is to deconstruct the formulation of a local government's green development policies and the material process of implementing green development behaviours.

2.5 Organisational Motivation Theory

The cognitive theory perspective has recently gained attention in motivation research and has become the most common approach. Dornyei stated that motivation is the element that determines the direction and degree of individual behaviour and should address the three aspects of why the behaviour is performed, how to maintain the behaviour, and how to obtain motivation. However, many studies have focused only on the why aspect. The introduction of the cognitive theory perspective provided new insights relevant to motivation research. Xu et al. (2019) pointed out that, as regards cognitive mechanisms, people's cognition, which refers to their understanding of and meaning construction concerning external things, may explain organisational changes through change-related cognition (Lau et al., 1995), and this affects individuals' attitudes and behaviours in the context of organisational change situations.

The above definition of local government green development behaviour emphasises behaviour change. Therefore, organisational change is relevant to the research undertaken for this thesis. Organisational change is the process of adopting a new concept or a new behavioural model when the organisation cannot adapt to changes in the external environment, and it is a complex system that incorporates change, the process of change, and the driving mechanism (Lewis et al., 2006). As the research in this field continues to deepen, organisational change's driving elements have become the focus. The model of the organisational change mechanism proposed by Greenwood and Hinings (1996) categorises organisational change dynamics into situational and intra-organisational dynamics. In this research, more attention is paid to change commitment.

Although organisational commitment was initially defined as an individual's attachment to or identification with organisational values, subsequent research has gradually focused on specific organisational commitments, such as change programs and managerial commitment. Commitment to change is the subordinate concept formed after the subdivision of organisational commitment issues. Commitment to change involves not only the individual's positive attitude toward change but also their intention to support the change and willingness to

work actively to implement the change successfully (Herold et al., 2008). Thus, change commitment emphasises an individual's attitudinal disposition to accept change (Ünal et al., 2019a) and reflects an individual's psychological identification with and action support for organisational change. The individual, the context, and other factors influence the formation of commitment to change. Leaders often play a crucial role in shaping individuals' attitudes and behaviours toward an organisation; individual members tend to view leaders as change agents, and leaders' behaviour toward subordinates tends to influence their perceptions of organisational change. Currently, there is a relative lack of research on the antecedents of change commitment formation in Chinese public organisations (Liu & Sun, 2022 Chinese), and change commitment helps to enhance individual change initiatives, so it should be an essential incentive issue in the context of management and change research (Ahmad et al., 2021). This study emphasises the impact of green development commitment on local government green development behaviour.

2.6 New Institutional Theory

DiMaggio and Powell (1983) developed a new institutional theory in the field of organisation and management, and it has become a central theory in the current research on organisational and strategic management. "Institutions" is an umbrella term for formal or informal social orders and rules that bind people or organisational patterns. Initially based on observations of the phenomenon of organisational institutionalisation during the modernisation of American society, the new institutional theory has been improved and refined by scholars such as Scott (2015) to explain the stability and isomorphism of organisational fields and organisational behaviour. At the same time, new institutional theory, because of its emphasis on social construction, also attempts to explain the dynamism and diversity of organisations (Greenwood et al., 2011).

New institutional theory has been applied to the study of organisational responsiveness to environmental issues (Colwell & Joshi, 2013) in describing how new practices are adopted in organisations. New institutional theory explores different methods and mechanisms through which information about legitimate

and socially acceptable organisational behaviours can be conveyed and how such behaviours can be institutionalised into organisations (Wheeler, 2008). Therefore, one of the research objectives of this study is to explain the institutionalisation of green development practices in local governments using a new institutional theory. The rational choice variable of new institutional theory considers behaviour a function of actors' interests (Dunlop & Russel, 2012). In this context, regulators behave in ways that maximise utility; regulators engage in sustainable development because such behaviours bring them sanctions and rewards, leading institutions to prompt behaviour more subtly. The sociology of the new institutional theory emphasises roles, codes of conduct, and the professional identities of actors, as well as how these elements shape action (March & Olsen, 1983; Peters, 2019).

The new institutional theory highlights three conceptually distinct mechanisms organisations construct their institutional environment: coercion, mimicry, and normative isomorphism (Colwell & Joshi, 2013). It is important to consider whether local governments' green development behaviours possess these three essential characteristics. This thesis applies rational choice institutions and social institutions as analytical tools to address the question. These two institution types can be used as analytical tools to explore the institutionalisation of sustainable development in local governments (March & Olsen, 1983). Dunlop and Russel (2012) analysed the role of UK regulators in integrating sustainable development into public services based on rational choice and social institutions. Andrews-Speed (2016) viewed the energy sector as a socio-technical system, drawing on the core ideas of rational choice and socio-organisational institutionalisation to illustrate socio-technical transformation.

Previous research has defined new institutional theory as only being used to explain persistence and homogeneity, but recent research has shown it to be suitable for explaining change (Llamas-Sanchez et al., 2013). Local governments' green development behaviours reflect dynamic changes in behaviour. At the same time, process organisation research has shown that organisations cannot simply replicate the practical processes of other firms (Visnjic et al., 2022).

Langley and Tsoukas (2010) pointed out that a particular organisational process may usually be adequate, but more must be understood about how the organisational process is achieved. Therefore, there is a need to derive insights into the sequence of events that occur over time (Rodriguez-Plesa et al., 2022).

Accordingly, this thesis integrates process organisation research, organisational motivation theory, and new institutional theory to explore and study the fundamental processes and practices that local governments employ in implementing green development behaviours at different times and in the context of different stakeholders. It analyses the internal and external factors affecting local governments' green development behaviours and performance and the mechanisms of effect of these factors on green development behaviours.

3 RESEARCH APPROACH AND METHODOLOGY

This chapter introduces the research methods used and discusses the corresponding research design. The first part of this chapter outlines the overall research design. Secondly, the two studies constituting the paper's backbone are described below. Finally, this thesis discusses each study's research design, data collection and analysis approaches.

3.1 Overall Research Design

The overall approach of this thesis involved mixed methods, and each paper followed its research method to answer specific research questions. Figure 3-1 illustrates the research methods used. Furthermore, Table 3-1 also summarises the methods used in the attached papers, including details of the research methods, the theoretical perspectives, and the correspondence between the papers' research questions and the research questions of this thesis.

Mixed-methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, and inference techniques) for the broad purpose of increasing the breadth and depth of understanding and corroboration (Johnson et al., 2007; Mousa et al., 2020). The core assumption of this method is that when researchers combine quantitative data with qualitative data, the collective advantages of these two data types provide a better understanding than is yielded using a single data type (Bryman, 2006; Sovacool et al., 2018).

The history of using mixed methods in management research can be traced back to the Hawthorne studies of the early 20th century. Hawthorne's studies investigated employee behaviour principles and emphasised experiments, extensive interviews, and observational data. These studies of the social relations among employees highlighted the need for unobtrusive methods of inquiry in management research (Teddlie & Tashakkori, 2012). At the same time, the complex nature of human behaviour often requires management scholars to improve their understanding of behaviours in terms of both breadth and depth, a

task to which mixed-methods research is especially well-suited (Harrison et al., 2020; Fàbregues et al., 2021). In addition, management studies often include varying contexts and focus on complex open systems featuring the management of people at different levels within the organisation.

In summary, the mixed-methods approach fits this study because the complexity and uncertainty of the environment and the interests of the many stakeholders involved in green development make it increasingly challenging for local governments to implement behavioural decisions related to green development. Therefore, using mixed methods helps to develop studies on local governmental green development behaviours. Harrison et al. (2020) highlighted three basic mixed-methods design types: exploratory sequential designs, explanatory sequential designs, and convergent designs (Creswell & Clark, 2017). Under exploratory sequential designs, researchers first collect and analyse qualitative data, then conduct quantitative follow-ups. The exploratory sequential design was employed in this study.

Two primary studies were conducted for this thesis: a qualitative study based on grounded theory (Study A) and a quantitative study using structural equation modelling (Study B) in accordance with an exploratory sequential design. As shown in Table 3-1, Study A produced Paper I and Paper II, while Paper III was based on the data collected in Study B.

First, this study discusses the grounded theory adopted in Study A. This approach is, first and foremost, an interpretive and qualitative research method particularly suitable for the intensive exploration of complicated social phenomena. Meanwhile, it is capable of identifying concepts and relationships and providing theoretical explanations for existing phenomena (Charmaz, 2006). Secondly, a semi-structured interview method was employed to collect data. Each of the papers also followed its process of data classification. The primary purposes of data collection were interpretation and theory construction.

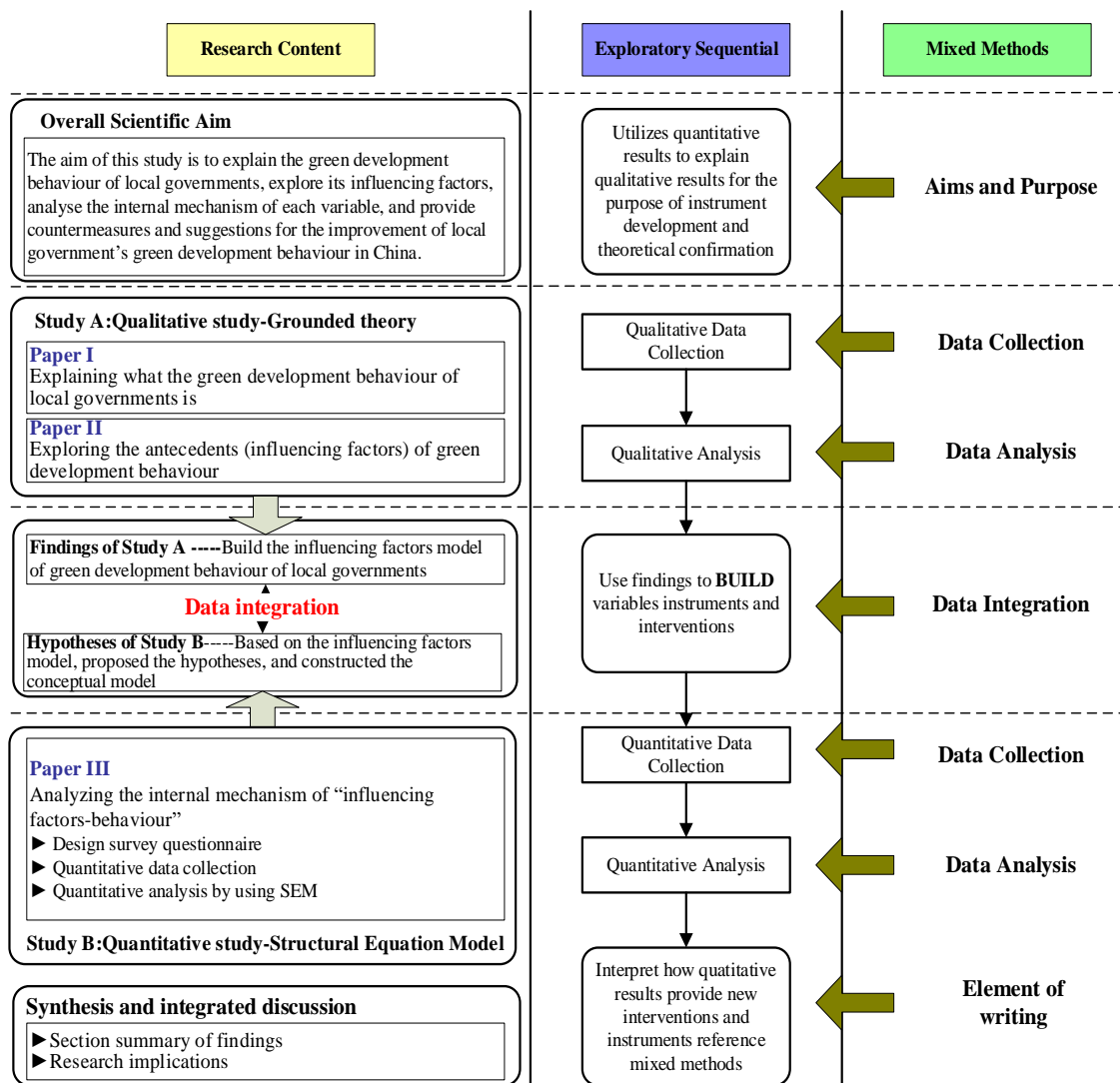


Figure3- 1 Mixed method design in this study

Specifically, the study aimed at explaining the green development behaviour of the local government, exploring potential influencing factors, and constructing a conceptual model. The following sections provide more details about Study A.

Study B employed quantitative research. According to its nature, exploratory sequential design is especially suited to scale development as it allows authors to develop their items from the qualitative data collected. These items can then be evaluated quantitatively (Harrison et al., 2020). Accordingly, this study formulated several research hypotheses based on the theoretical model of local governmental green development behaviour outlined above (Almandoz, 2012), followed by designing a questionnaire and collecting data. Simultaneously, structural equation modelling was utilised to analyse the obtained questionnaire

data, which in turn validated the model derived in Study A. Ultimately, the comparison resulted in a revised model that contributes to a greater comprehension of the mechanisms underlying the green development behaviour of local governments.

Table3- 1 Summary of methods in papers

	Paper I	Paper II	PaperIII
Topic	Explaining what the green development behaviour of local governments is	Exploring the antecedents (influencing factors) of green development behaviour	Analysing the internal mechanism of “influencing factors-behaviour”
Level of analysis	Local governments	Local governments	Local governments
Unit of analysis	Department officials of Local governments	Department officials of Local governments	Department officials of Local governments
Research study	Study A: Qualitative study-Grounded theory		Study B: Quantitative study-SEM
Specific research approach	Grounded theory	Grounded theory	Structual equation model
Theoretical perspective	New institutional theory and process organisation research (several research streams)	New institutional theory and oorganisational motivation theory (several research streams)	Process organisation research, new institutional theory and oorganisational motivation theory (several research streams)
Research Question(RQs) in the paper	Q1: What is the green development behaviour of local governments composed of? Q2: What is its logic?	Q1: What are the factors affecting the green development behaviour of local governments? Q2: How do the influencing factors affect the green development behaviour?	Q1: What are the mechanisms of internal and external factors on local governments green development behaviour? Q2: What are the mediating effects of internal factors? Q3: What is the moderating effect of the regional green development basis?
Related RQs of the thesis	RQ1	RQ2, RQ3	RQ3

3.2 Study A: Qualitative Study-Grounded Theory

3.2.1 Research Design

Study A focused on understanding the meaning of green development behaviours shown by local governments and exploring the factors influencing them. Data collection for the study was conducted through semi-structured, in-depth interviews. The interview designed for the study mainly addressed the respondents' cognition of green development behaviour, the role played by departments in green development, and the factors that promote or hinder local governments' choice of green development behaviour. Furthermore, the study analysed the data using grounded theory. Grounded theory is a qualitative research method put forward by Glaser and Strauss (2017), whose primary purpose is to establish a theory based on empirical data. Under this approach, researchers do not propose theoretical hypotheses in advance but directly summarise the survey data after determining the research scope (Corbin & Strauss, 2012), extract original concepts via continuous comparisons and supplementation, and then develop categories and the relationships between classes, before finally developing a systematic theory through integration and refinement.

This study adopts grounded theory as the research method for the following reasons: Firstly, it has become challenging to explain the various complex factors that affect the green development behaviour of local governments using traditional modes of hypothesis testing (Charmaz, 2017). Secondly, the relationship between each influencing factor is complex, and this further makes it arduous to explain the "how" and "why" of typical quantitative research. Grounded theory is explanatory, and its purpose is to discover concepts and relationships and provide theoretical explanations for existing phenomena (Charmaz, 2006), making it more appropriate for the present study. Therefore, this study uses grounded theory to explain the green development behaviour of local governments and build a conceptual model of green development to explain what factors will affect said behaviour.

3.2.2 Data Collection

This study employed an in-depth interview survey that was completed by local government departments. The sample objects were selected from three local governments located in provinces along the eastern coast of China (Jiangsu Province). Specific information pertaining to the sample is shown in Table 3-2. The enactment of green development behaviour by local governments takes place via collaboration between multiple departments. This study covered nine departments of local government related to green development, namely, the Development and Reform Commission, Bureau of Industry and Information Technology, Bureau of Ecology and Environment, Bureau of Science and Technology, Bureau of City Administration, Bureau of Agriculture and Rural Affairs, Bureau of Commerce, Water Authority, and Bureau of Housing and Urban–Rural Development. Each of these nine departments has a separate role in implementing green development practices in their local government. For example, the Development and Reform Commission serves as a leader in formulating green development policies, while the Bureau of Ecology and Environment supervises the implementation of green development policies. In addition, the Water Authority and the Bureau of Housing and Urban–Rural Development also have essential roles to play in end-of-pipe governance. Consequently, this study seeks to explain the concept of green development behaviour and explore the factors of influence and mechanisms of green development behaviour by interviewing local government officials, thus yielding a more nuanced understanding of the phenomenon.

Table3- 2 Descriptions of Sample Information

Characteristics	City A	City B	City C
Location within province	South-east	South	Central
Population	7.49 million	5.37 million	3.22 million
Interviews with divisional leaders	4	3	8
Interviews with section leaders	10	12	16
Archival data (total number of documents)	4	9	10
Interview time in the local sector (hours)	Ranging in duration from 0.5 to 1.5 hours for each interview		

Since grounded theory research ideally employs theoretical sampling (Li et al., 2019b), the participants in this study were selected based on a sampling strategy combining purpose and theory. These are the main driving forces structuring the data collection and the analysis of progress in grounded theory research (Corbin & Strauss, 2012). The target group of this study comprises the staff of local government departments related to green development. Whilst the job titles of the respondents varied slightly across the region, local green development efforts are typically associated with the nine departments listed, such as the Development and Reform Commission, the Bureau of Ecology and Environment, and the Water Authority (Krause et al., 2019). This thesis conducted 53 in-depth interviews with the staff of nine local government departments related to green development within the jurisdiction of Jiangsu Province, with each interview ranging in duration from 0.5 to 1.5 hours. Local government officials have extensive local knowledge and implementation experience. Simultaneously, the autonomy of local officials differs, which relates to substantial variations in the implementation of policies. Finally, a memorandum of about 304,000 words was formed. The information pertaining to the interviewees is shown in Table 3-3.

The in-depth interviews were conducted one-on-one without the interference of other people to enhance the integrity and efficiency of data collection. All interviews were conducted and recorded in Chinese, the mother tongue of the prominent researchers and participants. This helped the interviewers to quickly establish a harmonious relationship with respondents and thus obtain rich data (Kornilaki & Font, 2019). At the same time, before recording the interview, participants were asked to read a brief description, including detailed information such as the purpose of the survey and the confidentiality of the results (Clark & Manning, 2018). To further ensure the privacy and confidentiality of participants, this research anonymously numbered the respondents during the verbatim transcription of the interview. After each interview, the study used Nvivo12 to transcribe and organise all the material. To further improve the accuracy and reliability of the study, all the authors of this paper were involved in discussions related to data analysis and the further verification of the coding of the interviews.

Table3- 3 Interviewees Characteristics

Characteristics	Data categories	No.of participants	Percentage
Gender	Male	40	75.47%
	Female	13	24.53%
Age	21~30 years old	6	11.32%
	31~40 years old	18	33.96%
	41~50 years old	22	41.51%
	51~60 years old	7	13.21%
	Associate degree	3	5.66%
Level of education	Bachelor degree	24	45.28%
	Master degree	20	37.74%
	Doctoral degree	6	11.32%
Department	Development and Reform Commission	8	15.09%
	Bureau of Industry and Information Technology	5	9.43%
	Bureau of Ecology and Environment	5	9.43%
	Bureau of Science and Technology	5	9.43%
	Bureau of City Administration	7	13.21%
	Bureau of Agriculture and Rural Affairs	5	9.43%
	Bureau of Commerce	4	7.55%
	Water Authority	8	15.09%
	Bureau of Housing and Urban Rural Development	6	11.32%

3.2.3 Data Analysis

The traditional coding process employed in content analysis relies primarily on the analytical interpretation of data (Tevapitak & Helmsing, 2019). Specifically, drawing on grounded theory (Glaser & Strauss, 2017), this study uses open coding to analyse, compare, conceptualise, and categorise data to group related concepts to form and name categories and subcategories. Subsequently, this study develops the attributes of these categories and subcategories and distinguishes them to form dimensions. Next, axial coding was used to correlate categories and subcategories to identify antecedents, causal conditions, phenomena, consequences, contextual conditions, and possible intervening conditions (Li et al., 2021). Thus, this study focuses on the conditions that produce a category or phenomenon (local government green development behaviours), the context or specific properties in which the category or phenomenon is embedded (a sample of relevant internal and external environmental factors), and the mechanisms influencing the implementation of

green development behaviours by local governments. The specific process of data coding is shown in Table 3-4.

Table3- 4 Example of data coding

Coding process	Data codes
Document materials	Type1 Work summary of the 263 Special Action Type2 Self-examination report on work assessment Type3 Annual report on the work of departments ...
Initial concepts	aa1 Perceptions of local government leaders on green development (a1, a2...a5) aa2 Local government leaders familiarize themselves with green development-related work (a6, a7, a8) aa3 Local government leaders have a clear understanding of green development responsibilities (a9, a13...a31) ... (16 initial concepts)
Categories	Aa1 Local government leaders' cognitions of green development (aa1, aa2, aa3) Aa2 Local government green development commitment (aa4, aa5, aa6) Aa3 Local government green development capacity (aa7, aa8) ... (7 categories)
Main categories	A1 Internal driving factors (Aa1, Aa2, Aa3) A2 External Environmental Pressures (Aa4, Aa5, Aa6) A3 The Basis of Regional Green Development (Aa7) (3 main categories)

3.2.4 Validity Assurance

Additionally, this study strictly followed the steps recommended by Tellis (1997) to triangulate the information collected from both primary and secondary sources. First, each author independently reviewed all the information from the transcribed interviews and secondary documents to verify their validity and avoid potentially ambiguous and equivocal data from being included in the database. Each author then compared or corroborated their analyses with those of other authors to reach a shared understanding and interpretation of the information under investigation. Finally, this research triangulated all the information received (Ünal et al., 2019b; Huwel et al., 2023). This study examined a framework to create conceptual labels, categories, and subcategories simultaneously.

3.3 Study B: Quantitative Study-Structural Equation Modelling

3.3.1 Overall Approach

Study B employed structural equation modelling (SEM), which is a collection of statistical techniques that allow the examination of a set of relationships between one or more continuous or discrete independent variables (IVs) and one or more continuous or discrete dependent variables (DVs) (Weston & Gore, 2006). When dealing with potential variables, structural equation modelling is the most appropriate method for testing theoretical models with multiple independent and dependent variables and effectively assessing their interrelationships (Hair, 2011; Goodboy & Kline, 2017). Furthermore, researchers approach structural equation sets via a combination of factor analysis and path analysis, and two main components of structural equation sets can be considered: measurement models and structural models (Rathner & Byrne, 2014; Gkargkavouzi et al., 2019). Measurement models describe the relationship between observed variables and hypothesised measurements. In contrast, the structural model describes the interrelationships between the components (Gkargkavouzi et al., 2019). When the measurement and structural models are considered together, the model can be referred to as a complete structural model.

Drawing on an exploratory sequential design using the mixed-methods approach, Study B designed a questionnaire for data collection building on the conceptual model obtained above. A structural equation model was also applied to validate the conceptual model and examine the relationship between internal driving factors, external environmental pressures, the regional green development basis and local government green development behaviour. This study applied a questionnaire survey for data collection and selected the sample meticulously. The main reasons for this were as follows. Firstly, the green development behaviour of local governments is a complicated issue. Secondly, officials from local government departments related to green development were selected for the survey because they were capable of adequately understanding the relevant concepts in this study and could accurately respond to the survey questions. As a result, this thesis selected local government officials from nine sectors related

to green development in twelve provinces and cities in eastern, central, and western China for the survey. The specific provinces and cities mentioned were Shanghai, Zhejiang, Jiangsu, Hebei, Fujian and Guangdong in the east. The central provinces and cities covered included Anhui, Jiangxi and Hubei. The western provinces were Sichuan, Shaanxi and Gansu.

Additionally, the questionnaires were validated by professionals, and a pre-study was conducted by people with similar backgrounds to the target population, resulting in the final questionnaire used in this study. The official questionnaire was a combination of online and field surveys. The study tested the reliability and validity of the questionnaire data using SPSS 26.0 and then examined the proposed hypotheses with the assistance of AMOS 26.0 to further explore the mechanisms between internal driving factors, external environmental pressures, the bases of regional green development and local government green development behaviour. The following sections describe in detail the steps involved in developing a structural equation model.

3.3.2 Research Hypotheses

3.3.2.1 External Environmental Pressures and Internal Driving Factors

External factors affect organisation members as regards how they consciously select, implement and manage their actions to achieve the expected results (Darvishmotevali & Altinay, 2022). The institutional environmental pressures highlighted in this study include coercive pressures and normative pressures. Strict central environmental regulations and requirements have contributed to a growing understanding of environmental pollution and environmental protection among local governments (Wu et al., 2020a). Furthermore, institutional environmental pressures can influence local government leaders' cognitions and emotions regarding the institutional environment, leading to environmental commitment (Huang & Huang, 2016). Resnick and Siame (2023) also identified the degree of political interference as a potential factor influencing commitment. Specifically, higher levels of government need to monitor local governments to ensure that the latter have green development plans and programs in place. Furthermore, as the concept of green development continues to grow,

stakeholders' demand for green development is also rising. For instance, the demand of the public for an excellent urban environment is improving. Fan et al. (2021) identified that a joint environmental monitoring system, including enterprises, the public and the media, is required to force local governments to protect environmental quality. Consequently, besides businesses and the public, the media can also impact local governments' understanding of green development. Media influence will facilitate local governments to acquire knowledge about green development and the implementation of green development policies more effectively, thus immediately raising awareness of green development and improving its realisation (Benitez et al., 2018). Zhang et al. (2020) similarly stated that media influence contributes to local governments' awareness of green development. Therefore, the following hypotheses are proposed.

H1-1a: The regulation of superior departments has a significant positive impact on local government leaders' cognition of green development.

H1-1b: The regulation of superior departments has a significant positive impact on local government's green development commitment.

H1-1c: The regulation of superior departments has a significant positive impact on local government's green development capacity.

H1-2: The green development demands of enterprises and residents have a significant positive impact on local government's green development commitment.

H1-3a: Media influence has a significant positive impact on local government leaders' cognition of green development.

H1-3b: Media influence has a significant positive impact on local government's green development commitment.

H1-3c: Media influence has a significant positive impact on local government's green development capacity.

3.3.2.2 External Environmental Pressures and Green Development Behaviour

Galliano and Siqueira (2021) considered the interaction with the external environment as a vital aspect of organisational behaviour. This study found that external environmental pressures include the regulations enforced by superior departments, stakeholders' green development demands, and media influence. The strict environmental laws and assessment systems put in place by superior government departments will affect the behavioural choices of local governments, as is also underscored by Piña and Avellaneda (2019). China is currently implementing strict environmental protection regulations and an environmental responsibility system, which could positively or negatively impact the green development behaviour of local governments.

A couple of researchers proposed that bottom-up public protests will also affect government action (Gao et al., 2020). With the increasing awareness of the public of their living environment (Shi et al., 2019), the demands they make regarding regional green development continue to improve, as is seen with the increasing demand for green products (He et al., 2019), prompting local governments to implement green development behaviours, which also verifies that the public can influence the formulation of environmental governance policies (Lee & Kim, 2018). This study suggests that enterprises' green development demands include three aspects. One is the improvement of entrepreneurs' awareness of green development, which requires enterprises to carry out green transformation and upgrades. The other is the green demands of the market, which promote the continuous improvement of entrepreneurs' green development attempts (Reyes-Rodríguez, 2021). The last aspect refers to the fact that, under strict environmental regulations and supervision, corporate social responsibility requires enterprises to carry out green development (Melissen et al., 2018). At the same time, enterprises also hope that local governments will provide them with support, such as via green development publicity.

Furthermore, media influence places external pressure on local governments. A growing number of people post on social media, and the media discloses pollution

events through reports, all of which play a supportive role in environmental governance, mirroring the stance of Shi et al. (2019). Furthermore, some scholars have pointed out that the rational use of media will also promote the acquisition of organisational knowledge and improve organisational performance (Benitez et al., 2018). Accordingly, this study believes that social supervision will affect the green development behaviour of local governments. Anderson et al. (2019) argued that news media fulfils the role of monitoring environmental governance, thus helping to advance the environmental governance behaviour of local governments. Therefore, the following hypotheses are proposed:

H2-1: The regulation of superior departments has a significant positive impact on the green development behaviour of local governments.

H2-2: The green development demands of enterprises and residents have a significant positive impact on the green development behaviour of local governments.

H2-3: Media influence has a significant positive impact on the green development behaviour of local governments.

3.3.2.3 Internal Driving Factors and Green Development Behaviour

The internal driving factors include local government leaders' cognition of green development, green development commitment and green development capacity. Local government leaders' cognition of green development is crucial. Particularly in China, as the concept of green development continues to develop, local government leaders have a certain level of understanding of this issue. Cognition includes the processing of information, sense-making, information dissemination and reflective learning. Civil servants' motivations for green procurement have been shown to relate to awareness and knowledge (Bryngemark et al., 2023). Top managers' perceptions of the external environment shape organisational behaviour and environmental strategies (Sharma, 2000). As is consistent with social identity theory, the awareness and cognition of organisation members will affect the cognition of the organisation and, thus, its behaviour choices (Ashforth & Mael, 1989). The implementers' final understanding of the policy's overall

intention, specific standards, and objectives is crucial for its successful implementation. This means that local government officials need to fully understand the concepts and policies of green development.

Commitment includes attitudinal commitment and behavioural commitment (Ünal et al., 2019a). As is reflected in this study, the concept of attitudinal commitment, according to which organisations focus on the alignment of organisational values and goals with those of individuals (Salancik, 1977), emphasises that individuals develop a strong belief in organisational values, as well as a willingness to work for the benefit of the organisation. Grandia (2016) noted the importance of a willingness to implement sustainable initiatives and procurement. Willingness influences behaviour and is constrained by the external environment (Kornilaki & Font, 2019).

Green development capacity is divided into interdepartmental coordination governance capacity and resource allocation capacity. Reyes-Rodríguez (2021) suggested that organisational capability, as an intermediary attribute, will help develop a deeper understanding of the relationship between environmental management practices and competitive advantages. Interorganisational relationship theory holds that there are different degrees of resource dependence among organisations, which can easily lead to inter-organisational conflicts, making the policy implementation process more chaotic. The ability to coordinate and organise joint governance between various departments will affect the implementation of green development behaviour. Resource allocation capacity guarantees that local governments can implement green development behaviour successfully. Improper resource allocation will impede ecological efficiency, which is in line with the finding of Wang et al. (2020). Therefore, the following hypotheses are proposed:

H3-1: Local government leaders' cognition of green development has a significant positive impact on the green development behaviour of local governments.

H3-2: Local government's green development commitment has a significant positive impact on the green development behaviour of local governments.

H3-3: Local government's green development capacity has a significant positive impact on the green development behaviour of local governments.

In summary, and in conjunction with the findings of our qualitative study (Study A), the following hypotheses are proposed.

H4-1a: Local government leaders' cognitions of green development mediate the relationship between superior department regulation and green development behaviours.

H4-1b: Local government leaders' cognitions of green development mediate in the relationship between media influence and green development behaviours.

H4-2a: Local government's green development commitment mediates the relationship between superior department regulation and green development behaviour.

H4-2b: Local government's green development commitment mediates the relationship between green development demands of enterprises and residents and green development behaviour.

H4-2c: Local government's green development commitment mediates the relationship between media influence and green development behaviour.

H4-3a: Local government's green development capacity mediates the relationship between superior department regulation and green development behaviour.

H4-3b: The local government's green development capacity mediates the relationship between media influence and green development behaviour.

3.3.2.4 The Moderating Effect of Basis of Regional Green Development

The different resource endowments, environmental conditions, and economic bases of regions lead to heterogeneity between regions (Li et al., 2019a). Ostrom (2011) stated that the action situation affects the behaviour of actors, the communication mode between actors, and the ensuing results. In recent years, multiple scholars have also considered regional characteristics in their research,

believing that regional characteristics will affect environmental performance and green development efficiency (Marulanda-Grisales & Figueroa-Duarte, 2021). Simultaneously, due to the different green industrial and social foundations in each region, the perceptions of green development held by sectoral leaders manifest variability. Accordingly, the basis of regional green development has a moderating effect on green development behaviour. However, existing studies yielding insights on the impact of regional characteristics on local governments' implementation of green development tend to be scarce. Therefore, in the context of green development behaviour, this thesis has integrated this action situation into the model and holds that the basis of regional green development is a crucial moderating factor. This study also finds that the regional industrial and social bases affect the degree of difficulty of green development for local governments. Therefore, the following hypotheses are proposed:

H5-1a: The social base of regional green development positively moderates the relationship between internal driving factors and green development behaviour.

H5-1b: The social base of regional green development positively moderates the relationship between external environmental pressures and green development behaviour.

H5-2a: The industrial base of regional green development positively moderates the relationship between internal driving factors and green development behaviour.

H5-2b: The industrial base of regional green development positively moderates the relationship between external environmental pressures and green development behaviour.

Based on the above-hypothesised relationships, the conceptual model diagram for this study is shown in Figure 3-2.

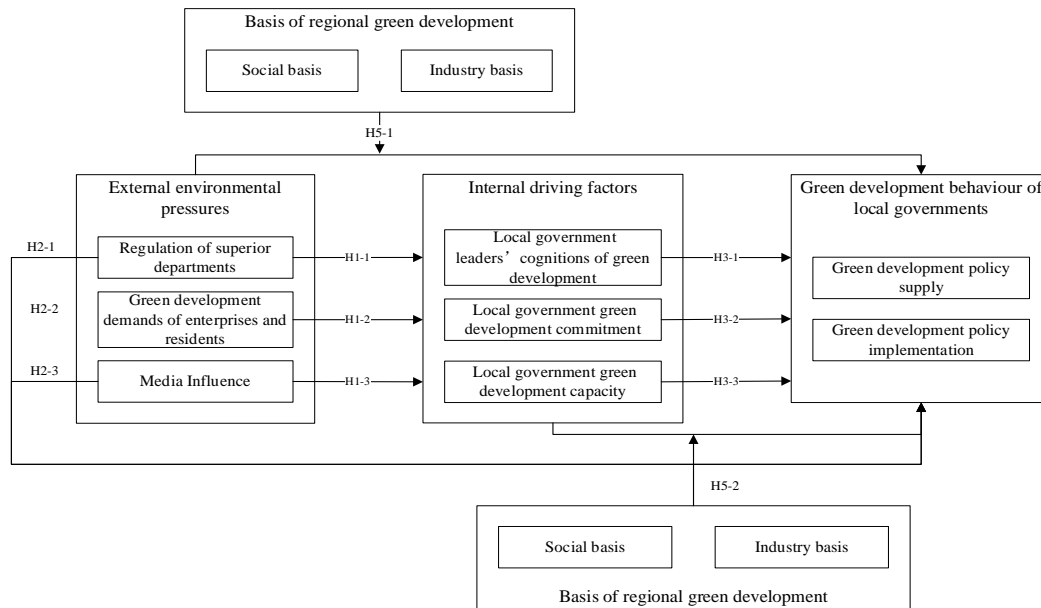


Figure3- 2 The conceptual model of green development behaviour of local governments

3.3.3 Questionnaire Design

There are strict operational procedures relating to questionnaire design regarding defining the concepts and dimensions of the variables based on a clear understanding of the problem under study and determining the measurement items for the variables to be consistent with the set research objectives. The wording of the items should be carefully scrutinised to avoid ambiguity in the respondents' understanding, and the reliability and validity of the questions should be assessed as necessary. Dunn et al. (1994) argued that the process of questionnaire design can be divided into the following four steps: firstly, forming the measurement items through literature reviews and interviews with relevant people; secondly, inviting experts and scholars with relevant research backgrounds to discuss and revise the questionnaire; thirdly, inviting some of the respondents to discuss and revise the questionnaire; fourthly, further revising the measurement items through pre-testing, and then ultimately finalising the questionnaire. With reference to the proposed questionnaire design steps, the design process of this questionnaire is as follows.

(1) Clarify the concepts and dimensions of the variables

Based on the preliminary research undertaken in four cities in Jiangsu Province,

including Zhenjiang, Changzhou, Wuxi, and Suqian, and personal in-depth interviews with officials from local government departments related to green development, the basic theoretical framework and the concepts of the variables of the study were defined. In addition, combined with the results of related studies, internal driving factors, external environmental pressures, the bases of regional green development, and the green development behaviour of local governments were sorted to clarify further the concepts and dimensions of the variables employed in this study.

(2) Identifying variable measurement question items

The established scales show good validity and reliability. Therefore, to clarify the concepts and dimensions of the variables, this study reviewed the scales for each variable with reference to existing scales to form the measurement items of the questionnaire. For some variables for which there are no directly applicable measurement items, existing measurement items were modified to include keywords related to the objectives of this thesis. Based on relevant questionnaire design tools and literature, the questionnaire used in the empirical research phase of this paper was designed as follows.

Green development behaviour of local governments. This is the outcome variable, the two dimensions of green development behaviour (local government's green development policy formulation and green development policy implementation). The study also drew on the research design of scholars such as Du et al. (2023), Vagnoni and Moradi (2018), and Zhan et al. (2018) to form a scale for measuring the green development behaviour of local governments. Green development policy formulation of local governments was measured using six items; the sample item includes "Local governments actively formulate regulations related to green development". Green development policy implementation of local governments was measured with eight items; the sample item includes "Local governments enforce strict environmental evaluation standards for newly introduced enterprises".

Internal driving factors. Referring to studies by Chen (2011), and Bryngemark et al. (2023). Local government leaders' green perceptions were measured using

five items; sample items included “local government leaders have green values”. Referring to the studies of Colwell and Joshi (2013) and Ünal et al. (2019a), local governments’ commitment to green development consisted of three items. The sample items include “Green development is a priority for local governments”. Referring to the studies of Cho and Poister (2013) and Deslatte and Stokan (2020), green development capacity was measured by three items; the sample items included the “capacity of local governments to address green development challenges in their regions”.

External environmental pressure. Three dimensions of external environmental pressure (regulations of higher authorities, green development needs of businesses and residents, and media influence). Referring to the studies of Piña and Avellaneda (2019) and Resnick and Siame (2023), superior department regulation includes four question items, and the sample items include “the degree of perfection of the green development regulations promulgated by the higher authorities”. The green development needs of enterprises and residents are measured with four items; sample items include “the extent to which residents of the region are motivated to report environmental violations to local governments”. Zhang et al.’s(2020) study, media influence was measured with five items; sample items included “the extent to which the news media publicise green living among residents in the region”.

The basis of regional green development. Two dimensions of the basis of regional green development (social basis and industry basis). Seven items developed by Chen (2011) were used. Social basis was measured using four items; the sample item includes “The degree of awareness of green development of residents”. Industry basis was measured using three items; the sample item includes “The degree of the industry actively changes to green and low-carbon circular development”.

(3) Small-scale interviews to revise the questionnaire

After clarifying the concepts and dimensions of the variables and determining the measurement items, small-scale interviews were conducted to test the reasonableness and suitability of these measurement items, to find out the

potential problems, and to improve the design of the questionnaire. The first interview was a small-scale expert interview, which mainly discussed the content of the questionnaire measurement items. The accuracy of the statements employed in the questionnaire measurement items and the overall structural arrangement of the questionnaire were also discussed and revised. In the second interview, local government officials from the Ecology and Environment Bureau, the Water Resources Bureau, the Housing and Construction Bureau, and the Bureau of Industry and Information Technology were invited to fill in the questionnaires revised since the first small-scale expert interview. Corrections were made to measurement items that were not easy to comprehend and could have been ambiguous. The third interview was a small-scale expert interview to explore whether the questionnaire met the research objectives after the first two revisions and to fine-tune the wording of the measurement items further. After three small-scale interviews, the initial questionnaire was improved and refined.

(4) Pretesting of the questionnaire

The pretesting of the scale was carried out after the initial questionnaire's formation. The trial test included issuing 240 questionnaires, of which 181 were validly recovered; the effective questionnaire recovery rate was 75.42%. The collection of samples mainly focused on the three cities of Zhenjiang, Changzhou, and Wuxi through field research; the results almost meet the requirements of the formal test sample, with a considerable degree of representativeness. The field research also involved listening to the respondents' opinions and suggestions regarding the language and content of the questionnaire as a reference for finalising the formal questionnaire. After several discussions undertaken at different scales by the project team and combining them with existing scales, the pretest scale was finalised and included 45 items in total, including internal driving factors (IDF), external environmental pressures (EEP), regional green development basis (RGB), and the green development behaviour of local government (GDB). Based on the data collected in the pretesting of the questionnaire, item analyses and exploratory factor analyses were conducted on the measurement items of each variable, and the items whose reliability and

validity did not meet the requirements were deleted, ultimately forming the questionnaire used in this paper (see Appendix).

3.3.4 Data Collection

The official survey at the foundation of this study was subsequently conducted; the official questionnaire consisted of two parts. The first part contained basic information about the respondents. The second part featured statements rated on a five-point Likert scale, where 1 meant “completely not matched” and 5 “absolutely matched”. According to the “10 times rule” (Hair et al., 2011), this rule assumes that the sample size should be greater than ten times the maximum number of internal or external model links referring to any latent variable in the whole model (Rvospk et al., 2020). The questionnaire of this study has 45 items; based on this rule, the sample size should be more than 450, and this study finally obtained a valid sample of 722. The respondents were local government officials working in departments related to green development who had insights about green development.

The study examined 12 provinces and cities in eastern, central and western China. The official questionnaires were distributed through a combination of online and field surveys. In total, 1,328 questionnaires were received and refined to remove incomplete responses. In conclusion, 722 completed questionnaires remained. Table 3-5 shows the characteristics of the research sample in terms of gender, position, and department. The sample’s proportions of males and females were 56.37% and 43.63%, respectively. Department heads represented the highest proportion in the sample (4.57%), followed by frontline employees, accounting for 95.43%. In addition, the interviewees came from nine different government departments, of which the Bureau of Industry and Information Technology and the Bureau of Ecology and Environment gave 96 and 106 respondents, each accounting for 13.30% and 14.68% of the total.

Table3- 5 Descriptions of information of participants

Characteristics	Data categories	No.of participants	Percentage
Gender	Male	407	56.37
	Female	315	43.63
Age	21-30 years old	213	29.50
	31-40 years old	330	45.71
	41-50 years old	110	15.24
	51-60 years old	69	9.56
Position	Department Heads	33	4.57
	Frontline Employees	689	95.43
Education	Associate degree	40	5.54
	Bachelor degree	506	70.08
	Master degree	169	23.41
	Doctoral degree	7	0.97
Department	Development and Reform Commission	71	9.83
	Bureau of Industry and Information Technology	96	13.30
	Bureau of Ecology and Environment	106	14.68
	Bureau of Science and Technology	51	7.06
	Bureau of City Administration	57	7.89
	Bureau of Agriculture and Rural Affairs	66	9.14
	Bureau of Commerce	71	9.83
	Water Authority	65	9.00
	Bureau of Housing and Urban Rural Development	77	10.66
	Other departments	62	8.59

3.3.5 Data Analysis

Study B analysed the survey data using SPSS 26 and AMOS 26 via the following steps. First, the reliability of the scale was analysed. Reliability mainly refers to the reliability, consistency, and stability of the measurement results, whether the results reflect the stable and consistent actual characteristics of the assessed respondents. The study further calculated Cronbach's α and Composite Reliability (CR>0.7) to evaluate the reliability of the structure.

Secondly, the validity of the scales was assessed. The validity of a scale refers to the extent to which the scale effectively measures the characteristics the researcher seeks to measure. It also refers to the proximity between the measurement object and the measurement results of the scale. In other words, the higher the validity, the more effectively the measurement results reflect the natural characteristics of the measured object. The methods most used to test validity include exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). To establish the effectiveness of discrimination and convergence, this study calculated the average variance extracted (AVE) of potential variables and

tested the correlation between structures. AVE values should exceed a threshold of 0.5, and factor loadings must be significant at the $p < 0.001$ level to ensure convergent validity.

Thirdly, the structural model was evaluated in this study by examining the significance, direction and magnitude of the goodness-of-fit index and structural parameter estimates. The t-value of the path should exceed ± 1.96 at the 0.05 significance level (Hair et al., 2010). At the same time, positions and departments were entered into the structural model as control variables. Finally, the proposed conceptual model was revised to emphasise its superior explanatory validity in relation to predicting the relationship between the factors given and green development behaviour.

4 EXPLAINING THE GREEN DEVELOPMENT BEHAVIOUR OF LOCAL GOVERNMENTS FOR SUSTAINABLE DEVELOPMENT: EVIDENCE FROM CHINA

Jianguo Du¹, Xiaowen Zhu^{1,2}, Xingwei Li³, Unal Enes², Phil Longhurst⁴

¹ School of Management, Jiangsu University, Zhenjiang 212013, China

² Centre for Design Engineering, Cranfield University, College Road, Cranfield MK43 0AL, UK

³ College of Architecture and Urban-Rural Planning, Sichuan Agricultural University, Chengdu 611830, China

⁴ School of Water, Energy and Environment, Cranfield University, Cranfield MK43 0AL, UK

Published in Behavioural Sciences 13(10) (2023) 813.

<https://doi.org/10.3390/bs13100813>

Abstract

Although researchers have examined organisational sustainability practices, a specific interpretation of local government green development practices remains for supplemental analysis. This study conducted an empirical survey of 53 local officials from departments related to green development to understand the key processes and practices of green development behaviour of local governments in China. The key findings indicate that the main stakeholders involved in the green development practices of Chinese local governments consist of enterprises and residents. In part, local government green development practices emphasise the greening of enterprises, especially in the step of process environmental regulation. The new institutionalism theory and the organisational process research provide dependable insights into green development behaviours. Our findings further shed light on the process of cross-sectoral cooperation across local government departments in green development, contributing to local multi-sectoral interactions for regional green development.

Keywords

local government; green development behaviour; new institutionalism; organisational process research; grounded theory

4.1 Introduction

The 2030 Agenda for Sustainable Development and the Sustainable Development Goals emphasise the importance of local stakeholders. Local governments are in an important position to implement localised intermediary strategies for the global agenda [1]. With the increasing contradiction between emission reduction and economic growth [2,3], the carbon emission situation remains gloomy. In 2022, global energy-related CO₂ emissions increased by 0.9%. As an essential tool for climate mitigation, green development has attracted significant attention from developed countries [4,5]. Since the beginning of the 21st century, the United Nations has issued the “China Human Development Report 2002: green development” [6]. The theoretical frameworks and practices of green development have become indispensable elements for Chinese government policymakers to discuss policies [7]. Notably, Chinese policymakers have contributed to the practice of reducing emissions and promoting clean energy [8-10]. However, following a report released by the United Nations Environment Program in 2021, experts predict that governments participating in the 2030 Paris Agreement will miss their carbon reduction targets [3]. Implementing green development behaviours is a crucial government initiative to reverse this situation [1,3]. Therefore, to encourage the growth of green production modes for businesses and green lifestyles for the general public, it is vital to investigate municipal governments’ behaviour in green development.

Local governments play a crucial role in green development [1]. On the one hand, local governments have the authority to enact regulations guiding businesses and citizens toward environmentally responsible conduct [11]. On the other hand, local governments have an advantage in obtaining local information, allowing them to provide public goods better suited to residents’ preferences than the central governments [12]. Consequently, local governments contribute to a more efficient implementation of national policies [13]. However, the main problem local governments in China currently face in implementing green development practices includes the lack of incentives to implement effective environmental governance measures according to local situations [14]. Second, because of the high threshold of green development and the difficulty of implementation [15],

local governments still encounter the problem of selective implementation [16]. Moreover, the traditional localised and disorganised model of local governments as key players in environmental governance reduces governance efficiency [17]. Accordingly, localising green development practices necessitates research to understand the fundamental practices and processes for implementation.

Existing research on the implementation of green development practices by local governments covers different aspects of policy and public action, including planning for emission reduction targets [18,19], selecting green policy instruments [16,20], behavioural changes in local governments [21], and implementing public green procurement [22,23]. Research on implementing green development practices by local governments in China mainly focuses on environmental regulation [24-28], decision making on green development behaviours [3,15,17,29,], and green behaviour of civil servants [30].

Accordingly, this study proposes the main research question: what does the green development behaviour of local governments comprise? This study interviewed 53 local government officials using local governments in China as a case study to answer this question. Local governments' green development endeavours are usually associated with the Development and Reform Commission, the Ecological Environment Bureau, and the Water Bureau [20]. These departments are mainly responsible for economic, environmental, social, scientific, and technological development. This study aims to analyse the composition of local governments' green development behaviours and critical processes and practices of its implementation by combining the new institutionalism theory with organisational process research. Hence, it can better expand the localisation research on green sustainable development practices.

Compared to previous research, our study has made the following contributions. First, new institutionalist theory and organisational process research have similar characteristics that help explain organisational change [12,31-33]. Therefore, this study deconstructs the idea that local governments' green development behaviours consist of two aspects, the formulation and implementation of green development policies, and analyses the key processes and practices of local

governments' green development behaviours. Second, this study contributes to understanding the green development behaviour of local governments in China. Most studies have been conducted on the European [21,34] and American [18,35] regions, while Chinese studies have received less attention. The process of local governments in China to localise green, sustainable practices is not clear. Furthermore, the findings detail the measures taken by local governments to promote the greening of business production methods and public lifestyles. Significantly, local governments in China have paid more attention to corporate green production than to greening the public's life. However, existing studies have emphasised the relationship between communities, residents, and local government's sustainable practices [35]. Nevertheless, the partnership between local governments and the private sector should not be ignored [10]. Our research results not only help local government departments and stakeholders to deepen their understanding of green development but also help local governments to realise regional green development.

This research is organised as follows. The second section examines the relevant research on local government in green development and the pertinent theories underlying the practice of local government green development. The third section explains the research design, data collection, and analysis. In the fourth section, we analyse the research findings. In the fifth section, this study summarises and discusses the research findings in greater detail. Finally, this study's conclusions, implications, and limitations are outlined.

4.2 Theoretical Background

4.2.1 The Role of Local Governments in Green Development

Local governments, as critical actors in green development practices, influence many key emission sectors, including buildings, energy supply, transportation, planning, and waste management [21]. Meanwhile, local governments serve as facilitators and leaders in guiding the sustainable transformation of business and society [36]. Notably, local governments adopt different rhythms when implementing green sustainability policies and practices depending on the

country, administrative level (for example, local versus central), or the activities and goals of each organisation [34]. Therefore, academics do not have a unified definition of local government green development behaviours.

Some scholars have linked green development behaviours to plans, programs, and goals. Wheeler noted that state and local governments in the US typically implement sustainable practices via planning and that most projects have set emission reduction targets, created emission inventories, and greened public sector operations [18]. Deslatte and Swann (2016) examined cities' choices of green policy tools regarding organisational goals, such as greenhouse gas emission reductions and energy efficiency [16]. Additionally, local governments often seek environmental goals that exceed state and federal minimum requirements [20]. Local governments have adopted comprehensive plans emphasising sustainability in local sustainability and climate action plans [19].

Other scholars perceived green development behaviour as a behavioural change. Revell believed that behavioural change is a policy tool, and behavioural change has been widely developed in environmental policy to encourage sustainable lifestyles [21]. Accordingly, this article identifies local government green development behaviour as a change in behaviour, namely behaviour taken by the local government to change from the original development mode of pursuing only economic growth to the green development mode of seeking environmental protection and economic growth. The purpose is to encourage enterprises to realise the greening of production methods and residents to learn the greening of lifestyles.

Furthermore, as the concept of green development emerged, local governments' key role in the green development process in China has gradually emerged (as shown in Table 4.1). Studies on local governments in China mainly focus on the regional level and are generally presented using panel data and empirical analysis [24-28]. Moreover, other scholars researched the behaviour of local governments in green development and the green behaviour of civil servants with structural equation modelling, evolutionary games, and meta-analysis methods [3,17,29,30]. Huang et al. investigated collaborative behaviour in local

government water governance using questionnaires and semi-structured interviews [17]. Regarding the following questions, which theoretical frameworks can be used for analysis remains to be studied: What does the green development behaviour of local governments comprise? What are the key processes and practices of green development behaviour? Accordingly, this research presents case studies of Chinese local governments combining the institutional theory and the organisational process theory to provide a specific analysis of green development behaviours.

Table4- 1 Research related to green development of local governments in China

References	Research Method	General Findings
Zhou et al. (2023) [24]	Data from 30 provinces in mainland China from 2001 to 2020, empirical analysis.	Regional economic development is related to both the internal and external environment and the characteristic behaviour of local governments.
Xin et al. (2022) [25]	Data on fiscal decentralisation, land resource use, and pollutant emissions in China, 2011–2018.	Local government leaders tend to prioritise short-term economic growth over environmental protection when they are under intense pressure for promotion.
Liu et al. (2022) [26]	Provincial panel data from 2008 to 2018, spatial econometric approach.	Local governments create a peer effect in green governance activities.
Li et al. (2022) [3]	18 literatures, meta-analysis.	Enterprise economic behaviour, environmental behaviour, social behaviour, and public participation are significantly and positively influenced by the government's green development behaviour.
Chen & Gao (2022) [29]	Evolutionary game.	Urban residents are more likely to change their green decisions under positive government incentives, but government penalties mainly influence firms' behavioural decisions.
Liu et al. (2021) [15]	Dynamic evolutionary game models.	Exploring group behaviour of local governments in green governance from a knowledge management perspective.
Liu et al. (2021) [30]	308 civil servants working in the public sector, empirical study.	Green behavioural intentions, organisational environmental strategies, and green lifestyles positively influence green behaviours.
Peng (2020) [27]	Panel data for 274 Prefecture-Level Cities in China, 2005–2015, Composite Indicators of Environmental Regulation	Interregional interaction of environmental regulatory strategies influences green productivity.
Wu et al. (2020) [37]	Empirical analysis of sample data from 30 provinces in China.	Environmental legislation and regulation can improve regional ecological quality.
Liu et al. (2018) [38]	Multi-adaptive scenario system dynamics modeling.	Five key policy variables were identified, including urban population carrying capacity, water consumption and recycling rates, and expansion of urban land cover.
Huang et al. (2017) [17]	Questionnaires and semi-structured interviews.	The density of the network ranges from weak to moderate, leading to collective action problems and insufficient cooperative governance.
Chen et al. (2016) [28]	Job changes of 31 governors between 1978 and 2012, probit model empirical testing.	Energy productivity has a significant positive effect on the political promotion of Chinese governors.

4.2.2 Theoretical Analysis of the Green Development Behaviour of Local Governments

Institutional theory has been applied to studying organisational responsiveness to environmental issues [31]. It is frequently used to describe how new practices are adopted in organisations [32]. Institutional theory offers explorations of different methods/mechanisms through which information about legitimate and socially acceptable organisational behaviours can be conveyed, and such behaviours can be institutionalised in organisations [18]. Therefore, one of the goals of our study is to apply institutional theory to explain the process of institutionalising green development practices in local governments.

On the one hand, the new institutionalism theory highlights three conceptually distinct mechanisms by which organisations reflect their institutional environment: mandatory, imitative, and normative [31]. Do local governments' green development behaviours involve these three essential characteristics? To address this targeted question, this study applies rational choice institutionalism and social institutionalism as analytical tools. These two institutionalisms can be used as analytical tools to explore the institutionalisation of sustainable development in local governments [39]. Dunlop and Russel analysed the role of UK regulators in integrating sustainable development into public services based on rational choice and sociological institutionalism [40]. Page pointed out that governance studies can generally be categorised into sensible choice and sociological institutionalism [41]. Andrews-Speed viewed the energy sector as a socio-technical system, drawing on the core ideas of rational choice and socio-organisational institutionalism to explain the socio-technical transformation in depth [42].

On the other hand, new institutionalism theory is often criticised for only explaining persistence and homogeneity, but recent studies have shown its suitability for explaining change [12]. Local governments' green development behaviours reflect dynamic changes in behaviour. Process research in organisational theory suggests that organisations cannot simply replicate the practical processes of other firms [33]. Langley and Tsoukas note that a particular

organisational process is usually adequate, but nothing is known about how it is achieved [43]. Therefore, it is necessary to gain insight into the sequence of events over time [44]. This evolutionary perspective explains how and why a process unfolds over time [45]. This study describes local governments' essential processes and practices in implementing green development behaviours at different times and in the face of different stakeholders, explained from an evolutionary perspective.

4.3 Method

4.3.1 Research Design

This article employs the case study method [46]. The case study method applies to new phenomena that must be explored and serendipitous discoveries in exceptional circumstances [47]. In this study, the specific processes implemented by local organisations in transforming local government behaviours to green development behaviours are yet to be explored, so an in-depth case study methodology was adopted to understand the phenomenon comprehensively. An in-depth case study analysis is consistent with the objectives of this paper for the following reasons. First, the leadership of local officials as decision makers is dynamic, multifaceted, and complex. It manifests itself in context [48], which requires an in-depth look at how these processes evolve in sequences and transitions [36]. Second, multiple case studies have generated rich, field-based insights into the critical strategies by which local governments develop green development policies and implement green development practices.

4.3.2 Data Collection

This study focuses on the local government departments in Jiangsu Province responsible for green development. Jiangsu Province is in the eastern coastal region of China and ranks as the second largest province economically. Since this study focuses on local governments, the local level is defined as local government units with different population sizes, municipalities (such as cities, towns, and villages), and district-level governments [10]. We selected three

prefecture-level cities in Jiangsu province in the southern and central regions (detailed sample information is shown in Table 4.2). The target group of our study is the staff of local government departments related to green development. While the job titles of the respondents varied slightly across the region, local green development efforts were typically associated with nine departments, including the Development and Reform Commission, the Bureau of Ecology and Environment, and the Water Authority [20]. All participants in our study view green development, environmental protection, low-carbon circular development, and cross-sector cooperation as integral to their work. The research data consists of 53 semi-structured interviews with local government officials, ranging in duration from 0.5 to 1.5 h for each interview. Finally, a memorandum of approximately 304,000 words was composed. Additionally, 23 archival data were collected, including policy documents related to green development practices issued by local governments. Each interview will be transcribed and organised using NVivo12. Table 4.3 contains detailed information about the respondents.

Table4- 2 Descriptions of sample information

Characteristics	City A	City B	City C
Location within province	South-East	South	Central
Population	7.49 million	5.37 million	3.22 million
Interviews with divisional leaders	4	3	8
Interviews with section leaders	10	12	16
Archival data (total number of documents)	4	9	10
Interview time in the local sector (hours)	Ranging in duration from 0.5 to 1.5 h for each interview		

In addition, the organisation sample includes nine local government departments, including the Development and Reform Commission, Bureau of Industry and Information Technology, Bureau of Ecology and Environment, Bureau of Science and Technology, Bureau of City Administration, Bureau of Agriculture and Rural Affairs, Bureau of Commerce, Water Authority, and the Bureau of Housing and Urban-Rural Development. Notably, the Development and Reform Commission and the Water Authority have at most eight respondents. The results section will specifically elaborate on the roles of these sectors in the process of green development. In general, our sample reflects not only the differences in the

functions of local government departments but also, to a certain extent, the importance of cross-sectoral cooperation. To further improve the accuracy and dependability of this study, the authors all participated in a discussion regarding data analysis and interview coding verification.

The in-depth interviews were conducted one-on-one without the interference of other people to enhance the integrity and efficiency of data collection. All interviews were conducted and recorded in Chinese, which is the mother tongue of the prominent researchers and participants. It is helpful for interviewers to quickly establish a harmonious relationship with respondents and obtain rich data [49]. At the same time, before recording the interview, participants were asked to read a brief description, including detailed information such as the purpose of the survey and the confidentiality of the results [50]. To further ensure the privacy and confidentiality of participants, we anonymously numbered the respondents during the verbatim transcription of the interview [49].

4.3.3 Data Analysis

The traditional coding process for content analysis [51] relies heavily on analysing and interpreting the data [52]. Specifically, the axial coding process involves examining the categories constructed from the subcategories and the possible relationships between them based on the data [52,53]. Therefore, this study analyses the specific attributes of the categories or phenomena generated (mandatory, incentivised, and normative properties of local governments' green development behaviours) and critical processes for implementing green development behaviours. Accordingly, the theoretical framework of this study provides a clear roadmap for processing the coding and translating the results into Figure 1.

Additionally, this study strictly followed the steps recommended by Tellis [54] to triangulate the information collected from both primary and secondary sources. First, each author independently reviewed all the information from the transcribed interviews and secondary documents to verify their validity and avoid potentially ambiguous and equivocal data to be included in the database. Then, each author compared or corroborated their own analyses with the ones of other authors to

reach a shared understanding and interpretation of the whole information under investigation. Finally, the authors triangulated all the information received [55]. This research examined the framework to create conceptual labels, categories, and subcategories for any time.

Table4- 3 Interviewee’s characteristics

Characteristics	Data Categories	No. of Participants	Percentage
Gender	Male	40	75.47%
	Female	13	24.53%
Age	21~30 years old	6	11.32%
	31~40 years old	18	33.96%
	41~50 years old	22	41.51%
	51~60 years old	7	13.21%
	Associate degree	3	5.66%
Level of education	Bachelor’s degree	24	45.28%
	Master’s degree	20	37.74%
	Doctoral degree	6	11.32%
Department	Development and Reform Commission	8	15.09%
	Bureau of Industry and Information Technology	5	9.43%
	Bureau of Ecology and Environment	5	9.43%
	Bureau of Science and Technology	5	9.43%
	Bureau of City Administration	7	13.21%
	Bureau of Agriculture and Rural Affairs	5	9.43%
	Bureau of Commerce	4	7.55%
	Water Authority	8	15.09%
	Bureau of Housing and Urban-Rural Development	6	11.32%

4.4 Results

This section describes the qualitative research findings that led to the core category of “local government green development behaviour”. Table 4.4 displays the overview of the key processes and practices for implementing green development behaviours by local governments. Our findings indicate that local government green development behaviour consists of formulating and implementing green development policies. In the following section, we will elaborate on these two categories.

Table4- 4 Key processes and practices of green development behaviour of local governments

Empirical Themes	Conceptual Categories	Categories
Statements describing “green industry guidance catalog”, “emerging industry strategy catalog”, and “green industry policy.”	Guiding industrial green production policy	Green development guiding policy formulation
Statements describing “green lifestyle”, “subsidy policy for purchasing green products”, “green travel policy”, and “green prevention and control technology of crop diseases”	Guiding public green living policy	
Statements describing “special funds for circular economy”, “special funds for cleaner production”, “bank financing policies”, and “tax preferential policies”	Financial incentive policy	Green development supporting policy formulation
Statements describing “cleaner production training for business managers”, “environmental policy explanation”, “green technology guidance”, and “technology support”	Education and talent support policy	
Statements describing “employee re-employment”, “personnel placement”, and “financial compensation”	Social security policy	
Statements describing “water saving and pollution reduction”, “rainwater recycling”, “energy-saving technology transformation”, “water saving”, material saving, land saving, and energy saving. Environmental protection mainly refers to indoor environmental protection	Energy saving and emission reduction policy	Green development regulatory policy formulation
Statements describing “new environmental protection law”, “industry regulatory standards”, “environmental evaluation standards”, “corporate social environment credit”, “operation management standards”, “environmental taxes”, “environmental resource prices”, and “emissions trading”	Environmental regulatory policy	
Statements describing “local government—accountability”, “enterprise—environmental damage compensation”, “production shutdown”, “production restrictions”, and “administrative penalties”	Enforcement and punishment policy	
Statements describing how local governments “promote green concepts”, “publicise green ecological aquaculture models”, and “advocate green buildings”	Publicizing green development policies	Project source control
Statements describing how local governments “guide enterprises to voluntary green production” and “encourage residents to buy green products”	Guiding and supporting green development policy implementation	
Statements describing how local governments provide “certain plant rent concessions”, “incentive policies in the stages of enterprise incubation and industrial transformation”, and “financial credit”	Implementation of supporting policies for newly introduced enterprises	
Statements describing how local governments “implement green industry guidance catalog”, “emerging industry strategy catalog”, “green industry policy”, and “environmental evaluation standards”	Enterprise access standards	

Empirical Themes	Conceptual Categories	Categories
Statements describing how local governments implement “environmental supervision” and “law enforcement”	Environmental supervision	
Statements describing how local governments dynamically detect “wastewater” and “exhaust gas” from enterprises or residents	Environmental monitoring	
Statements describing how local governments provide supporting policies for the existing enterprises, such as “specialized funds for energy conservation and circular economy” and “special ecological plan”	Implementation of supporting policies for existing enterprises	Process green regulation
Statements describing how local governments provide “energy-saving technological to reduce energy consumption”, “ultra-low emissions, including coal consumption reduction”, and encourage “the development of energy-saving and environmental protection equipment, resource recycling equipment and derivative services”, “enterprise voluntary green change and upgrading”, and “force enterprises to carry out green transformation and upgrading”	Energy conservation and emission reduction and green transformation and upgrading	
Statements describing how local governments implement “end-of-pipe treatment”, such as “water environment treatment” and “harmless waste treatment”	Pollution treatment	End-of-pipe green governance
Statements describing how local governments implement “administrative penalties” and “administrative orders”.	Enforcement and punishment	

4.4.1 Green Development Policy Formulation of Local Governments

Local government green development policy formulation is, in fact, the beginning of the implementation of green development behaviours. Process research in organisational theory suggests the need to understand more about the emergence of organisational processes [33]. Clarifying the localised green development policies formulated by local governments is a prerequisite to accurately implementing green development behaviours. According to rational choice institutionalism, acting as an agent, namely an implementer, of the central government's implementation of green development policies [40], local governments usually seek to maximise their own utility. This means that following the green development policies proposed by the central government, local governments develop green development policies in accordance with local circumstances. Alternatively, sociological institutionalism emphasises that regulators act according to the way they perceive to be appropriate for their roles and particular policy sectors [40]. Accordingly, this paper analyses three core areas of local governments' green development policymaking: green development guiding policies, supporting policies, and regulatory policies.

4.4.1.1 Green Development Guiding Policy Formulation

Green development guiding policies include enterprise green production and public green life-guiding policies. The complexity of the local government and its institutional environment necessitates that when formulating green development policies, local governments consider the stakeholders' interests. In our research, we regard the green development guiding policy as a binding norm, reflecting the preferences of members of closely related groups. Second, norms are usually regarded as industry associations' values and standards of conduct [56]. Standardised norms not only help local government officials better understand their roles but also help officials clearly understand the job responsibilities of other colleagues [57]. Therefore, as conceptualised in this study, the green development guidance policies formulated by local governments include the green production policy for guiding enterprises and the green life policy for guiding the public.

In guiding the green development of local industries, normativity is regarded as the main priority. It is believed that normative pressure can influence the environmental practices of businesses [56]. Our data indicate that local governments' green industry guidance catalogue is the most crucial policy for directing the green production of industries. This policy is the green industry guidance catalogue proposed by the central government in 2018 [24], formulated by local governments to guide the green development of industries following actual local conditions. We interviewed local government departments involved in green development, and a consensus emerged that “the green industry guidance directory had become a critical necessity for local governments to introduce businesses” (Development and Reform Commission, P2). Second, it must be emphasised that the Development and Reform Commission and the Industry and Information Technology Departments of local governments are the two primary departments responsible for formulating green industry guidance policies.

The following is the description of an interviewee from the Department of the Development and Reform Commission: “In terms of industry selection, the industries encouraged to develop in the documents issued by our city include new materials and new energy. These industries are developed according to the green industry guidance catalogue formulated by the Development and Reform Commission and in combination with the actual local characteristics of our city”.

In addition to developing policies to direct the green development of industries, the public is another stakeholder in the green development of local governments. Respondents from the Bureau of Ecology and Environment stated that domestic sewage discharge, food waste, garbage classification, and other public behaviours forced local governments to confront this long-term environmental problem in daily life. Nonetheless, the key to addressing this issue is promoting the greening of the public lifestyle. Citizens and consumers can alter their lifestyles or exert pressure on the government and businesses [11]. In 2020, the central government of China issued top-level guidance on building a modern environmental governance system, pointing out that promoting a “green lifestyle”

is regarded as one of the essential tasks for China's green development [58]. Our data also demonstrate that local governments have actively formulated subsidy policies for purchasing green products, preferential policies for green travel, and innovative green development concepts such as the "green campus and green community" (Development and Reform Commission, P17). Additionally, for rural residents, officials from the Bureau of Agriculture and Rural Affairs stated the following: "Our department actively promotes soil testing and formula fertilisation technology, green prevention and control technology of crop diseases and pests and guiding rural residents to use biological pesticides actively" (Bureau of Agriculture and Rural Affairs, P10).

4.4.1.2 Green Development Supporting Policy Formulation

Rational choice institutionalism assumes that policies are not neutral but have different incentives for different behaviours [59]. Compared to obligatory policies, incentive policies can offer more adaptable economic incentives, making them more efficient. Gao believed that the market expansion caused by incentive policies contributes to improving normative and cognitive legitimacy in society [60]. Our research also indicates that "many local governments are utilising market-based solutions to address the issue of enterprise incentives" (Development and Reform Commission, P17). Because of this information, we will introduce the green development support policies formulated by local governments, such as financial incentive policies, education and talent policies, and social security policies.

The fiscal incentive policy is intended to provide funding and tax incentives to businesses that meet green standards. For instance, "Provide special funds for businesses to conserve energy and develop a circular economy" and "encourage banks and other financial institutions to increase business financing". This section primarily divides fiscal incentive policies into investment and financing policies and preferential tax policies. These financial incentive policies rely on the collective efforts of normative actors, including local governments, businesses, and industry associations [52]. Fiscal incentives can effectively increase the market size of green industries such as the solar energy industry. Additionally,

local governments may develop preferential tax policies for businesses that meet green standards following applicable national tax policies. A representative of the Department of Industry and Information Technology confirmed this.

“Our district and even Industrial Park level will grow their green industry incentive policies, mainly financial incentives for green factories and supply chains. For instance, the incentive policies that support the growth of the renewable resource recovery industry can take the form of tax-exempt preferential policies and applications for special funds when the investment reaches a certain threshold. Second, certain regions have relevant incentive policies for cleaner production. Reward companies or projects that achieve cleaner production, for instance, to raise the enthusiasm of enterprises in this region for cleaner production” (Bureau of Industry and Information Technology, P16). In addition, it is crucial to highlight that due to the heterogeneity of the industry, various local government departments will implement green development incentive policies based on the actual situation of each industry and even individual businesses, making the formulation of these policies flexible.

By providing education and talent support, enterprises can promote green development and form an excellent social demonstration effect. Our interview data indicate that local governments have formulated education and talent-related policies. In addition, it is necessary to emphasise the transformation of local government functions and the significance of active service. Specifically, “Local authorities will answer some of the environmental policy questions raised by companies at their environmental reception days” (Bureau of Ecology and Environment, P18). “When businesses encounter pollution issues, our office will take the initiative to assist them in securing the technical assistance they need to actively resolve their pollution issues” (Bureau of Science and Technology, P52).

The social security policies by local governments for businesses cannot be overlooked in our survey results. Specifically, during the transitional phase of green development, local governments implement social security policies that facilitate the transformation and upgrading of businesses. The informant of the Department of Industry and Information Technology stated, “During the transition

period of green development, businesses may face challenges. The local government has, therefore, provided them with social security policies to assist businesses in overcoming obstacles. In addition, the local government will collaborate with the neighbourhood office to assist businesses in resolving issues such as re-employment and labour security for vocational workers” (Bureau of Industry and Information Technology, P16).

4.4.1.3 Green Development Regulatory Policy Formulation

The regulatory policy generally refers to encouraging or restricting activities or actors through legislation, monitoring, and sanctions [61]. On the one hand, government policies can provide the legal framework for businesses to enter a region, such as environmental protection and energy consumption evaluation standards, and introduce green industries from the ground up to promote local green development. On the other hand, the obligatory pressure exerted on the organisation by entities in the institutional environment restricts its strategic options. It forces it to meet institutional expectations, such as enhancing regulatory review and monitoring to promote green transformation and upgrade regional enterprises. We categorise local government green development regulatory policies as energy conservation and emission reduction policies, environmental regulation policies, and law enforcement and punishment policies.

Energy conservation and emission reduction policies refer to specific, detailed green goals with measurable indicators. By analysing the survey data, we determined that local government departments have reached a consensus on the importance of energy conservation and emission reduction policies in promoting regional green development. On the one hand, the roles of energy conservation and emission reduction policies vary across departments. For instance, local Development and Reform Commission departments will establish energy conservation and emission reduction goals annually for the region. On the other hand, the Water Authority’s policy regarding energy conservation and emission reduction is “water conservation and emission reduction transformation in high water consumption industries, improving the recycling rate of industrial water, and promoting water conservation and pollution reduction” (Water Authority, P42).

The Bureau of Housing and Urban-Rural Development's energy conservation and emission reduction policies are expressed as "Water, material, land, and energy conservation. Water conservation refers specifically to water conservation and rainwater recycling. Wood and other materials can be conserved using prefabricated buildings. The plot ratio primarily reflects land conservation, which helps to conserve land. Finally, energy conservation, including using renewable energy sources such as solar energy, ground source heat pumps, and photovoltaic power generation".

Local governments seem to be the direct legal subordinate institutions of the central government. The government agency responsible for formulating environmental regulations is the Environmental and Ecological Bureau [62]. The pursuit of legitimacy is the key driving force for enterprises to decide on environmental response behaviour. It is not difficult to see that the formulation of environmental regulatory policies has a restrictive or incentivised impact on the green development of enterprises. According to our data analysis, environmental regulatory policies include strict environmental regulations and environmental assessment standards. For example, "the environmental rules of the water conservancy department include the most stringent water resources management system and the ecological red line policy issued by the state" (Water Authority, P43). According to national environmental regulations, the provincial and municipal levels also formulate related environmental supervision policies or regional standards, such as the provincial "263 plan" (Bureau of Housing and Urban-Rural Development, P20), "environmental governance of land pollution" (Bureau of Agriculture and Rural Affairs, p23), municipal "water source protection regulations" (Water Authority, P44), and "Taihu Lake standard" (Bureau of Housing and Urban-Rural Development, P48). The environmental assessment standard here is an essential means to ensure that the regional environmental indicators meet the criteria, and this consensus has been certified by many departments. Respondents from the Bureau of Ecology and Environment advised that "when introducing projects, all projects must pass the environmental assessment, and projects that do not meet the environmental assessment standards cannot enter the region" (Bureau of Ecology and Environment, P35).

In addition, it controls “total energy consumption” (Development and Reform Commission, P17). It is not difficult to see that the routine activities of local governments are inseparable from environmental regulatory policies, which are the core components of green development regulatory policies.

Law enforcement and punishment policies should also be implemented to ensure the implementation of the green development policy and realise the region’s green development. Our findings indicate that law enforcement policies include administrative punishment and order, such as “production limits, administrative penalties, and time-limited disciplinary measures. The most severe administrative penalty provided for by the law is the suspension of production for remedial purposes” (Bureau of Ecology and Environment, P32). Since the implementation of the newly revised environmental protection law in 2015, the specific rules involved in each case of polluting businesses have varied to varying degrees, according to the head of the ecological environment division. For example, “there is a daily method for determining the severity of punishment; the environmental law enforcement department notifies the business of its violations, which it must fix immediately or face a fine if the deadline is not met” (Bureau of Ecology and Environment, P18).

4.4.2 Green Development Policy Implementation of Local Governments

Policy implementation requires government actors to manage and implement the policy [41], including various actions, interpretation, dissemination, experimentation, coordination, and control. Although the above studies describe green development policymaking, policy formulation to implementation would probably not be easy. First, implementing development behaviours is a dynamic process that denotes the transformation of policy content into practical effects to achieve the stated goals of the policy. It also means moving from the previous model of pursuing only economic growth to the model of pursuing green development. Second, process research in organisational theory suggests that organisations cannot simply replicate processes that work effectively in other organisations [33]. Understanding how processes are achieved requires insights

into the sequence of events that occur over time [43]. The third, rational choice, institutionalism, proposes that different green development behaviours should be implemented according to the key stakeholders in the process of implementing green development behaviours [41]. Finally, since implementing green development behaviours in local governments involves the assistance of multiple departments, local government officials usually act upon what they believe is appropriate for their roles and specific policy sectors [40]. Therefore, this section highlights the key processes and practices of local government departments in implementing green development behaviours when interacting with the public and businesses, including source project control, process green regulation, and end-of-pipe green governance.

4.4.2.1 Project Source Control

Project source control is a prerequisite for local governments to implement green development behaviours, which includes publicising green development policies, local governments guiding enterprises to green production and the public to green living and describing the access standards for new enterprises. According to sociological institutionalism, norms not only “bind” but also “shape” or “constitute” behaviour [63]. Individual preference formation among actors is an endogenous process influenced by informal systems such as norms and beliefs. Therefore, guiding policies can be viewed as obligatory normative policies, which help increase enterprise and public awareness and understanding of green development.

Local governments’ publicity of green development policy is an essential prerequisite for effective policy implementation. Zhang et al. stated that businesses should fully comprehend the government’s green-related policies, which will help them establish a green concept [64]. Development and Reform Commission respondents stated that “we could disseminate industrial policies to assist businesses in better understanding these policies” (Development and Reform Commission, P36). Furthermore, he mentioned, “At present, there are many channels of publicity, such as social media, television, newspapers, NGO”. Meanwhile, this informant also stressed that local governments could take the

initiative to provide services, which will help local governments fully understand the current situation of enterprises. Such two-way interaction helps realise information sharing between local governments and enterprises, thus helping to improve the implementation effect of policies. In addition to promoting green development policies for enterprises, local governments also provide relevant policy publicity for the public, such as “publicity of waste classification” and “publicity of green ecological breeding mode and technology”.

The green development guiding policy implementation also includes enterprises and the public. Local governments typically guide and encourage voluntary green production by green industrial policies (such as the Green Industry Guidance Catalogue) and phase out obsolete and highly polluting equipment in terms of technological transformation, as opposed to interfering with the normal development of businesses (Bureau of Industry and Information Technology, P36). Participants from the ecological and environmental sector asserted that “government departments should avoid a one-size-fits-all approach and instead guide and encourage enterprises with new ways of starting a business or altering their original production methods” (Bureau of Ecology and Environment, P32). Additionally, to further promote the greening of public lifestyles, the City Administration department has also established “particular actions for waste classification and treatment and developed facility and operation management standards” (Bureau of City Administration, P7).

Project source control means that when introducing new enterprise projects, local governments must comply with the relevant provisions of the green industrial policy. Then, they comply with the environmental assessment standards to prevent enterprises with high pollution and high emissions from entering the region from the source. Before introducing the enterprises, the Bureau of Commerce will hold a pretrial meeting, equivalent to a cross-departmental consultation mechanism. Then, all functional departments, including the Bureau of Ecology and Environment, Development and Reform Commission, will approve the project.

Specifically, “The development and reform department is mainly responsible for approving projects in this part. First, it is necessary to ensure that new projects have low energy consumption. Second, the environmental assessment standard is also an important indicator in project approval” (Development and Reform Department, P33). This notion is consistent with the Industry and Information Technology Departments. The interviewees of this department stated, “Currently, the primary industries to be introduced are the new materials industry and the Internet of Things industry, and only businesses that meet environmental assessment criteria can be introduced. This way, enterprises with high pollution and high emissions can be controlled at the source” (Bureau of Industry and Information Technology, P16).

Incentive policies affect different enterprises, so local governments need to implement differentiated incentive policies. The impact of financing incentives on the formation of new companies is different between start-ups and new subsidiaries [60]. Our research results confirm that local governments have other incentive policies for newly introduced and existing enterprises. As suggested by the participant, “For newly introduced enterprises, they must first meet the requirements of the green industry, and they enjoy certain plant rent concessions. Second, local governments will give different incentive policies in enterprise incubation and industrial transformation stages. Third, local governments will encourage banks and other financial institutions to resolve enterprise financing issues” (Development and Reform Commission, P38). However, it is necessary to emphasise “The enterprise credit evaluation system, which divides enterprises into five colours: red, yellow, blue, green and black. Financial institutions will provide financial credit by dividing colours to promote enterprises’ green transformation and upgrading” (Bureau of Ecology and Environment, P31).

4.4.2.2 Process Green Regulation

Process green regulation is central to effectively implementing green development behaviours by local governments. Due to the complexity and unpredictability of local governments and their institutional environments, it is necessary to consider factors beyond interests and information, such as

cooperative relationships [41], including the cooperation between local governments, the public, and businesses. In this section, the local government for the public is still used to encourage and guide the primary strategic approach, and the public for the surrounding environmental issues actively provides feedback to the local government, thus forming the interaction between the local government and the public. This section describes the local government's green regulation of enterprises, including environmental supervision and environmental monitoring. It also emphasises how local governments can help existing enterprises to carry out energy saving and emission reduction as well as green transformation and upgrading.

Environmental supervision aims to check whether pollutants in industrial enterprises meet emission standards. The Industry and Information Technology Department and the Commerce Department said "we would regularly go to the enterprise to supervise and enforce the law with the ecological environment department every year. When problems are found will the enterprise be subject to law enforcement, which is mainly the responsibility of the ecological environment department". According to one elected official, "At present, our region has designated primary and secondary protection areas, which have different emission standards according to different protected areas. Second, we should inspect the breeding base and carry out the standardised quality transformation of breeding production facilities" (Bureau of Agriculture and Rural Affairs, P25). Therefore, it is not difficult to see that although the ecological environment department is indispensable in environmental supervision, the active cooperation of other departments is the key to the effective implementation of green development supervision policies.

Environmental monitoring reflects the importance of technical support and information sharing between departments. One interviewee stated that "the department has special dynamic real-time monitoring. Whenever there is information about environmental pollution, the software is automatically updated every two hours. The data is automatically sent to the local government department" (Bureau of Ecology and Environment, P31). Technological

innovation has enabled real-time information sharing between sectors and rapidly facilitated the relevant local government departments dealing with environmental pollution problems. The Water Authority interviewees also indicated that “the core industrial enterprises are already using the Water Resources Information Management System, which allows the Water Authority to monitor their water consumption online” (Water Authority, P44). In addition, monitoring and testing the farming environment or waters cannot be overlooked.

This section focuses primarily on how local governments use support policies to encourage the green transformation and upgrading of businesses. The first component is financial support. The Bureau of Industry and Information Technology and the Development and Reform Commission have established specialised funds for energy conservation and circular economy. Enterprises can obtain certain financial support if they voluntarily audit cleaner production. Simultaneously, the Bureau of Ecology and Environment and Science and Technology established a unique program to assist businesses with green development. For example, the “Special ecological plan” (Bureau of Science and Technology, P6) improves entrepreneurs’ understanding of green development and production technology through education and talent development policies. Local government departments also organise entrepreneurs to conduct green development education and training. Moreover, the interview participants identified that, in addition to market orientation, regulatory policies would also force enterprises to make transformations and upgrades (Bureau of Industry and Information Technology, P5).

Energy conservation and emission reduction play a crucial role in promoting the green transformation of businesses. To enable local enterprises to produce more efficiently and environmentally friendly, local governments usually guide enterprises to carry out energy-saving technological changes to reduce energy consumption. For instance, “focusing on the fields of energy-saving equipment, environmental engineering, green building, environmental protection services, local governments promote the cooperation of production, learning, and research of key technologies and components, and encourage the development of energy-

saving and environmental protection equipment, resource recycling equipment and derivative services” (Development and Reform Commission, P37).

An industry and information technology interviewee illustrated this point with the following example: “Iron and steel companies have high energy consumption and high pollution. Even though they have undergone ultralow emission corrections, their energy consumption is still high, and their annual power and coal consumption are still substantial. Moreover, these businesses with high energy consumption are relatively large, making relocation difficult. We can promote enterprises’ green development through energy conservation and emission reduction. For instance, ultralow emissions, including coal consumption reduction and other factors” (Bureau of Industry and Information Technology, P36).

Moreover, the green transformation and upgrading of diverse industries differ and are broadly divided into two categories: (1) enterprise voluntary green change and upgrading due to market-oriented industry competition and (2) the government’s strict and mandatory policies forcing enterprises to carry out green transformation and upgrading. Through data analysis, local governments adopt market-oriented standards to promote green change and upgrade enterprises. However, for heavily polluting enterprises such as electric power enterprises and chemical enterprises, local governments still draw up strict environmental standards, such as energy saving and emission reduction, to reduce the rate of environmental pollution and promote the green transformation and upgrading of enterprises.

4.4.2.3 End-of-Pipe Green Governance

In the end, green treatment is the main guarantee for effectively implementing green development behaviours by local governments. The main emphasis in this section is on cooperative sectoral governance, the treatment of pollutants, and the strict enforcement of penalties by local governments. Notably, a growing number of researchers have argued the need to address sustainable development across policy sectors [40]. Many departments have indicated that the river chief system is a typical case of cross-sectoral cooperation from the perspective of water environment governance. Although the system still suffers

from cross-functional or overlapping functions, it is undeniable that the river chief system has facilitated cross-sectoral cooperation in water environment management and has organised, coordinated, planned, coordinated, inspected, supervised, and assessed the relevant departments. The following informants elaborated on this notion: “The river chief system includes municipal river chiefs, district river chiefs, village river chiefs, and even river section chiefs. Their responsibility is to inspect the river, and when they discover pollution issues, they will report through the river chief’s office and forward it to the appropriate department for resolution. For instance, the department of city administration is responsible for waste disposal. A disorderly discharge from a discharge pipe would be reported to the departments of Ecology and Environment and Housing and Urban-Rural Development” (Water Authority, P45). In addition, “there is a requirement for the river management system that to ensure the long-term maintenance of the river; it should be handed over to the corresponding river management unit to take care of the river” (Bureau of Housing and Urban-Rural Development, P46).

First, the end-implementing department deals with pollution, for example, “the city administration department has some pressure as an end-implementing department and is responsible not only for the collection of waste but also for the environmentally sound treatment of waste” (Bureau of City Administration, P28). In addition, the department has prepared a plan to construct end-of-pipe disposal facilities for the resource station of construction waste (Bureau of City Administration, P7). The second is the enforcement of penalties for violations. For example, “polluters who exceed the emission limits are punished with fines” (Bureau of Industry and Information Technology, P5). In addition, the most severe punitive measures are stopping production, followed by the suspension of production and rectification, some means of limiting production, administrative penalties, and a deadline for correction, which are some administrative means given by law, including two types of administrative penalties and administrative orders. Sometimes, the local government will adopt these auxiliary means, such as temporary equipment sealing.

4.5 Discussion

Through the above explanations, this study identifies this core code, namely the green development behaviours of local governments. The green development behaviour of local governments mainly consists of six subcategories. Three subcategories elaborate on the formulation of local government green development policies. The green development behaviour of local governments is characterised by normative, incentive, and regulatory features. The other three subcategories illustrate in detail the key processes and specific practices of local governments in implementing green development behaviours. Therefore, based on the above results, this paper constructs a theoretical model of the green development behaviour of local governments, as shown in Figure 4-1.

A growing number of scholars recognised that local governments influence many key emission sectors, including buildings, energy supply, transportation, planning, and waste management [21]. Meanwhile, local governments play the role of facilitators and leaders in guiding the sustainable transformation of business and society [36]. However, the change in local governments to green development behaviours can be challenging [21] because the practical processes of this transformation are unknowable. Local governments are usually portrayed as institutional-level actors that play essential roles in different stages of the shift to green development behaviours [65]. Therefore, this study constructs a process framework based on new institutionalism theory and organisational process research to illustrate how organisations successfully transform into green development behaviours by formulating and implementing green development policies for different audiences emerging at different stages.

Our research categorises local governments' green development behaviours as policy formulation and implementation. Page mentioned that governance requires local governments to act in terms of policy authorisation and implementation [41]. Rational choice institutionalism demonstrated that as implementers of green development policies implemented by the central government [40], local governments usually seek to maximise their utility. This study found that following the green development policies proposed by the central government, local

governments would formulate green development plans, goals, and policies that meet their requirements based on local circumstances, and these policies usually exceed the minimum required environmental goals set by superior authorities [20]. Furthermore, sociological institutionalism highlights functions, including problem-solving processes, capacity building, and relationships [66]. Supervisors typically act in ways they believe are appropriate for their role and particular policy sector [40]. Our research reveals that organisations collaborate across sectors in implementing local government environmental regulatory policies. For example, in environmental regulation, the Department of Ecology and Environment, the Department of Water Affairs, and the Department of Housing and Urban-Rural Development actively collaborate across sectors.

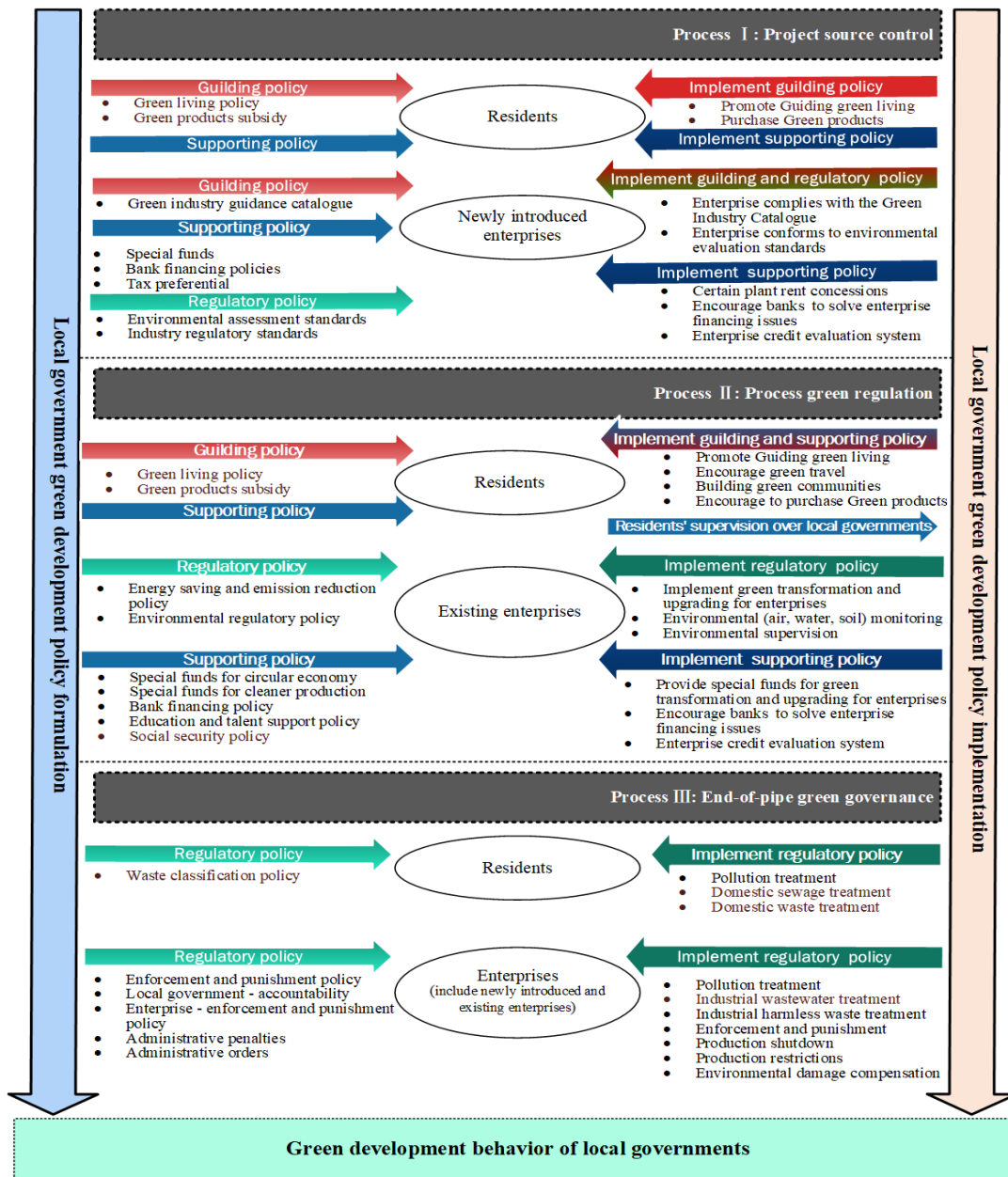


Figure4- 1 The conceptual model of green development behaviour of local governments

This research contributes to the field by integrating the new institutionalism theory and the organisational process research to conceptualise local government green development behaviours involving multiple actors and to articulate critical processes and practices. New institutionalism theory and organisational process research could collectively explain organisational change [12,31-33]. This evolutionary perspective explains how organisational practice processes emerge, unfold, and end over time [45]. This study identifies local government green development behaviour as a behavioural transformation, meaning the behaviour taken by local governments to change from the original development model that only pursues economic growth to a green development model that seeks environmental protection and economic growth. Its purpose is to encourage enterprises to realise the greening of their production methods and encourage residents to learn the greening of their lifestyles. The components of local governments' green development behaviours are explained, and the key processes and practices of such behaviours are analysed, which help to spread green development behaviours among different local government departments.

Previous research has described the mediating role of local governments in facilitating partnerships between sustainable development goals and the private sector [1]. Our analysis confirms the facilitating role of local governments in greening businesses. Furthermore, our study complements how local governments can facilitate the public's realisation of green living and promote green production in different enterprises. Additionally, our findings suggest that different periods and sectors of the organisational process are critical for implementing green development practices [33]. As shown in Figure 1, during the source control stage of the project, guidance and incentive policies are implemented for the public, while more mandatory policies are added for the enterprises. Local governments must fulfil green regulations such as environmental assessment when introducing new businesses. As the process evolved, the second stage dealt with green rules for the public. Although it was still dominated by the implementation of incentives and guidance policies, it was found that the public would interact by providing feedback to the local government authorities. Currently, local governments are more inclined to regulate the

enterprises already in the region and promote green transformation and upgrading. Mandatory policies dominate the final stage of end-to-end green governance. While incentive and guidance policies are valuable in the first two stages, the continued use of these practices in the later stage can prevent local governments from implementing green development behaviours. Therefore, we describe local governments' green development behaviours as an evolutionary process, the outcome of which depends on the sequence and speed of different practices [33,44] and on different local government departments. Moreover, it is worth noting that local governments in China pay more attention to enterprises' green production than the public's green life. However, existing studies set in Europe [21,34] and the United States [18] emphasise the relationship between communities, residents, and local governments' sustainable practices [35]. However, local governments and private sector partnerships cannot be ignored [1].

Overall, most of our research focused on local government departments that are closely associated with green development. By introducing the concept of green development, the effective implementation of policies related to green development and the realisation of regional green development has become an ongoing process for many local government departments. This is due to the ever-changing institutional environment in which local governments operate and the growing number of stakeholders actively engaged in regional green development. The green development of enterprise production modes and public lifestyles urgently requires detailed guidance from local governments. Therefore, understanding the key processes and practices of local governments' green development behaviours facilitates the clarification of responsibilities and cross-sectoral collaboration among local government departments and contributes to a better comprehension of green development by businesses, the public, and other stakeholders. Furthermore, feedback from enterprises and the public on the implementation of green development policies contributes to the further improvement of green development policy formulation by local governments, thus enhancing the effectiveness of policy implementation.

4.6 Conclusions and Implications

4.6.1 Conclusions

This study analysed local governments' green development behaviours from an organisational perspective, combining new institutionalism and organisational process research. By conducting in-depth interviews with 53 local government officials from nine government departments related to green development and analysing case studies of local governments in China, we found that the green development behaviour of local governments mainly consists of the formulation and implementation of local government green development policies. The formulation of local government green development policies contains three subcategories, reflecting the normative, incentive, and regulatory characteristics of local governments' green development behaviours. Local governments' key processes and specific practices in implementing green development behaviours include project source control, process green monitoring, and end green treatment.

4.6.2 Implications

This study provides new perspectives for local governments to formulate localised green development policies and study the effective implementation of green development behaviours. Additionally, this study proposes the following recommendations: First, the central government should establish new incentive mechanisms and long-term performance evaluation systems for local governments to prompt them to transfer their focus from current short-term economic goals to long-term green development. Second, for enterprises, local governments must continuously update new measures to measure the results and effectiveness of implementing industry standards in actual projects. Assessment methods, such as environmental management systems, green production, and carbon audits, can potentially improve the behaviour of industries towards green and low-carbon development. In addition, local governments should further promote the greening of public lifestyles and encourage the public to purchase green products. Local governments should also adopt more

incentives for the waste separation and recycling industry to reduce landfills and increase the resource recovery rate.

Limitations are that this study focused on three cities in Jiangsu Province as the case studies and centered on sectors related to green development. Future research could represent how individuals in different organisations or sectors perceive green development behaviours. Additionally, this study found that local government departments show inconsistent concern for the public's green lifestyles and the enterprises' green production, and future research necessitates the strengthening of in-depth studies on green lifestyles. Moreover, future research would be necessary to understand the influence of stakeholders or other factors on implementing green development behaviours, which would help local governments to further realise regional green development.

Author Contributions: Conceptualization, J.D. and X.Z.; methodology, software, validation, formal analysis, and writing-original draft preparation, X.Z.; data curation, X.Z. and X.L.; writing-review and editing, J.D., X.Z., X.L., E.U., and P.L.; project administration, funding acquisition, J.D. All authors have read and agreed to the published version of the manuscript.

Funding: This work was funded by the National Social Science Fund of China (grant number 22AGL028).

Institutional Review Board Statement: Ethical approval for this study was conducted by the ethics committee of Cranfield University (No. CURES/16182/2022). All participants were informed about the study objectives and the voluntary nature of their participation. Also, a consent form was obtained from them.

Informed Consent Statement: Not applicable.

Data Availability Statement: The datasets used and/or analyzed during this current study are available from the corresponding author upon reasonable request. Please contact the corresponding author for the data requests.

Conflicts of Interest: The authors declare no conflicts of interest.

4.7 References

- 1.Masuda, H.; Kawakubo, S.; Okitasari, M.; Morita, K. Exploring the role of local governments as intermediaries to facilitate partnerships for the Sustainable Development Goals. *Sustain. Cities Soc.* 2022, 82, 103883.
- 2.Li, X.; Li, X.; Zhu, X.; Huang, Y.; Liu, X.; Deng, W. Dynamic relationship between resource endowment, financial agglomeration, innovation-driven, and green total factor productivity. *Energy Environ.* 2023, 0, 0958305X231155495.
- 3.Li, X.; Dai, J.; Zhu, X.; He, J.; Li, J.; Liu, X.; Huang, Y.; Shen, Q. What Is the Mechanism of Government Green Development behaviour Considering Multi-Agent Interaction? A Meta-Analysis. *Int. J. Environ. Res. Public Health* 2022, 19, 8263.
- 4.Li, X.; Huang, Y.; Li, X.; Liu, X.; Li, J.; He, J.; Dai, J. How does the Belt and Road policy affect the level of green development? A quasi-natural experimental study considering the CO2 emission intensity of construction enterprises. *Humanit. Soc. Sci. Commun.* 2022, 9, 280.
- 5.Mombeuil, C. Institutional conditions, sustainable energy, and the UN sustainable development discourse: A focus on Haiti. *J. Clean. Prod.* 2020, 254, 120153.
- 6.Monks, F. China Human Development Report 2002: Making Green Development a Choice. Produced by Stockholm Environment Institute in collaboration with UNDP. [Hong Kong: Oxford University Press, 2002. 152 pp. ISBN 0-19-593603-5.]. *China Q.* 2003, 174, 539–541.
- 7.Lin, B.; Benjamin, N.I. Green development determinants in China: A non-radial quantile outlook. *J. Clean. Prod.* 2017, 162, 764–775.
- 8.Kong, D.; Feng, Q.; Zhou, Y.; Xue, L. Local implementation for green-manufacturing technology diffusion policy in China: From the user firms' perspectives. *J. Clean. Prod.* 2016, 129, 113–124.
- 9.Ding, Z.; Fan, Z.; Tam, V.W.Y.; Bian, Y.; Li, S.; Illankoon, I.M.C.S.; Moon, S. Green building evaluation system implementation. *Build. Environ.* 2018, 133, 32–40.
- 10.Li, X.; Dai, J.; Li, J.; He, J.; Liu, X.; Huang, Y.; Shen, Q. Research on the Impact of Enterprise Green Development behaviour: A Meta-Analytic Approach. *Behav. Sci.* 2022, 12, 35.
- 11.Stoddart, M.C.; Tindall, D.B.; Greenfield, K.L. "Governments have the power"? Interpretations of climate change responsibility and solutions among Canadian environmentalists. *Organ. Environ.* 2012, 25, 39–58.

- 12.Llamas-Sanchez, R.; Garcia-Morales, V.; Martin-Tapia, I. Factors affecting institutional change: A study of the adoption of Local Agenda 21 in Spain. *J. Organ. Chang. Manag.* 2013, 26, 1045–1070.
- 13.Knox-Hayes, J.; Chandra, S.; Chun, J. The role of values in shaping sustainable development perspectives and outcomes: A case study of Iceland. *Sustain. Dev.* 2021, 29, 363–377.
- 14.Song, Y.; Xiao, Z.; Ming, Z. The influence of environmental regulation on industrial structure upgrading: Based on the strategic interaction behaviour of environmental regulation among local governments. *Technol. Forecast. Soc. Chang.* 2021, 170, 120930.
- 15.Liu, H.; Yao, P.; Wang, X.; Huang, J.; Yu, L. Research on the peer behaviour of local government green governance based on SECI expansion model. *Land* 2021, 10, 472.
- 16.Deslatte, A.; Swann, W.L. Is the price right? Gauging the marketplace for local sustainable policy tools. *J. Urban Aff.* 2016, 38, 581–596.
- 17.Huang, C.; Chen, T.; Yi, H.; Xu, X.; Chen, S.; Chen, W. Collaborative environmental governance, inter-agency cooperation and local water sustainability in China. *Sustainability* 2017, 9, 2305.
- 18.Wheeler, S.M. State and municipal climate change plans: The first generation. *J. Am. Plan. Assoc.* 2008, 74, 481–496.
- 19.Cease, B.; Kim, H.; Kim, D.; Ko, Y.; Cappel, C. Barriers and incentives for sustainable urban development: An analysis of the adoption of LEED-ND projects. *J. Environ. Manag.* 2019, 244, 304–312.
- 20.Krause, R.M.; Hawkins, C.V.; Park, A.Y.S.; Feiock, R.C. Drivers of Policy Instrument Selection for Environmental Management by Local Governments. *Public Adm. Rev.* 2019, 79, 477–487.
- 21.Revell, K. Promoting sustainability and pro-environmental behaviour through local government programmes: Examples from London, UK. *J. Integr. Environ. Sci.* 2013, 10, 199–218.
- 22.Sönnichsen, S.D.; Clement, J. Review of green and sustainable public procurement: Towards circular public procurement. *J. Clean. Prod.* 2020, 245, 118901.
- 23.Bryngemark, E.; Söderholm, P.; Thörn, M. The adoption of green public procurement practices: Analytical challenges and empirical illustration on Swedish municipalities. *Ecol. Econ.* 2023, 204, 107655.
- 24.Zhou, X.; Wang, L.; Du, J. Institutional environment and green economic growth in China. *Complexity* 2021, 2021, 6646255.

- 25.Xin, F.; Qian, Y. Does fiscal decentralization promote green utilization of land resources? Evidence from Chinese local governments. *Resour. Policy* 2022, 79, 103086.
- 26.Liu, H.; Zhou, R.; Yao, P.; Zhang, J. Assessing Chinese governance low-carbon economic peer effects in local government and under sustainable environmental regulation. *Environ. Sci. Pollut. Res.* 2022, 30, 61304–61323.
- 27.Peng, X. Strategic interaction of environmental regulation and green productivity growth in China: Green innovation or pollution refuge? *Sci. Total Environ.* 2020, 732, 139200.
- 28.Chen, X.; Qin, Q.; Wei, Y.M. Energy productivity and Chinese local officials' promotions: Evidence from provincial governors. *Energy Policy* 2016, 95, 103–112.
- 29.Chen, L.; Gao, M. Predictive modeling for behavioural evolution of municipal household waste classification and recycling. *Sust. Cities Soc.* 2022, 78, 103659.
- 30.Liu, H.T. The Influence of Public Servants' Perceived Formalism and organisational Environmental Strategy on Green behaviour in the Workplace. *Sustainability* 2021, 13, 11020.
- 31.Colwell, S.R.; Joshi, A.W. Corporate Ecological Responsiveness: Antecedent Effects of Institutional Pressure and Top Management Commitment and Their Impact on organisational Performance. *Bus. Strateg. Environ.* 2013, 22, 73–91.
- 32.Grob, S.; Benn, S. Conceptualising the adoption of sustainable procurement: An institutional theory perspective. *Australas. J. Environ. Manag.* 2014, 21, 11–21.
- 33.Visnjic, I.; Jovanovic, M.; Raisch, S. Managing the transition to a dual business model: Tradeoff, paradox, and routinized practices. *Organ Sci.* 2022, 33, 1964–1989.
- 34.Klein, N.; Ramos, T.B.; Deutz, P. Factors and strategies for circularity implementation in the public sector: An organisational change management approach for sustainability. *Corp. Soc. Responsib. Environ. Manag.* 2022, 29, 509–523.
- 35.Rodriguez-Plesa, E.; Dimand, A.M.; Alkadry, M.G. Community social capital, political values, or organisational capacity? Indicators of engagement in sustainable public procurement at the local level. *J. Clean. Prod.* 2022, 338, 130556.
- 36.Figueira, I.; Domingues, A.R.; Caeiro, S.; Painho, M.; Antunes, P.; Santos, R.; Videira, N.; Walker, R.M.; Huisingh, D.; Ramos, T.B. Sustainability policies and practices in public sector organisations: The case of the Portuguese Central Public Administration. *J. Clean. Prod.* 2018, 202, 616–630.
- 37.Wu, L.; Ma, T.; Bian, Y.; Li, S.; Yi, Z. Improvement of regional environmental quality: Government environmental governance and public participation. *Sci. Total Environ.* 2020, 717, 137265.

- 38.Liu, X.; Pei, T.; Zhou, C.; Du, Y.; Ma, T.; Xie, C.; Xu, J. A systems dynamic model of a coal-based city with multiple adaptive scenarios: A case study of Ordos, China. *Sci. China-Earth Sci.* 2018, 61, 302–316.
- 39.March, J.G.; Olsen, J.P. The new institutionalism: organisational factors in political life. *Am. Polit. Sci. Rev.* 1983, 78, 734–749.
- 40.Dunlop, C.A.; Russel, D. Watching the Detectives: Explaining regulators' roles in the integration of sustainable development in UK public services. *Public Manag. Rev.* 2012, 14, 681–704.
- 41.Page, S.B. Theories of governance: Comparative perspectives on Seattle's light rail project. *Policy Stud. J.* 2013, 41, 583–607.
- 42.Andrews-Speed, P. Applying institutional theory to the low-carbon energy transition. *Energy Res. Soc. Sci.* 2016, 13, 216–225.
- 43.Introducing perspectives on process organisation studies. Available online: <https://academic.oup.com/book/34414/chapter-abstract/291952942?redirectedFrom=fulltext&login=false> (accessed on 29 July 2023)
- 44.Langley, A.N.N.; Smallman, C.; Tsoukas, H.; Van de Ven, A.H. Process studies of change in organisation and management: Unveiling temporality, activity, and flow. *Acad. Manag. J.* 2013, 56, 1–13.
- 45.Van de Ven, A.H. Suggestions for studying strategy process: A research note. *Strateg. Manag. J.* 1992, 13, 169–188.
- 46.Yin, R.K. *Case Study Research and Applications: Design and Methods*; Sage Publications: Thousand Oaks, CA, USA, 2017.
- 47.Ünal, E.; Urbinati, A.; Chiaroni, D. Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry. *J. Manuf. Technol. Manag.* 2019, 30, 561–589.
- 48.Awasthi, P.; Walumbwa, F.O. Antecedents and consequences of servant leadership in local governance: Evidence from three case studies. *Public Adm. Rev.* 2022, 82, 1077–1094.
- 49.Kornilaki, M.; Font, X. Normative influences: How socio-cultural and industrial norms influence the adoption of sustainability practices. A grounded theory of Cretan, small tourism firms. *J. Environ. Manag.* 2019, 230, 183–189.
- 50.Clark, J.; Manning, L. What are the factors that an opportunity sample of UK students insinuate as being associated with their wastage of food in the home setting? *Resour. Conserv. Recycl.* 2018, 130, 20–30.
- 51.Weber, R.P. *Basic Content Analysis*, 2nd ed.; Sage: Thousand Oaks, CA, USA, 1990.

52. Corbin, J.M.; Strauss, A. Grounded theory research: Procedures, canons, and evaluative criteria. *Qual. Sociol.* 1990, 13, 3–21.
53. Corbin, J.; Strauss, A. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 3rd ed.; Sage: Thousand Oaks, CA, USA, 2012.
54. Tellis, W. Application of a case study methodology. *Qual. Rep.* 1997, 3, 1–19.
55. Ünal, E.; Urbinati, A.; Chiaroni, D.; Manzini, R. Value Creation in Circular Business Models: The case of a US small medium enterprise in the building sector. *Resour. Conserv. Recycl.* 2019, 146, 291–307.
56. Ma, Y.; Liu, Y.; Appolloni, A.; Liu, J. Does green public procurement encourage firm's environmental certification practice? The mediation role of top management support. *Corp. Soc. Responsib. Environ. Manag.* 2021, 28, 1002–1017.
57. Scott, W.R. *Institutions and organisations: Ideas, Interests, and Identities*; Sage Publications: Thousand Oaks, CA, USA, 2013.
58. Wei, R.; Zhang, W.; Peng, S. Energy and greenhouse gas footprints of China households during 1995–2019: A global perspective. *Energy Policy* 2022, 164, 112939.
59. Ostrom, E. A behavioural approach to the rational choice theory of collective action: Presidential address, American Political Science Association, 1997. *Am. Polit. Sci. Rev.* 1998, 92, 1–22.
60. Gao, X. The comparative impact of solar policies on entrepreneurship in the US solar photovoltaic installation industry. *Energy Policy* 2021, 156, 112389.
61. Su, J.; Zhai, Q.; Karlsson, T. Beyond red tape and fools: Institutional theory in entrepreneurship research, 1992–2014. *Entrep. Theory Pract.* 2017, 41, 505–531.
62. Qian, W.; Burritt, R.; Monroe, G. Environmental management accounting in local government: A case of waste management. *Account. Audit Account. J.* 2011, 24, 93–128.
63. Niemann, A.; Mak, J. (How) do norms guide Presidency behaviour in EU negotiations? *J. Eur. Public Policy* 2010, 17, 727–742.
64. Zhang, W.; Zhang, M.; Zhang, W.; Zhou, Q.; Zhang, X. What influences the effectiveness of green logistics policies? A grounded theory analysis. *Sci. Total Environ.* 2020, 714, 136731.
65. Fudge, S.; Peters, M.; Woodman, B. Local authorities as niche actors: The case of energy governance in the UK. *Environ. Innov. Soc. Trans.* 2016, 18, 1–17.
66. Hill, R.; Grant, C.; George, M.; Robinson, C.J.; Jackson, S.; Abel, N. A typology of indigenous engagement in Australian environmental management: Implications for

knowledge integration and social-ecological system sustainability. *Ecol. Soc.* 2012, 17, 23.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

5 WHAT DRIVES THE GREEN DEVELOPMENT BEHAVIOUR OF LOCAL GOVERNMENTS? A PERSPECTIVE OF GROUNDED THEORY

Jianguo Du¹, Xiaowen Zhu^{1,2}, Xingwei Li³, Unal Enes², Phil Longhurst⁴

1 School of Management, Jiangsu University, Zhenjiang 212013, China

2 Centre for Design Engineering, Cranfield University, College Road, Cranfield MK43 0AL, UK

3 College of Architecture and Urban-Rural Planning, Sichuan Agricultural University, Chengdu 611830, China

4 School of Water, Energy and Environment, Cranfield University, Cranfield MK43 0AL, UK

Submitted to Heliyon (Cell) and under review

Abstract

Although the factors that lead local governments to adopt sustainable development behaviours have been examined, the underlying mechanisms adopted by local governments to achieve green development behaviour lack systematic theoretical analysis. The purpose of this study is to investigate the determinants influencing local governments' implementation of green development behaviours from the organisational internal and external perspectives. This study first interviewed 53 Chinese local officials, adopted the grounded theory to analyse the data, and constructed the influencing factors model of local governments' green development behaviours. Second, the influence mechanism of these factors on green development behaviours was probed by combining process organisation research and new institutional theory. The study results demonstrate that the proposed model of influencing factors could provide clear guidance for local governments to formulate wise green development policies, which could help further improve the effectiveness of green development behaviours.

Keywords

Sustainable practices, Local government, Green development behaviour, Grounded theory

5.1 Introduction

Driven by economic development and population growth, carbon emissions are not optimistic [1]. In recent years, global CO₂ emissions have rebounded [2], with global energy-related CO₂ emissions increasing by 0.9% since 2022 [3]. Implementing green development practices in response to global climate change has become a priority for organisations [4]. Several countries have made great strides towards developing green development plans [5,6]. The Chinese government has even proposed a green development strategy to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060 [7]. These behavioural changes have not only highlighted the environmental responsibility of public organisations by enacting and implementing green policies and practices [8], but the role of local governments in solving unsustainable problems and reducing carbon emissions has also become more prominent [9]. However, while the adoption of sustainability policies and practices in organisations represents a rising trend, most research at the organisational level focuses on private enterprises [10]. Although local governments actively adopt green sustainability strategies, implementing green development behaviours is slower [11]. Therefore, it is necessary to study the driving factors for local governments to conduct green development behaviours, which contributes to accelerating the change of local government behaviours to green development behaviours.

Local government green development behaviour is a behavioural change, namely, the behaviour taken by local governments to change from the original development mode of pursuing only economic growth to the green development mode of pursuing environmental protection and economic growth. It encourages enterprises to realise the greening of production methods and residents' lifestyles [19]. Scholars have explored the adoption and implementation factors that influence the green development behaviour of local governments [20]. However, their applications vary across economies and sectors examined [11,12,21]. The critical factors summarised in the existing literature include constraints on organisational capacity [15,22,23], the leadership of local government managers [24,25], the chief executive's green development awareness and support for green development practices [10,20], and stakeholders in terms of public and

superior authorities [26,27,28]. Overall, previous studies have achieved significant results and have crucial academic value.

However, the following research gaps remain. First, organisational change processes are associated with identifying antecedents to implementing green circular practices [29]. However, when organisations transform to green, sustainable practices, little is known about the factors influencing the transformation process. Second, the green development behaviour of local governments is an interconnected and interdependent system consisting of the organisation's internal and external dimensions. Existing research on influencing factors is dispersed among three domains: organisational capacity, local government managers, and stakeholders, and systematic analysis of the influencing factors of local governments' green development behaviours is still lacking [2]. Third, this study contributes to understanding local government's green development behaviour in the Chinese context. While most studies have examined the European [9,11] and American regions [12], Du et al. (2023) [19] explored the conceptualisation of green development behaviours of Chinese local governments, yet the factors that promote the implementation of green development behaviours by Chinese local governments remain unclear.

Combining a realistic research context and the current state of theoretical research, this study proposes the following research question: What motivates Chinese local governments to implement green development behaviour? Specifically, this study explores the potential internal and external factors affecting local governments' green development behaviours and examines the interaction mechanism between these factors and green development behaviours. This study analysed data collected from 53 local government officials based on grounded theory to address the above research questions. The results demonstrate that a single factor does not drive the green development behaviour of local governments but depends on the combined effects of internal driving factors, external environmental pressures, and the basis of regional green development. Additionally, this study constructs a model of the factors influencing green development behaviour and proposes five propositions to provide a basis

for subsequent analysis. The novelty of this study consists of exploring the influencing factors of local governments' green development behaviours from an organisational perspective and enriching the application of the process organisation study in the field of local governments' green development behaviours research. This study provides theoretical and practical references for local governments to improve and implement green development policies in the context of government-led enterprise actions and public participation in green development.

The structure of this paper is as follows: Section 2 reviews the research on the green development behaviour of local governments and influencing factors, and Section 3 introduces the research and data methodology. Section 4 presents the results of data analysis and proposes five propositions. Section 5 provides a discussion, conclusion, research limitations and prospects.

5.2 Literature Review

5.2.1 Green Development behaviour of Local Governments

Green development emphasises integrating and coordinating economic growth, environmental protection, and sustainable resources [30]. The terms “green” and “sustainable” are often used interchangeably. This may present an implicit assumption that green procurement inevitably moves toward more sustainable procurement [31]. Accordingly, this study identified green development behaviour as an essential strategy for local governments to achieve greater sustainability. As critical actors in green development practices, local governments influence many key emission sectors, including buildings, energy supply, transportation, planning, and waste management [9]. Meanwhile, local governments serve as facilitators and leaders in guiding the sustainable transformation of businesses and society [10]. Notably, local governments adopt different rhythms when implementing green sustainability policies and practices, depending on the country, administrative level (for example, local versus central), and the activities and goals of each organisation [11]. Therefore, academics do not have a unified definition of local governments' green developmental behaviour.

Some scholars have linked green development behaviour to plans, programs, and goals. Wheeler (2008) noted that state and local governments in the U.S. typically implement sustainable practices through planning. Most projects have set emission reduction targets, created emissions inventories, and greened public sector operations [12]. Deslatte and Swann (2016) examined cities' choices of green policy tools regarding organisational goals such as greenhouse gas emission reduction and energy efficiency [14]. Additionally, local governments often seek environmental goals that exceed minimum state and federal minimum requirements [15]. Local governments have adopted comprehensive plans emphasising local sustainability and climate action plans [13].

Another scholar perceived green development behaviour as a behavioural change. Revell (2013) believed behavioural change is a tool widely developed in environmental policy to encourage sustainable lifestyles [9]. Local governments implement public green purchasing behaviours through behavioural change [16,17]. Wu et al. (2020) discovered that local governments' green development behaviours, such as environmental legislation and regulation, can improve the regional ecological quality [32]. Liu et al. (2021) indicated that green governance behaviour, as an essential course of action for local government development transformation, is instrumental behaviour that implies value [18]. Li et al. (2022) defined government green development behaviour as the government's ability to achieve green development and economic growth [2]. Accordingly, this study identifies local governments' green development behaviour as a change in behaviour, namely, the behaviour taken by the local government to change from the original development mode of pursuing only economic growth to the green development mode of seeking environmental protection and economic growth. The purpose is to encourage enterprises to realise greening of production methods and residents to learn the greening of their lifestyles.

5.2.2 Influencing Factors of Local Governments Green Development behaviour

Despite the key role of local governments in implementing green sustainability behaviours, a stubborn gap between the rhetoric and reality of local sustainability policies remains [9]. Academics have conducted extensive research on the factors that influence the green development behaviours of local governments.

Organisational capacity is crucial for implementing green development practices. Homsy et al. (2015) suggested that internal drivers of municipal action are insufficient and that low policy adoption rates are due to capacity constraints [22]. Capacity building is a crucial initiative for implementing sustainable development in American cities [23]. Local governments' financial and human resource capacities are also prominent factors that lead cities to adopt more environmentally oriented policies [15]. Rodriguez-Plesa et al. (2022) argued that organisational capacity and political values may predict local engagement in sustainable practices [20]. Furthermore, managers responsible for implementing sustainable development initiatives face resource reallocation [25]. Consequently, local government managers have a vital influence.

Managers can implement sustainable development by attracting citizen participation, improving expertise, mobilising financial resources, and developing the capacity to drive sustainable development [24]. Klein et al. (2022) concluded that the chief executive awareness of public sector organisers is an essential element in the organisational transformation to circular development [10]. Support from executive leadership is necessary for implementing green development behaviours in local governments [20]. Bryngemark et al. (2023) observed that green development practices rely on the decisions of strategic documents; however, unobserved factors may include civil servants [17]. Moreover, environmental sustainability frameworks, organisational culture, and structures directly and indirectly affect the implementation of green development behaviours [11].

Stakeholder engagement assists in promoting sustainable development practices among local governments. Citizen engagement is closely related to securing financial support for sustainable development [23]. Several local authorities have noted that public participation mechanisms influence the formulation of environmental governance policies [34]. Environmental complaints and letters from the public serve to provide regulators with adequate information and reduce regulatory costs [35]. Different community elements are essential for addressing green sustainability issues [20]. Another factor that influences the actions of local authorities is superior governments [9], including strict environmental regulations, environmental supervision of local governments [27], and appraisal mechanisms for local officials [28]. Additionally, higher governments usually utilise the information provided by the public to encourage lower levels of government to provide better services to residents through accountability mechanisms [26]. Moreover, the external environment also impacts green development behaviour; for example, regional heterogeneity moderates the impact of government green development behaviour [2].

In summary, most existing research on green development practices primarily focuses on Europe and the United States, and the insights gained do not necessarily apply well to the study of local governments' green development behaviours in China. Second, existing studies emphasise the influencing factors dispersed among organisational capacity, local government managers, and stakeholders. However, little is known about the specific factors that influence local governments' green development behaviour. Accordingly, this study explores the driving forces that specifically affect the implementation of green development behaviours by local governments from the internal and external perspectives of organisations. The interaction mechanisms of these factors were systematically and thoroughly analysed. While the stakeholders of existing studies mainly concentrate on the public and superior governments, this study provides a complementary survey of the influence of enterprises' green development demands on implementing green development behaviours.

5.3 Research and Data Methodology

5.3.1 Research Design

Grounded theory is a qualitative research methodology proposed by Glaser and Strauss whose primary purpose is to establish a theory based on empirical data [36]. Accordingly, scholars do not propose theoretical hypotheses in advance but directly summarise the experience from the survey data after determining the research scope [37], extracting the original concepts in the process of continuous comparison and supplementation, developing categories and the relationship between classes, and finally developing system theory through integration and refinement. This study adopts grounded theory as the research methodology for the following reasons. First, local officials serve as decision-makers, and leadership is dynamic, multifaceted, complex, and demonstrated contextually [38]. Hence, explaining the various complex factors that affect the green development behaviour of local governments using traditional hypothesis testing has become challenging [39]. Second, grounded theory is explanatory; its purpose is to discover concepts and relationships and provide theoretical explanations for existing phenomena [40], making it more appropriate for the present study.

5.3.2 Data Collection

Considering that grounded theory research ideally follows the principle of theoretical sampling [41], the participants in this study were selected based on a sampling strategy that combines purpose and theory. The target group for our study was the staff of local government departments related to green development. While the job titles of the respondents varied slightly across the region, local green development efforts were typically associated with nine departments: the Development and Reform Commission, the Bureau of Ecology and Environment, and the Water Authority [15]. This study investigates three local government agencies (three prefecture-level cities) in the central-eastern coastal province of China (Jiangsu Province), with the specific sample information shown in Table 5-1. We conducted 53 in-depth interviews with the staff of nine local

government departments related to green development within the jurisdiction of Jiangsu Province; each interview lasted approximately 0.5 to 1.5 hours. Finally, a memorandum of approximately 304 thousand words was created. In addition, 23 archival data points were collected. Detailed information about the interviewees is presented in Table 5-2. The interviewees were mainly between 31-40 and 41-50 years old. The percentages of those with bachelor's and master's degrees were 45.28% and 37.74%, respectively. Furthermore, the interviewees came from nine government departments, of which the Development and Reform Commission and Water Authority had a maximum of eight respondents, each accounting for 15.09% of the total.

Table5- 1 Descriptions of Sample Information

Characteristics	City A	City B	City C
Location within province	South-east	South	Central
Population	7.49 million	5.37 million	3.22 million
Interviews with divisional leaders	4	3	8
Interviews with section leaders	10	12	16
Archival data (total number of documents)	4	9	10
Interview time in the local sector (hours)	Ranging in duration from 0.5 to 1.5 hours for each interview		

In-depth interviews were conducted one-on-one without interference from other people to enhance the integrity and efficiency of data collection [42]. All interviews were conducted and recorded in Chinese, the mother tongue of the principal scholars and participants. Therefore, it is helpful for interviewers to quickly establish harmonious relationships with respondents and obtain rich data [43]. Before recording the interviews, participants were asked to read a brief description, including detailed information, such as the purpose of the survey and the utilisation of the results. To ensure the privacy and confidentiality of the participants, we anonymously numbered the respondents during the verbatim transcription of the interviews. The interview outline designed in this study mainly involved respondents' cognition of green development, the role played by the respondents' departments in green development, and the factors that promote or hinder local governments' choice of green development behaviour (shown in Appendix A). After each interview, we used Nvivo12 to transcribe and organise the material. To further improve the accuracy and reliability of the study, all

authors of this paper were involved in discussions on data analysis and further verification of the interview coding.

Table5- 2 Interview sample characteristics

Characteristics	Data categories	No.of participants	Percentage
Gender	Male	40	75.47%
	Female	13	24.53%
Age	21~30 years old	6	11.32%
	31~40 years old	18	33.96%
	41~50 years old	22	41.51%
	51~60 years old	7	13.21%
	Associate degree	3	5.66%
Level of education	Bachelor degree	24	45.28%
	Master degree	20	37.74%
	Doctoral degree	6	11.32%
Department	Development and Reform Commission	8	15.09%
	Bureau of Industry and Information Technology	5	9.43%
	Bureau of Ecology and Environment	5	9.43%
	Bureau of Science and Technology	5	9.43%
	Bureau of City Administration	7	13.21%
	Bureau of Agriculture and Rural Affairs	5	9.43%
	Bureau of Commerce	4	7.55%
	Water Authority	8	15.09%
	Bureau of Housing and Urban Rural Development	6	11.32%

5.3.3 Data Analysis

The traditional coding process in content analysis relies primarily on the analytical interpretation of data [42]. Specifically, drawing on grounded theory [36], this study uses open coding to analyse, compare, conceptualise, and categorise data to group related concepts to form and name categories and subcategories. Subsequently, this study develops the attributes of these categories and subcategories and distinguishes these attributes in order to form dimensions. Next, axial coding was used to correlate categories and subcategories to identify antecedents, causal conditions, phenomena, consequences, contextual conditions, and possible intervening conditions [45]. Thus, this study focuses on the conditions that produce a category or phenomenon (local government green development behaviours), the context or specific properties in which the category or phenomenon is embedded (a sample of relevant internal and external

environmental factors), and the mechanisms influencing the implementation of green development behaviours by local governments. The specific process of data coding is shown in Table 5-3.

Table5- 3 Example of data coding

Coding process	Data codes
Document materials	Type1 Work summary of the 263 Special Action Type2 Self-examination report on work assessment Type3 Annual report on the work of departments ...
Initial concepts	aa1 Perceptions of local government leaders on green development (a1, a2...a5) aa2 Local government leaders familiarize themselves with green development-related work (a6, a7, a8) aa3 Local government leaders have a clear understanding of green development responsibilities (a9, a13...a31) ... (16 initial concepts)
Categories	Aa1 Local government leaders' cognitions of green development (aa1, aa2, aa3) Aa2 Local government green development commitment (aa4, aa5, aa6) Aa3 Local government green development capacity (aa7, aa8) ... (7 categories)
Main categories	A1 Internal driving factors (Aa1, Aa2, Aa3) A2 External Environmental Pressures (Aa4, Aa5, Aa6) A3 The Basis of Regional Green Development (Aa7) (3 main categories)

5.3.4 Validity Assurance

Additionally, this study strictly followed the steps recommended by Tellis (1997) [47] to triangulate the information collected from both primary and secondary sources. First, each author independently reviewed all the information of the transcribed interviews and secondary documents to verify their validity and avoid potential ambiguous and equivocal data from being included in the database. Each author then compared or corroborated their own analyses with those of other authors to reach a shared understanding and interpretation of the information under investigation. Finally, we triangulated all the information received [46,48]. This study examined a framework to create conceptual labels, categories, and subcategories simultaneously.

5.4 Results

This study describes the factors influencing local governments' green development behaviour and emphasises the link between each element and

green development behaviour. Our findings show that there are three main categories: (1) the internal driving factors, including local government leaders' cognitions of green development, local government green development commitment, and local government green development capacity; (2) external environmental pressures, consisting of the regulation of the superior governments, green development demands of enterprises and residents, and media influence; and (3) the basis of regional green development, which contains industrial and social bases.

5.4.1 Internal Driving Factors

5.4.1.1 Local Government Leaders' Cognitions of Green Development

Managers of public organisations are at the centre of the flow of information and resources and the intersection of political superiors and subordinates. Accordingly, the cognition of green development by the leaders of local government departments not only reflects that local government leaders have an accurate understanding of the green development policies promulgated by their superiors but also reflects that local government leaders' cognition of green development is a significant prerequisite for local governments to implement green development behaviours. Local government leaders have different educational backgrounds and green development awareness. Moreover, highly educated local officials have confidence in implementing environmental governance practices and are likely to use efficient environmental governance techniques to improve environmental efficiency. Therefore, local officials must understand green development clearly. However, the data analysis found that local officials' understanding of green development was vague and often confused environmental protection, sustainable development, and a circular economy (shown in Appendix Table 5-4).

Furthermore, although the departments of local government leaders play a significant role in regional green development, their understanding and perceptions of green development vary due to the limitations of their department functions. Most local officials indicated that green development is a system of indicators, as green development indicators are commonly used in the daily work

of their departments to measure enterprises' green development. However, they mentioned that because different functions exist in each sector, each has separate indicators, thereby raising challenges in implementing green development practices.

Overall, leaders' green development cognition focuses on sustainable development, environmental protection, resource conservation, and ecological civilisation construction. Our findings suggest that local government leaders increasingly identify green development paradigms rather than traditional development approaches, including promoting green development of production and lifestyles. This further demonstrates that changes in top management's decision-making facilitate the achievement of environmental commitment at the organisational level [21,50]. Accordingly, local government leaders' awareness and concern for green development are prerequisites for local governments to implement green development behaviours.

5.4.1.2 Local Government Green Development Commitment

Commitment describes the interaction between individual and organisational dimensions [46,51]. From an organisational perspective, a local government's commitment to green development refers to the attitudinal commitment of local government leaders to green development behaviours. Local government leaders' identification with organisational goals and values facilitates their better internalisation of green development cognition and ideas and enhances achieving desired goals.

Furthermore, as shown in Appendix Table 5-4, local government leaders have set specific short-, medium-, and long-term regional green development goals and plans for green development to integrate green development into their respective functions better. Ecological and environmental protection plans and energy-saving plans help to precisely orient the green development of local government sectors.

From an organisational perspective, the above findings reflect managers' commitment to identifying with the organisation's values and goals [46].

Furthermore, top managers' commitment to change must articulate a vision that differs from the status quo [52]. Hence, it can be understood that local government leaders have gradually changed from pursuing regional development goals of GDP to green development goals, setting regional development goals and plans that provide direction for implementing green development behaviours in the sector.

Additionally, a leader from the Bureau of Industry and Information Technology reported that local governments' green development goals and plans provide a clear assessment target for the clean production of enterprises. This can also promote green transformation and the development of enterprises.

5.4.1.3 Local Government Green Development Capacity

Inter-organisational coordination governance capacity. Green development involves several local governmental departments. Local officials typically use administrative means to solve problems and coordinate their actions with other government departments [42]. Colwell and Joshi (2013) identified limitations in local government departments' ability to communicate effectively with each other [52]. For the interviews, we selected nine local government departments closely related to regional green development, each of which played a crucial role in green development. For instance, some departments mainly plan and develop policies, whereas implementing green policies necessitates cooperation from other sectors (as shown in Table 5-4 in the Appendix). There will also be problems, such as asynchrony in departmental coordination and governance.

Resource allocation capacity of local governments. According to the analysis of the interview data, local governments' resource-allocation abilities include human, financial, and material resources. Regarding the human resource allocation capacity of local governments, the staffing of governments at all levels in environmental protection organisations reflects the importance of governments at all levels in environmental protection affairs to a certain extent. In our interview, the local officials reported "pressure in team building, especially the lack of relevant staff in environmental field monitoring." Meanwhile, to reduce emissions,

local governments have successively increased the staffing of local environmental protection institutions.

Second, the ability to allocate financial resources is usually a significant limiting factor for local governments in fulfilling their environmental responsibilities [42]. Respondents asserted that “local governments still do not have sufficient funds to guide enterprises and the residents to achieve green development” (Bureau of Housing and Urban-Rural Development, P14). They also underlined that “some environmental events need emergency treatment, and these costs put pressure on local governments” (Bureau of Ecology and Environment, P32).

In the green development of local governments, in addition to allocating human and financial resources, allocating material resources plays an essential role, especially in allocating infrastructure. Respondents noted that “the local environmental infrastructure was still relatively weak; for example, sewage treatment plants were operating at total capacity” (Bureau of City Administration, P29). Moreover, owing to the increasing frequency of environmental protection inspections of enterprises by local governments, it is difficult for local governments to complete these inspections by relying solely on human resources. It is necessary to adopt scientific means, such as “installing environmental supervision systems” (Bureau of Ecology and Environment, P31). Another official stated that the city administration had been actively installing waste separation facilities in the community to promote green lifestyles among residents.

5.4.2 External Environmental Pressures

External factors influence organisational members to consciously select, implement, and manage their actions to achieve expected results. This study integrates the new institutional theory to provide a specific analysis of external environmental pressures. External environmental pressures include the regulation of superior departments, stakeholders’ green development demands, and media influence (shown in Appendix 5-5).

5.4.2.1 Regulation of Superior Departments

Green development regulations and requirements. The central government has promulgated new laws and regulations to realise green development. Accordingly, it was emphasised that to implement the decisions and arrangements of the central and provincial governments to accelerate the construction of ecological civilisation (including the implementation of relevant policies and opinions on ecological and environmental protection and promoting regional and municipal development), one should “fight a tough battle for pollution prevention and control” (Bureau of Agriculture and Rural Affairs, P10). Meanwhile, the superior department has precise requirements for the green development of local governments, which is reflected explicitly in the annual reduction target of energy consumption per unit of GDP, such as “the total emission reduction target of the environmental protection department” (Bureau of Industry and Information Technology, P16). Additionally, it should be noted that local governments have also put forward their plans according to the laws and regulations of superior departments, such as the 263 transfer action and high-quality development plan for the Yangtze River Economic Belt. Thus, the promulgation of a series of new laws and regulations by the central government and other superior departments has affected the green development behaviour of local governments to a certain extent.

Environmental supervision. One of the participants highlighted that “The establishment of the central environmental supervision system urges the superior departments to inspect the work progress of our department every year” (Bureau of Housing and Urban-Rural Development, P27). Simultaneously, strict environmental protection supervision and accountability mechanisms of superior departments will impact local governments' implementation of green development policies. The official interviewed stated that under the considerable pressure of environmental protection, the region had adjusted the layout of the whole agricultural industry, such as “increasing the demand for reduction of chemical fertilisers and pesticides in the planting industry and the withdrawal of aquaculture industry from the region” (Bureau of Agriculture and Rural Affairs, P24). Additionally, some respondents proposed that, under strict supervision and

accountability mechanisms during environmental protection supervision, many unqualified electroplating enterprises stopped production, which impacted the construction machinery industry in the area. This step reflects the necessity for local governments to implement green development practices under the strict environmental supervision of higher authorities.

Green development assessment indicators. A superior department's evaluation of local government green development consists of multiple quantitative indicators related to environmental quality, ecological protection, and industrial development. Since environmental indicators were incorporated into the assessment system 2006, environmental protection performance has become the standard for promoting local government officials [53]. In 2016, the green development index system and objective assessment system of ecological civilisation construction, as the basis for assessing ecological civilisation construction, were also highly valued by local governments. However, as reported in our survey, the central government assesses provincial governments every year. One should mention that following the green development assessment system promulgated by the state, local governments refined their green development indicators and developed a stricter indicator system that was higher than that at the central or provincial level. An official believed that "according to the provisions of Article 10 on water, the assessment requirements for water quality in the treatment of Taihu Lake are divided into national assessment sections and provincial assessment sections" (Water Authority, P22). Furthermore, the provincial government takes "green and high-quality agricultural products for the agricultural sector as a critical assessment index" (Bureau of Agriculture and Rural Affairs, P24).

5.4.2.2 Green Development Demands of Enterprises and Residents

Green development demands of enterprises. Our research mainly analyses the green development demands of enterprises from the perspective of local governments to better promote local governments to help enterprises achieve green development. The analysis shows that there are three main aspects of enterprises' green development demands. First, the entrepreneurs' green

development consciousness has continuously improved. Specifically, “the green transformation and upgrading consciousness of entrepreneurs is extreme now; it not only requires equipment and technology to be advanced” (Development and Reform Commission, P41), but “entrepreneurs slowly realise that green development is for the benefit of future generations” (Bureau of Ecology and Environment, P18). Second, owing to fierce market competition, enterprises are taking the initiative to require green transformation and development. An official interviewee demonstrated that “the market competition is very fierce at present, and enterprises are trying to reduce costs and achieve energy conservation and emission reduction” (Bureau of Industry and Information Technology, P5). Third, owing to the internal requirements of local governments for the green development of regional industries, enterprises demand green development. Improving environmental protection requirements has prompted many enterprise leaders to attach greater importance to environmental protection.

Green development demands of residents. With a continuous increase in public awareness of green development, people’s requirements for living environments are constantly improving. On the one hand, residents have significant concerns about the risks of industrial pollution to life. As an illustration, residents living around industrial enterprises believe that the enterprise impacts their environment, including soil and air. Residents regularly express their green development demands to local governments through petitions and reports. Some officials stated there is an excellent chance for people to report, but the local government will record and respond according to people’s reactions. However, residents began to pay attention to green lifestyles and their impact on them. This view has been recognised by most participants, who maintain that the resident is now pursuing a sense of spiritual happiness, such as “blue sky, white clouds, green water, and green mountains” (Development and Reform Commission, P36). The above analysis shows that residents’ demand for green development is conducive to local governments finding environment-related problems in time and actively encouraging local governments to implement green development.

5.4.2.3 Media Influence

As a highly interactive platform, social media improves the interactions between local governments and the public [54]. Our analysis found that “residents report the local environmental pollution phenomenon through social media such as the Weblog and WeChat official account” (Bureau of Ecology and Environment, P31). Simultaneously, social media gradually began to assume responsibility for information disclosure and monitoring local government behaviour [55]. For instance, “social media will respond to local river water pollution incidents” and “social media will report local air quality pollution incidents” (Bureau of Commerce, P49) to urge local governments to solve relevant environmental problems in time. Consequently, local governments could supervise local enterprises through social media to promote the implementation of green development policies.

5.4.3 The Basis of Regional Green Development

5.4.3.1 Social Basis

Green development literacy of residents. To achieve green development, residents must bear specific environmental responsibilities for production and life. However, a significant gap remains in terms of the ideal goals. More illustrative inputs from interviewees are presented in Appendix Table 5-6.

Many participants believe that “residents have not formed a good habit of protecting the environment” (Bureau of City Administration, P29), mainly because their awareness and concept of green development need to be strengthened. Numerous interviewees also deemed that “only when residents have more green development knowledge, they will participate more actively in green development actions” (Bureau of Ecology and Environment, P31). Additionally, officials from agricultural departments emphasised that “despite local governments’ emphasis on ecological benefits, farmers’ economic benefits remain a force to be reckoned with since farmers need to pay more attention to life pressure”.

Green development literacy of entrepreneurs. As we have previously analysed, entrepreneurs are gradually becoming aware of the importance of green

development, but their understanding of green development differs owing to differences in personnel quality. Some regional participants considered that “in green development, plentiful entrepreneurs have their awareness of innovation” (Development and Reform Commission, P40). Similarly, some entrepreneurs are more aware of green transformation and upgrades than are local governments. However, respondents in some regions also mentioned that “some enterprises have environmental protection facilities, but enterprises choose not to operate these facilities, so entrepreneurs ignore their social responsibility” (Bureau of Science and Technology, P52).

5.4.3.2 Industry Basis

Different regions have distinct industrial and structural foundations. Therefore, in realising regional green development, the difficulties encountered, and the behavioural choices made by local governments will not be the same. From our analysis, the officials interviewed in some areas stated that their city was originally an industrial city, and traditional industries such as steel and building materials accounted for a large proportion. These industries have high energy consumption and cause pollution. Thus, a local government official called for “the need to adjust production capacity and optimise industrial structure” (Bureau of Industry and Information Technology, P5). Another interviewee also proposed that “the region’s industrial structure is biased, and industries with heavy pollution such as electric power and chemical industry account for a large proportion, resulting in the relatively high pollutant discharge intensity per unit area in the province” (Bureau of Ecology and Environment, P31). Consequently, adjusting the traditional industrial structure and realise green transformation and industry upgrades is necessary.

Moreover, several participants showed that “the small and medium-sized enterprises accounted for nearly 1/3 of the whole city. From the perspective of industrial structure, it is high pollution and energy consumption” (Development and Reform Commission, P36). Therefore, although local governments are constantly optimising the industrial structure, there is still a significant gap in green development compared to advanced areas. In contrast, local governments

face relatively few obstacles to green development in advanced areas and are more likely to promote green development practices.

5.4.4 The Structure of the Analysis

According to the analysis results above, construct the influencing factor model of local government green development behaviour. Figure 5-1 shows the dimensions of the theoretical framework of local governments' green development behaviour. Five fundamental propositions can be obtained as follows:

Proposition 1: The green development cognitions of local government leaders are influenced by the regional green development basis and external environmental pressures, thus affecting the local government's green development commitment.

Awareness of green development by local government leaders is crucial. Particularly in China, as the concept of green development continues to deepen, local government leaders have a certain level of cognition of green development. Cognition includes information processing, sense making, information dissemination, and reflective learning. Civil servants' motivation for green procurement comes from awareness [17]. Top managers' perceptions of the external environment shape their organisational behaviour and environmental strategies [56]. Simultaneously, owing to the different green industrial and social foundations of each region, local leaders generally develop appropriate green development plans and goals depending on regional realities. Thus, regional green development moderates the relationship between cognition and commitment. External environmental pressures can influence local government leaders' cognition and emotions regarding the institutional environment, leading to environmental commitment [57]. Therefore, the local government leaders' cognition of green development is the beginning of the entire storyline.

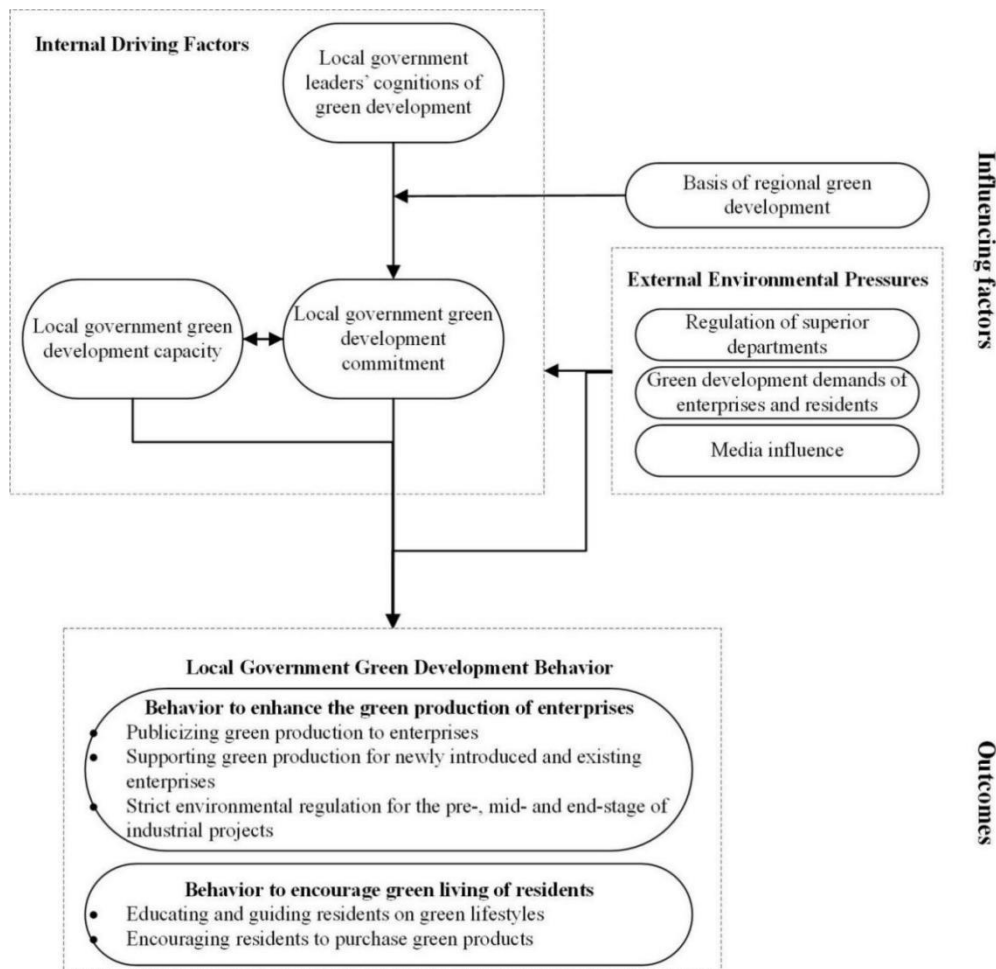


Figure5- 1 The influencing factors model of local governments' green development behaviour

Proposition 2: Understanding the interaction between local government green development commitments and capabilities facilitates the achievement of green development behaviour by local governments.

Concerning green development commitment, the willingness of local government leaders to adhere to the concept of green development and set regional green development goals and plans that provide clarity and direction for green development in the sector induces green development commitment in organisations [46]. Management commitment is integral to capacity building, resource allocation, and helping organisations gain a competitive advantage [58]. Therefore, local leaders play a fundamental role in achieving organisational plans and strategies. Local government leaders' decisions encompass resource

commitment and organisational transformation (e.g., sustainability), further influencing organisational capacity [58].

Green development capacity reflects the ability of local government organisations to coordinate governance and allocate resources. Organisational capacity has been used to encapsulate insights from the resource-based theory of firms regarding organisational sources of high performance [59]. In the field of public management, a growing number of studies have highlighted the need for local governments to explore the implementation of necessary resources to achieve environmental protection commitments [60]. Deslatte and Stokan (2020) noted that managers responsible for implementing sustainable development are also faced with the choice to reallocate resources [25]. On the one hand, local government leaders need adequate inter-organisational coordination skills to coordinate collaboration between departments, thus facilitating the achievement of sectoral green development goals and plans. Local government leaders, on the other hand, need to reflect on the sector's resource allocation. For instance, in the face of inadequate financial, human, and material resources proposed by the eco-environmental sector, local government leaders should immediately restructure the level of resource allocation in each sector to contribute to the realisation of the local government's green development goals and plans, which, in turn, will have an impact on green development commitments. Therefore, there is a reciprocal relationship between the local government's commitment to and capacity for green development.

Proposition 3: Local government green development commitment is influenced by institutional environmental pressures that promote or hinder local governments from implementing green development behaviours.

Commitment includes attitudinal and behavioural commitment [51]. Reflected in this study, the view of attitudinal commitment, in which organisations focus on aligning organisational values and goals with those of individuals [61], emphasises that individuals develop a strong belief in organisational values and generate a willingness to work for the benefit of the organisation. Grandia (2016) noted the importance of willingness or commitment to implement sustainable

initiatives and procurement [62]. Willingness influences behaviour and is constrained by the external environment [43]. Resnick and Siame (2021) identified the degree of political interference as a potential factor influencing commitment [63]. Precisely, higher levels of government must monitor local governments to ensure they have green development plans and programs to implement green development practices. On the other hand, the green development needs of enterprises and residents influence the formulation and implementation of relevant green development policies by local governments. For instance, local governments develop and implement different green development strategies, such as incentives or mandatory strategies, depending on the type of business (e.g., newly introduced enterprises and existing enterprises), thus promoting green development in the production patterns of enterprises and the lifestyles of residents.

Proposition 4: Local government green development capacity is influenced by institutional environmental pressures that promote or hinder local governments from implementing green development behaviours.

Among the vital internal factors for achieving green development behaviour in local governments, the capacity of local governments for green development is essential. This is because if a sector lacks capacity or if the sector's capacity is not appropriate for the task, then the sector will incur opportunity costs when implementing sustainable development planning [25]. Furthermore, organisational capacity is not monolithic [60]. For example, as elaborated in this study, resource allocation capacity is tangible and includes the ability to allocate financial, human, and physical resources. Local governments typically make appropriate decisions regarding green development behaviour based on their organisational capacity. Simultaneously, external environmental pressures can influence external environmental pressures [23]. For example, higher levels of government can constrain the capacity of local governments to allocate resources. Similarly, the green development demands of enterprises and residents can improve the coordination capacities of local government leaders. Public reporting of pollution problems and the pursuit of lifestyles such as green

travel can assist in improving the capacity of local government leaders to solve problems and promote interdepartmental cooperation for better implementation of green development practices.

Proposition 5: External environmental pressures promote or hinder local governments from implementing green development behaviours.

External environmental pressures have a direct impact on green development behaviour. Galliano and Siqueira (2021) argued that interacting with the external environment is a significant aspect of organisational behaviour [64]. Strict environmental laws and assessment systems implemented by higher authorities can influence the behavioural choices of local governments [65,66]. Second, the interaction of local governments with the public and local communities has also received attention [15,34,35]. Especially the interaction between local governments and enterprises. Recently, the increase in market demand for green products promoted an increase in entrepreneurs' awareness of green development [67]. A growing number of enterprises choose to carry out digital green innovation [68,69], and enterprises expect that local governments could support their green transformation with stronger policies. Yet, local governments maintain the implementation of mandatory green development measures to regulate green production. Additionally, enterprises must develop green production under strict environmental supervision, and local governments typically implement mandatory green development measures to supervise green production. Moreover, media influence exerts external pressures on local governments. Notably, residents reported pollution incidents through social media [53], which promoted the green development behaviour of local governments.

5.5 Discussion and Conclusion

5.5.1 Discussion

Local government green development behaviour is a behavioural change, namely, the behaviour taken by local governments to change from the original development mode of pursuing only economic growth to the green development

mode of pursuing environmental protection and economic growth. It aims to encourage enterprises to realise the greening of production methods and residents' lifestyles [19]. Following the literature by Du et al. (2023) [19], this study provides an exploration of the antecedents influencing the implementation of green development behaviours for local governments from the internal and external perspectives of the organisation. This study expands the application of process organisation research in the field of local government green development behaviours. Process research in organisation theory suggests that organisations cannot simply copy the processes that are effective in other organisations. Implementing green development behaviours in local governments means transforming from the paradigm of simply pursuing economic growth to pursuing green development. Understanding this transformation requires an in-depth understanding of the series of events that occur over time [70]. Existing research suggests that organisational change processes are associated with identifying antecedents to implementing green cycle practices [29]. However, when organisations change to green, sustainable practices, relatively little is known about the factors influencing their change process. Identifying, analysing, and understanding these influencing factors and the relationships between them is a complex task [71], and organisational actors have a limited direct grasp of this complexity [72]. Therefore, the entry point of this study is an exploratory analysis of the potential internal and external factors influencing local governments' green development behaviours. This study demonstrates the role of internal organisational and stakeholder factors in implementing green development in local governments [10, 15,24, 26]. Therefore, internal and external environmental elements consisting of multiple intrinsic and extrinsic variables may determine the nature of green development behaviours [46]. The implementation of green development strategies by local governments is a complex and systemic issue. The complexity of local governments at the societal and individual levels [73] and involving many stakeholders [26,27,28]. Accordingly, drawing on the new institutional theory, this study categorises external environmental pressures as higher sector regulation, green development demands of businesses and

residents, and media influence. It highlights the moderating role of the regional green base.

5.5.2 Conclusion

The implementation of green development by local governments is a complex organisational behavioural problem. This study explored the factors influencing green development behaviour and analysed the interaction mechanism between these factors and the green development behaviour of local governments by conducting in-depth interviews with 53 local government officials from nine government departments related to green development. Three main categories were obtained through data analysis, and an influencing factor model of local governments' green development behaviour was constructed.

Internal driving factors include the green development cognition of local government leaders, green development commitment, and capacity. The regulation of superior departments, green development demands of enterprises and residents, and media influence are critical external environmental pressures. In China's green governance context, superior government oversight and restraints have been the main factors in implementing green development. However, this study stresses that enterprises' green development demands have received growing attention in China's green development process. Consequently, this study maintains that the demand for green development by enterprises and residents is a critical external environmental pressure on local governments to implement green development behaviours that cannot be ignored. The basis of regional green development is the action situation incorporated into our model. Local governments usually consider the basis of regional green development to determine their own behavioural choices, especially regarding introducing enterprises and transforming and upgrading enterprises.

5.5.3 Implications

This study has theoretical and practical significance: (i) Explore the influencing factors of local governments' green development behaviours from the organisational perspective. (ii) Constructing the influencing factors model of local

governments' green development behaviours provides a new perspective for local governments to implement green development behaviours effectively. (iii) This study theoretically expands the application of process organisation research in local government green development behaviour research. Moreover, understanding the influencing factors of local governments' green development behaviour and grasping the rules of this behaviour has practical significance for strengthening the implementation of local governments' green development behaviour and improving green development performance.

5.5.4 Research Limitations and Future Prospects

These findings provide novel insights into the effective implementation of green development behaviours by local governments and facilitate the greening of enterprise production and resident lifestyles. Furthermore, this study has key limitations. First, findings from a grounded theory study in a single location do not lend themselves to generalization, and the validity of the emerging theory is tested through the credibility, transferability, dependability, and confirmability of the study. Second, grounded theory focuses more on theoretical development and less on hypothesis testing. These limitations highlight opportunities for future research in these fields. First, future research could use quantitative studies to test the hypotheses of the propositions presented in this study and verify the mechanism of the influence of these factors on the green development behaviour of local governments through a wider sample. Second, greater categorization and comparison of internal drivers and external environmental pressures could be conducted. Moreover, further consideration of the impact of emerging perspectives, like digital driving, on green development behaviours will contribute to a deeper comprehension of the driving mechanisms influencing local governments' implementation of green development behaviours.

Ethical Approval and Consent to Participate: Ethical approval for the study was conducted by the ethics committee of Cranfield University (No. CURES/16182/2022). All participants were informed about the study objectives and voluntary nature of their participation. Also, a consent form was obtained from them.

Consent to Publish: All participants were informed of the objectives of the academic publication.

Funding: This work was funded by the National Social Science Fund of China (grant number 22AGL028).

Authors Contributions: All authors listed have significantly contributed equally to the design of the research, field data collection and analysis, and the writing of this article.

Competing Interests: We declare that we have no financial and personal relationships with other people or organisations that can inappropriately influence our work, there is no professional or other personal interest of any nature or kind in any product.

Data availability statement: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request. Please contact the corresponding author for the data requests.

5.6 References

- [1]L. Shen, Y. Wu, Y. Lou, D. Zeng, C. Shuai, X. Song, What drives the carbon emission in the Chinese cities?—A case of pilot low carbon city of Beijing, *J. Clean. Prod.* 174 (2018) 343-354, <https://doi.org/10.1016/j.jclepro.2017.10.333>.
- [2]X. Li, J. Dai, X. Zhu, J. He, J. Li, X. Liu, Y. Huang, Q. Shen, What is the mechanism of government green development behaviour considering multi-agent interaction? A meta-analysis, *Int. J. Environ. Res. Public Health*, 19 (14) (2022) 8263, <https://doi.org/10.3390/ijerph19148263>
- [3]BP Global, 2023 Statistical Review of World Energy, BP Global, 2023, <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>.
- [4]L. Marrucci, T. Daddi, F. Iraldo, The contribution of green human resource management to the circular economy and performance of environmental certified organisations, *J. Clean. Prod.* 319 (2021) 128859, <https://doi.org/10.1016/j.jclepro.2021.128859>

- [5]X. Wang, Q. Shao, Non-linear effects of heterogeneous environmental regulations on green growth in G20 countries: Evidence from panel threshold regression, *Sci. Total Environ.* 660 (2019) 1346–1354, <https://doi.org/10.1016/j.scitotenv.2019.01.094>
- [6]C. Mombeuil, Institutional conditions, sustainable energy, and the UN sustainable development discourse: A focus on Haiti, *J. Clean. Prod.* 254 (2020) 120153, <https://doi.org/10.1016/j.jclepro.2020.120153>
- [7]S. Yin, T. Dong, B. Li, S. Gao, Developing a Conceptual Partner Selection Framework: Digital Green Innovation Management of Prefabricated Construction Enterprises for Sustainable Urban Development, *Buildings* 12(6) (2022), 721. <https://doi.org/10.3390/buildings12060721>
- [8]J. Zhang, S. Ul-Durar, M. N. Akhtar, Y. Zhang, L. Lu, How does responsible leadership affect employees' voluntary workplace green behaviours? A multilevel dual process model of voluntary workplace green behaviours, *J. Environ. Manage.* 296 (2021) 113205, <https://doi.org/10.1016/j.jenvman.2021.113205>
- [9]K. Revell, Promoting sustainability and pro-environmental behaviour through local government programmes: examples from London, UK, *J. Integr. Environ. Sci.* 10 (3-4) (2013) 199-218, <https://doi.org/10.1080/1943815X.2013.858752>
- [10]N. Klein, T. B. Ramos, P. Deutz, Factors and strategies for circularity implementation in the public sector: An organisational change management approach for sustainability, *Corp. Soc. Responsib. Environ. Manag.* 29 (3) (2022) 509-523, <https://doi.org/10.1002/csr.2215>
- [11]I. Figueira, A. R. Domingues, S. Caeiro, M. Painho, P. Antunes, R. Santos, N. Videira, R. M. Walker, D. Huisingh, T. B. Ramos, Sustainability policies and practices in public sector organisations: The case of the Portuguese Central Public Administration, *J. Clean. Prod.* 202 (2018) 616-630. <https://doi.org/10.1016/j.jclepro.2018.07.244>
- [12]S. M. Wheeler, State and municipal climate change plans: The first generation, *J. Am. Plan. Assoc.* 74 (4) (2008) 481-496, <https://doi.org/10.1080/01944360802377973>
- [13]B. Cease, H. Kim, D. Kim, Y. Ko, C. Cappel, Barriers and incentives for sustainable urban development: An analysis of the adoption of LEED-ND projects, *J. Environ. Manage.* 244 (2019) 304-312, <https://doi.org/10.1016/j.jenvman.2019.04.020>
- [14]A. Deslatte, W. L. Swann, Is the price right? Gauging the marketplace for local sustainable policy tools, *J. Urban Aff.* 38 (4) (2016) 581-596, <https://doi.org/10.1111/juaf.12245>

- [15]R. M. Krause, C. V. Hawkins, A. Y. S. Park, R. C. Feiock, Drivers of Policy Instrument Selection for Environmental Management by Local Governments, *Public Adm. Rev.* 79 (4) (2019) 477-487, <https://doi.org/10.1111/puar.13025>
- [16]S. D. Sönnichsen, J. Clement, Review of green and sustainable public procurement: Towards circular public procurement, *J. Clean. Prod.* 245 (2020) 118901, <https://doi.org/10.1016/j.jclepro.2019.118901>
- [17]E. Bryngemark, P. Söderholm, M. Thörn, The adoption of green public procurement practices: Analytical challenges and empirical illustration on Swedish municipalities, *Ecol. Econ.* 204 (2023) 107655, <https://doi.org/10.1016/j.ecolecon.2022.107655>
- [18]H. Liu, P. Yao, X. Wang, J. Huang, L. Yu, Research on the peer behaviour of local government green governance based on SECI expansion model, *Land* 10 (5) (2021) 472, <https://doi.org/10.3390/land10050472>
- [19]J. Du, X. Zhu, X. Li, E. Ünal, P. Longhurst, Explaining the Green Development behaviour of Local Governments for Sustainable Development: Evidence from China, *Behav. Sci.* 13(10) (2023), <https://doi.org/10.3390/bs13100813>.
- [20]E. Rodriguez-Plesa, A. M. Dimand, M. G. Alkadry, Community social capital, political values, or organisational capacity? Indicators of engagement in sustainable public procurement at the local level, *J. Clean. Prod.* 338 (2022) 130556, <https://doi.org/10.1016/j.jclepro.2022.130556>
- [21]A. Raj, A. Agrahari, S. K. Srivastava, Do pressures foster sustainable public procurement? An empirical investigation comparing developed and developing economies, *J. Clean. Prod.* 266 (2020) 122055, <https://doi.org/10.1016/j.jclepro.2020.122055>
- [22]G. C. Homsy, M. E. Warner, Cities and sustainability: Polycentric action and multilevel governance, *Urban Aff. Rev.* 51 (1) (2015) 46-73, <https://doi.org/10.1177/1078087414530545>
- [23]X. Wang, C. V. Hawkins, N. Lebrede, E. M. Berman, Capacity to sustain sustainability: A study of US cities, *Public Adm. Rev.* 72 (6) (2012) 841-853, <https://doi.org/10.1111/j.1540-6210.2012.02566.x>
- [24]X. Wang, M. Van Wart, N. Lebrede, Sustainability leadership in a local government context: The administrator's role in the process, *Public Perform. Manag. Rev.* 37 (3) (2014) 339-364, <https://doi.org/10.2753/PMR1530-9576370301>
- [25]A. Deslatte, E. Stokan, Sustainability Synergies or Silos? The Opportunity Costs of Local Government organisational Capabilities, *Public Adm. Rev.* 80 (6) (2020) 1024-1034, <https://doi.org/10.1111/puar.13237>

- [26]B. Yan, L. Wu, X. H. Wang, J. Wu, How can environmental intervention work during rapid urbanization? Examining the moderating effect of environmental performance-based accountability in China, *Environ. Impact Assess. Rev.* 86 (2021) 106476, <https://doi.org/10.1016/j.eiar.2020.106476>
- [27]B. Zhang, X. Chen, H. Guo, Does central supervision enhance local environmental enforcement? Quasi-experimental evidence from China, *J. Public Econ.* 164 (2018) 70-90, <https://doi.org/10.1016/j.jpubeco.2018.05.009>
- [28]X. Chen, Q. Qin, Y. M. Wei, Energy productivity and Chinese local officials' promotions: Evidence from provincial governors, *Energy Policy* 95 (2016) 103-112, <https://doi.org/10.1016/j.enpol.2016.04.041>
- [29]U. Awan, R. Sroufe, Sustainability in the circular economy: insights and dynamics of designing circular business models, *Applied Sci.* 12(3) (2022), <https://doi.org/10.3390/app12031521>
- [30]A. G. Hu, S. J. Zhou, Green development: Functional definition, mechanism analysis and development strategy, *China Population Resources and Environment*, 24 (1) (2014) 14-20, <https://doi.org/10.3969/j.issn.1002-2104.2014.01.003>
- [31]J. Smith, G. Andersson, R. Gourlay, S. Karner, B. E. Mikkelsen, R. Sonnino, D. Barling, Balancing competing policy demands: The case of sustainable public sector food procurement, *J. Clean. Prod.* 112 (2016) 249-256, <https://doi.org/10.1016/j.jclepro.2015.07.065>
- [32]L. Wu, T. Ma, Y. Bian, S. Li, Z. Yi, Improvement of regional environmental quality: Government environmental governance and public participation, *Sci. Total Environ.* 717 (2020) 137265, <https://doi.org/10.1016/j.scitotenv.2020.137265>
- [33]L. Laurian, M. Walker, J. Crawford, Implementing Environmental Sustainability in Local Government: The Impacts of Framing, Agency Culture, and Structure in US Cities and Counties, *Int. J. Public Adm.* 40 (3) (2017) 270-283, <https://doi.org/10.1080/01900692.2015.1107738>
- [34]J. Lee, S. Kim, Citizens' e-participation on agenda setting in local governance: Do individual social capital and e-participation management matter? *Public Manag. Rev.* 20 (6) (2018) 873–895, <https://doi.org/10.1080/14719037.2017.1340507>
- [35]J. Wu, M. Xu, P. Zhang, The impacts of governmental performance assessment policy and citizen participation on improving environmental performance across Chinese provinces, *J. Clean. Prod.* 184 (2018) 227–238, <https://doi.org/10.1016/j.jclepro.2018.02.056>

- [36]B. G. Glaser, A. L. Strauss, *Discovery of Grounded Theory: Strategies for Qualitative Research*, New York, Routledge (2017), <https://doi.org/10.4324/9780203793206>
- [37]J. Corbin, A. Strauss, *Basics of Qualitative Research (3rd ed.): Techniques and Procedures for Developing Grounded Theory*, London, Sage (2012), <https://doi.org/10.4135/9781452230153>
- [38]P. Awasthi, F. O. Walumbwa, Antecedents and consequences of servant leadership in local governance: Evidence from three case studies, *Public Adm. Rev.* 82 (6) (2022) 1077-1094, <https://doi.org/10.1111/puar.13552>
- [39]K. Charmaz, The power of constructivist grounded theory for critical inquiry, *Qual. Inq.* 23 (1) (2017) 34-45, <https://doi.org/10.1177/1077800416657105>
- [40]K. Charmaz, *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*, London, Sage, (2006).
- [41]X. Li, J. Du, H. Long, Green development behaviour and performance of industrial enterprises based on grounded theory study: Evidence from China, *Sustainability* 11 (15) (2019) 4133, <https://doi.org/10.3390/su11154133>
- [42]K. Tevapitak, A. H. J. Bert Helmsing, The interaction between local governments and stakeholders in environmental management: The case of water pollution by SMEs in Thailand, *J. Environ. Manage.* 247 (2019) 840-848, <https://doi.org/10.1016/j.jenvman.2019.06.097>
- [43]M. Kornilaki, X. Font, Normative influences: How socio-cultural and industrial norms influence the adoption of sustainability practices. A grounded theory of Cretan, small tourism firms, *J. Environ. Manage.* 230 (2019) 183-189, <https://doi.org/10.1016/j.jenvman.2018.09.064>
- [44]J. M. Corbin, A. Strauss, Grounded theory research: Procedures, canons, and evaluative criteria, *Qual. Sociol.* 13 (1) (1990) 3-21, <https://doi.org/10.1007/BF00988593>
- [45]C. H. Li, W. G. Yang, I. T. Shih, Exploration on the gap of single-and double-loop learning of balanced scorecard and organisational performance in a health organisation, *Heliyon* 7(12) (2021), <https://doi.org/10.1016/j.heliyon.2021.e08553>
- [46]E. Ünal, A. Urbinati, D. Chiaroni, R. Manzini, Value Creation in Circular Business Models: The case of a US small medium enterprise in the building sector, *Resour. Conserv. Recycl.* 146 (2019) 291-307, <https://doi.org/10.1016/j.resconrec.2018.12.034>
- [47]W. M. Tellis, Application of a case study methodology, *The qualitative report.* 3 (3) (1997) 1-19, <http://nsuworks.nova.edu/tqr/vol3/iss3/1>
- [48]L. Huwel, J. Van Eessen, J. Gunst, M. L. Malbrain, V. Bosschem, T. Vanacker, S. Verhaeghe, D. D. Benoit, What is appropriate care? A qualitative study into the

perceptions of healthcare professionals in Flemish university hospital intensive care units, *Heliyon* 9(2) (2023), <https://doi.org/10.1016/j.heliyon.2023.e13471>

[49]J. Lu, B. Li, H. Li, X. Zhang, Characteristics, exchange experience, and environmental efficiency of mayors: Evidence from 273 prefecture-level cities in China, *J. Environ. Manage.* 255 (2020) 109916, <https://doi.org/10.1016/j.jenvman.2019.109916>

[50]A. K. Al-Swidi, H. Gelaidan, R. M. Saleh, The joint impact of green human resource management, leadership and organisational culture on employees' green behaviour and organisational environmental performance, *J. Clean. Prod.* 316 (2021) 128112, <https://doi.org/10.1016/j.jclepro.2021.128112>

[51]E. Ünal, A. Urbinati, D. Chiaroni, Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry, *J. Manuf. Technol. Manag.* 30 (3) (2019) 561-589, <https://doi.org/10.1108/JMTM-02-2018-0061>

[52]S. R. Colwell, A. W. Joshi, Corporate Ecological Responsiveness: Antecedent Effects of Institutional Pressure and Top Management Commitment and Their Impact on organisational Performance, *Bus. Strateg. Environ.* 22 (2) (2013) 73-91, <https://doi.org/10.1002/bse.732>

[53]C. Shi, Q. Shi, F. Guo, Environmental slogans and action: The rhetoric of local government work reports in China, *J. Clean. Prod.* 238 (2019) 117886, <https://doi.org/10.1016/j.jclepro.2019.117886>

[54]F. Zhang, L. Zhu, Social media strategic capability, organisational unlearning, and disruptive innovation of SMEs: The moderating roles of TMT heterogeneity and environmental dynamism, *J. Bus. Res.* 133 (2021) 183-193, <https://doi.org/10.1016/j.jbusres.2021.04.071>

[55]D. Giacomini, L. Rocca, P. Zola, M. Mazzoleni, Local Governments' environmental disclosure via social networks: organisational legitimacy and stakeholders' interactions, *J. Clean. Prod.* 317 (2021) 128290, <https://doi.org/10.1016/j.jclepro.2021.128290>

[56]S. Sharma, Managerial interpretations and organisational context as predictors of corporate choice of environmental strategy, *Acad. Manage. J.* 43 (4) (2000) 681-697, <https://doi.org/10.2307/1556361>

[57]Y. C. Huang, C. H. Huang, Research on Relationships among Institutional Pressure, Stewardship behaviour, Green Supply Chain Management, and organisational Performance: The Case of Electrical and Electronics Industries in Taiwan, *J. Comput. Inf. Sci. Eng.* 16 (4) (2016) 041010, <https://doi.org/10.1115/1.4033435>

[58]M. Imran, I. Salisu, H. D. Aslam, J. Iqbal, I. Hameed, Resource and information access for SME sustainability in the era of IR 4.0: The mediating and moderating roles

- of innovation capability and management commitment, *Processes* 7 (4) (2019) 211, <https://doi.org/10.3390/pr7040211>
- [59]R. Andrews, M. J. Beynon, A. M. McDermott, organisational Capability in the Public Sector: A Configurational Approach, *J. Publ. Adm. Res. Theory* 26 (2) (2016) 239-258, <https://doi.org/10.1093/jopart/muv005>
- [60]Y. J. Cho, T. H. Poister, Human Resource Management Practices and Trust in Public organisations, *Public Manag. Rev.* 15 (6) (2013) 816-838, <https://doi.org/10.1080/14719037.2012.698854>
- [61]Y. Wiener, Commitment in organisations: A normative view, *Acad. Manage. Rev.* 7 (3) (1982) 418-428, <https://doi.org/10.5465/amr.1982.4285349>
- [62]J. Grandia, Finding the missing link: Examining the mediating role of sustainable public procurement behaviour, *J. Clean. Prod.* 124 (2016) 183-190, <https://doi.org/10.1016/j.jclepro.2016.02.102>
- [63]D. Resnick, G. Siame, organisational commitment in local government bureaucracies: The case of Zambia, *Governance* 36 (3) (2023) 933-952, <https://doi.org/10.1111/gove.12713>
- [64]D. Galliano, T. T. S. Siqueira, organisational design and environmental performance: The case of French dairy farms, *J. Environ. Manage.* 278 (2021) 111408, <https://doi.org/10.1016/j.jenvman.2020.111408>
- [65]G. Piña, C. Avellaneda, Central Government Strategies to Promote Local Governments' Transparency: Guidance or Enforcement? *Public Perform. Manag. Rev.* 42 (2) (2021) 357-382, <https://doi.org/10.1080/15309576.2018.1462215>
- [66]T. E. George, K. Karatu, A. Edward, An evaluation of the environmental impact assessment practice in Uganda: challenges and opportunities for achieving sustainable development, *Heliyon* 6 (9) (2020), <https://doi.org/10.1016/j.heliyon.2020.e04758>
- [67]J. Shi, Y. Su, behavioural strategies of manufacturing firms for high-quality development from the perspective of government participation: A three-part evolutionary game analysis, *Heliyon*, 9 (4) (2023), <https://doi.org/10.1016/j.heliyon.2023.e14982>
- [68]S. Yin, Y. Wang, J. Xu, Developing a Conceptual Partner Matching Framework for Digital Green Innovation of Agricultural High-End Equipment Manufacturing System Toward Agriculture 5.0: A Novel Niche Field Model Combined With Fuzzy VIKOR, *Front. Psychol.* 13 (2022) 924109, <https://doi.org/10.3389/fpsyg.2022.924109>
- [69]T. Dong, S. Yin, N. Zhang, New Energy-Driven Construction Industry: Digital Green Innovation Investment Project Selection of Photovoltaic Building Materials Enterprises

Using an Integrated Fuzzy Decision Approach, *Systems* 11 (1) (2023) 11, <https://doi.org/10.3390/systems11010011>

[70]C. Cloutier, A. Langley, What makes a process theoretical contribution? *organisation Theory* 1(1) (2020), <https://doi.org/10.1177/2631787720902473>.

[71]J. Schad, M. W. Lewis, S. Raisch, W. K. Smith, Paradox research in management science: Looking back to move forward, *Acad. Manag. Annals* 10(1) (2016) 5-64, <https://doi.org/10.5465/19416520.2016.1162422>

[72]H. Tsoukas, R. Chia, On organisational becoming: Rethinking organisational change, *organisation science*, 13(5) (2002) 567-582, <https://doi.org/10.1287/orsc.13.5.567.7810>

[73]S. P. Osborne, M. Powell, T. Cui, K. Strokosch, Value Creation in the Public Service Ecosystem: An Integrative Framework, *Public Adm. Rev.* 82 (4) (2022) 634-645, <https://doi.org/10.1111/puar.13474>

Appendix A

Informed Consent Form

Dear Sir or Madam

Greetings.

Thank you kindly for accepting the invitation to participate in a study on “Green Development behaviour of Local Governments”. This study is funded by the National Social Science Fund of China (grant number grant number 22AGL028). The project title is “Research on Path Choice and Guarantee Mechanism for Promoting Green Development”. Ethical approval for the study was conducted by the ethics committee of Cranfield University (No. CURES/16182/2022). Before you decide whether or not to accept to participate in this study, please read as much of the following as you can. It will help you understand the main elements of the study. The results of the interviews will be used for academic research only. Any information you provide will be kept strictly confidential and will not affect you personally or your organisation in any way, so please feel free to answer.

1. General Information

Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
Age	Under 30 years old <input type="checkbox"/> 31~40 years old <input type="checkbox"/> 41~50 years old <input type="checkbox"/> over 50 years old <input type="checkbox"/>
Education	Associate degree <input type="checkbox"/> Bachelor's degree <input type="checkbox"/> Master's degree <input type="checkbox"/> Doctoral degree <input type="checkbox"/>
Departments	Development and Reform Commission <input type="checkbox"/> Bureau of Industry and Information Technology <input type="checkbox"/> Bureau of Ecology and Environment <input type="checkbox"/> Bureau of Science and Technology <input type="checkbox"/> Bureau of City Administration <input type="checkbox"/> Bureau of Agriculture and Rural Affairs <input type="checkbox"/> Bureau of Commerce <input type="checkbox"/> Water Authority <input type="checkbox"/> Bureau of Housing and Urban Rural Development <input type="checkbox"/>

2. Interview Protocol

- 1) How do you understand and perceive the green development behaviour of local governments?
- 2) What role does your sector play in green development?
 - How do you think the region is currently going green compared to previous years?
 - What are the medium and long term plans related to green development in the region?
- 3) What factors drive the green development behaviours of local governments?
 - Do you think that local governments provide abundant resources such as human, financial and material resources for the implementation of green development behaviours?
 - What are the requirements from the superior governments for green development in the

region?

- What is the gap between the current level of green development in the region and the requirements set by the higher level?
- How do local governments promote the issue of green transformation and upgrading of industries?
- What kind of difficulties have local governments encountered in the process of building green industries?
- What difficulties have local governments experienced in promoting green living among residents?
- Has there been resistance to measures such as promoting waste separation?
- Do residents have requirements for local governments to implement green development behaviours?

Appendix B

Table5- 4 The coding interpretation of internal driving factors (example).

Illustrative quote (organisation, informant)	Initial concept	Categories
<p>a1. Green development includes the rain cycle, the reduction of waste, such as the process of reusing kitchen waste and industrial waste. (Development and Reform Commission, P2)</p> <p>a2. Green development is mainly about the protection of the ecological environment, ecological environment governance, and sustainable development. Meanwhile, green development highlights the issue of how the ecological economy is reflected in the GDP assessment. (Bureau of Science and Technology, P19)</p> <p>a5. In fact, the understanding of this green development can be divided into two levels, one is based on our work, to put this green concept into practice in the whole work. The other is full coverage of the green concept in life. Moreover, there is a macro level, in terms of the community of destiny, it all must start from itself, which is also a contribution to the society and the country. (Bureau of Science and Technology, P51)</p>	<p>aa1.Perceptions of local government leaders on green development (a1, a2...a5)</p>	
<p>a6. Green development is the concept of green development mentioned by General Secretary Xi Jinping since the 19th National Congress. In fact, this concept of green development has always been what we must implement. (Bureau of City Administration, P20)</p> <p>a7. Green development is a circular economy and minimization of pollutants, meaning a development model that minimizes harm to nature. (Bureau of Ecology and Environment, P31)</p>	<p>aa2.Green development as an issue related to the circular economy (a6, a7, a8)</p>	<p>A1. Local government leaders' cognition of green development (aa1, aa2, aa3)</p>
<p>a9. Green development refers to a model of development, including green production, green consumption, and other aspects. Specifically, it means that the whole society, from production and consumption to end-of-pipe management, should aim to achieve the best development benefits at the lowest cost to the environment. (Bureau of Ecology and Environment, P1).</p> <p>a13.I believed that green development requires industries with low energy consumption, low environmental pollution, and high output. There are rarely such industries in existence, as it takes time to nurture them in our current situation. Green development means developing their own core competencies so that the added value of their products would be raised. (Development and Reform Commission, P2)</p> <p>a31.Green development is clean production, improving production efficiency, and reducing energy consumption, which is all part of a category of green development. Secondly, I think the advanced technology, the advanced management, and the advanced governance are all covered in green development. (Development and Reform Commission, P36)</p>	<p>aa3.Local government leaders have a clear understanding of green development responsibilities (a9, a13... a31)</p>	
... ..		
<p>a10.We are responsible for water conservancy and green development is more closely related. The work of the river chief system is to emphasize the importance of clear water, smooth rivers, green banks, and beautiful ecology. We implement the river chief system, the end to achieve this goal, this is the direction of our development. (Water Authority, P22)</p> <p>a11There must be a combination of short-term and long-term goals, and with our local economic and social development, scientifically set some phased green development goals. Furthermore, as our</p>	<p>aa4.Leaders with a clear green development direction (a10, a11...a15)</p>	<p>A2. Local government green development commitment (aa4, aa5, aa6)</p>

grassroots environmental protection departments, we must plan the route scientifically to achieve our goals. (Bureau of Ecology and Environment, P32)

a15.Previous leaders attached more importance to the governance of the Yangtze River. As a result, we also placed great significance on the conservation of the Yangtze River, as water resources are extremely valuable and non-renewable. Although it generates huge economic value, we are now putting the protection of the ecological environment first. (Water Authority, P13)

a16.Short, medium, and long-term goals related to green development, such as ecological and environmental protection plans and energy saving plans. These can effectively improve regional green development planning and facilitate local governments' implementation of green development policies. (Bureau of Industry and Information Technology, P16)

a17.I believed that it is necessary to have a long-term planning process for our environmental protection milestones, which must be 5, 10, 20, or 30 years, and to unify them with our economic and technological development. As a primary environmental protection department, we must scientifically plan the route to achieve our goals. (Bureau of Ecology and Environment, P31)

aa5.Leaders with a clear plan for green development (a16, a17, a20)

a20.We currently have two main plans, one for the governance of Taihu Lake and another one based on the provincial plan 263. Moreover, our national soil pollution prevention and control plan includes relevant content on reducing chemical fertilizers and pesticide use. Regarding green development, our main task is to plan the spatial development of industry and emphasize the layout of industry. (Bureau of Agriculture and Rural Affairs, P23)

a21.Because the main work of our Energy Conservation Division is energy conservation and consumption reduction, plus the city's Energy Conservation Leading Group Office is also located in our department. Therefore, energy saving, and consumption reduction is an inevitable part of green development, and moreover, it should be described as a common vocabulary in our department. (Bureau of Industry and Information Technology, P5)

a43.We have always attached more importance to the cleaner production aspect. Every year we have a target in our energy saving and consumption reduction tasks that our department needs to audit whether the regional companies are producing cleaner. On the other hand, we have annual training on cleaner production, so that the enterprise's person in charge of energy saving management can attend the training and experience the technical level of cleaner production. For enterprises, we have mid-term assessment and evaluation; at the end of the year, we have assessment and acceptance and a specialized assessment scheme. There are relevant incentive policies for cleaner production. (Bureau of Industry and Information Technology, P16)

aa6.Green development integrated into local government departments (a21, a43...a51)

a51.Now our department has done a lot of work in advocating the vigorous development of green industries. On the one hand, we are promoting the green transformation of chemical enterprises. The second is to introduce new industries including some new materials and new energy. (Bureau of Industry and Information Technology, P37)

... ..

a22. Some departments are mainly responsible for planning and formulating policies, while the implementation of relevant policies requires the cooperation of other departments.....As a result, a Joint Implementation Provincial Joint Review Mechanism has been established and a Joint Environmental Review Mechanism has also been retained. (Bureau of Science and Technology, P6)

a23. An automatic monitoring system, for instance, detects the possibility of heavy pollution and it would warn of an emergency response, which would require the cooperation of other departments in the city during the emergency response..... Different policy indicators between various departments will lead to disharmony between the two departments. (Bureau of Ecology and Environment, P18)

a33. To improve water quality, not only one department can complete, but also the joint management of environmental protection, agriculture, industry, and other departments. This includes the ecological and environmental departments, the agricultural department, and the industrial information department. (Water Authority, P22)

a69. The second aspect is to protect the ecological space of rivers and lakes. Finally, it is to clarify the ecological protection red line. In this respect, our department communicates with the ecological environment department and the housing construction department. (Water Authority, P43)

a30. First, we needed technological innovation, because the staff of our ecology and environment department, from the municipal level to the districts and counties, totals around seven hundred people. It is true that there was pressure to build up the team, especially in terms of the lack of personnel related to environmental field monitoring. (Bureau of Ecology and Environment, P18)

a33. Every work related to green growth, especially environmental protection, requires a lot of funds. (Bureau of City Administration, P28)

a46. "Installing environmental supervision systems such as automatic monitoring to encourage enterprises to develop green environmental protection to make full use of pollution prevention and control facilities and meet the emission standards. (Bureau of Ecology and Environment, P31)

a50. Adopting the grid approach of environmental protection can save a lot of human resources to realize the adequate supervision of local enterprises.....some environmental events need emergency treatment, and these costs put pressure on local governments. (Bureau of Ecology and Environment, P32)

aa7. Inter-organisational coordination governance capacity (a22, a23, a33...a69)

A3. Local government green development capacity (aa7, aa8)

aa8. Resource allocation capacity of local governments (a30, a33, a46, a50)

.....

Table5- 5 The coding interpretation of external environmental pressures (example).

Illustrative quote (organisation, informant)	Initial concept	Categories
<p>a29. Local governments strictly implement the requirements for the issuance of ecological and environmental protection plans by the State Council. (Water Authority, P12)</p> <p>a36. The higher authorities had clear requirements for the green development of our city, for illustration, there is an annual reduction target for energy consumption per unit of GDP, and the environmental protection department had a target for total emission reduction, both the higher authorities and we have been placing growing emphasis on green development. (Bureau of Industry and Information Technology, P16)</p> <p>a49. Firstly, the National Water Pollution Control Law has regulations on the water protection zones themselves. Secondly, the provincial requirement is the 263-transfer action. 263 transfer action refers to the two reductions, six treatments, and three upgrades. The 'two reductions' refer to the reduction of total coal consumption and the reduction of backward chemical production capacity. The province has added the remediation of foundry enterprises to the 'two reductions' in conjunction with the outstanding problems in the region. The "six treatments" refer to the treatment of the water environment of Taihu Lake and Yangtze River basin, domestic waste, black smelly water bodies, livestock and poultry breeding pollution, volatile organic compounds, and environmental hazards. The 'three upgrades' refer to the upgrading of the level of ecological protection, the level of environmental and economic policy regulation, and the level of environmental law enforcement and supervision. (Water Authority, P22)</p> <p>a75. According to the arrangements of the Provincial Water Resources Department, our city carried out 263 actions, followed by the implementation of the Yangtze River Economic Belt for high-quality development, as well as the full implementation of the national water conservation actions. (Water Authority, P45)</p>	<p>aa9. Green development regulations and requirements (a29, a36, a49...a75)</p>	<p>A4. Regulation of Superior Departments (aa9, aa10, aa11)</p>
<p>a44. Increasing the demand for reduction of chemical fertilizers and pesticides in the planting industry and the withdrawal of aquaculture industry from the region." (Bureau of Agriculture and Rural Affairs, P24)</p> <p>a53. The establishment of the central environmental supervision system urges the superior departments to inspect the work progress of our department every year." (Bureau of Housing and Urban-Rural Development, P27)</p> <p>a83. During the major environmental inspection, lots of substandard electroplating enterprises suspended all production, which also affected construction machinery in our region.....Then further rectification measures were needed to restore production." (Development and Reform Commission, P40)</p>	<p>aa10. Environmental supervision (a44, a53...a83)</p>	
<p>a37. The assessment of green development was based on quantified indicators, specifically involving many indicators, such as environmental quality indicators, and indicators of industrial development. (Bureau of Ecology and Environment, P18)</p>	<p>aa11. Green development assessment indicators (a37, a45...a68)</p>	

<p>a45.Green and high-quality agricultural products for the agricultural sector as a critical assessment index. (Bureau of Agriculture and Rural Affairs, P24)</p>		
<p>a68.In fact, the assessment of green development is still more of a system of indicators, such as total emissions, environmental quality, as well as nature reserves, and ecological protection levels. Specifically, the assessment of the environmental protection level depends on whether the forest coverage rate and the proportion of nature reserves have been increased. (Bureau of Ecology and Environment, P31)</p>		
... ..		
<p>a19.The market competition is very fierce at present, and enterprises are trying to reduce costs and achieve energy conservation and emission reduction.” (Bureau of Industry and Information Technology, P5)</p>		
<p>a25.Entrepreneurs slowly realize that green development is for the benefit of future generations. (Bureau of Ecology and Environment, P18)</p>	<p>aa12.Green development demands of enterprises (a19, a25...a81, a92)</p>	<p>A5. Green Development Demands of Enterprises and Residents (aa12, aa13)</p>
<p>a81.According to the current market environment, the enterprise’s development concept is updating. If it cannot achieve green development, it will lack vitality for the enterprise.....because of the strict accountability mechanism, the enterprises must satisfy the environmental protection requirements. Otherwise, they will face the risk of shutting down or stopping production and renovation. (Development and Reform Commission, P36)</p>		
<p>a92.The specificity of the industry (industrial enterprises) forces entrepreneurs to have an intensely green sense of transformation and upgrading. Consequently, all the types of equipment of these enterprises are advanced and include advanced technology. (Development and Reform Commission, P41)</p>		
<p>a27.In addition to the risks posed to us by industrial pollution, people are now noticing the greening of lifestyles and the impact of such lifestyles.....I suggested that the indicators of public satisfaction were becoming increasingly difficult to achieve, mainly because people had become more demanding. (Bureau of Ecology and Environment, P18)</p>	<p>aa13.Green development demands of residents (a27, a48, a70, a87...a126)</p>	
<p>a48.The public will regularly express their green development demands to local governments through petitions and reports. (Bureau of City Administration, P29)</p>		
<p>a70.If similar events often occur in this area, the local government will analyse and respond. (Bureau of Ecology and Environment, P31)</p>		
<p>a87.The public is now pursuing a sense of spiritual happiness, such as blue sky, white clouds, green water, and green mountains. (Development and Reform Commission, P36)</p>		
<p>a126.Residents living around industrial enterprises think that the enterprise will have an impact on their living environment, including soil and air. (Development and Reform Commission, P41)</p>		
... ..		
<p>a18.Through media exposure, the relevant authorities would examine the gases emitted by the enterprises. A lot of problems with pollution from enterprises originate from reports by the public and exposure by the media. Then, the relevant departments conduct inspections and eventually determine how to impose penalties. (Bureau of Science and Technology, P6)</p>	<p>aa14.Public reporting and monitoring through the media (a18...a106, a113)</p>	<p>A6. Media Influence (aa14)</p>

a106.The department will evaluate the environmental protection credit of enterprises annually; the results will be revealed through social media. (Development and Reform Commission, P37)

a113.There have been numerous petitions from people living close to industrial enterprises. The residents thought that the enterprises had an impact on the soil, on the air, and on the surrounding living environment.....social media will respond to local river water pollution incidents. (Development and Reform Commission, P40)

a153. Social media will report local air quality pollution incidents. (Bureau of Commerce, P49)

Table5- 6 The coding interpretation of the basis of regional green development (example).

Illustrative quote (organisation, informant)	Initial concept	Categories
a26.Build a green development society, the public needs to bear specific responsibilities for the environment in both production and life.....the awareness of green development of some production and operation entities still needs to be improved. (Bureau of Agriculture and Rural Affairs, P10)		
a35.Despite local governments' emphasis on ecological benefits, farmers' economic benefits remain a force to be reckoned with since farmers need to pay more attention to life pressure. (Bureau of Agriculture and Rural Affairs, P23)		
a47.Residents have not formed a good habit of protecting the environment. Environmentally conscious people could travel with public morality and care for the environment. However, there are still citizens with low quality, which is inevitable in the development of a country or a region. (Bureau of City Administration, P29)	aa15.Social Basis (a26, a35, a47, a59...a226)	
a59.Only when residents have more green development knowledge, they will participate more actively in green development actions. (Bureau of Ecology and Environment, P31)		
a226.Some enterprises have environmental protection facilities, but to pursue economic performance and save costs, enterprises choose not to operate these facilities, so entrepreneurs ignore their social responsibility. (Bureau of Science and Technology, P52)		A7. The Basis of Regional Green Development (aa15, aa16)
a62.The region's industrial structure is biased, and industries with heavy pollution such as electric power and chemical industry account for a large proportion, resulting in the relatively high pollutant discharge intensity per unit area in the province. (Bureau of Ecology and Environment, P31)		
a110.The small and medium-sized enterprises accounted for nearly 1/3 of the whole city. From the perspective of industrial structure, it is high pollution and energy consumption. (Development and Reform Commission, P36)	aa16.Industry basis (a62, a110...a136)	
a136.Three pillar industries in the city are emerging industries, which have little pollution to the environment. (Development and Reform Commission, P41)		
.....		

6 ANALYSING THE MECHANISMS OF INFLUENCING FACTORS ON LOCAL GOVERNMENTS GREEN DEVELOPMENT BEHAVIOUR: EMPIRICAL EVIDENCE FROM CHINA

Xiaowen Zhu^{1,2}, Unal Enes², Jianguo Du¹, Xingwei Li³, Phil Longhurst⁴

1 School of Management, Jiangsu University, Zhenjiang 212013, People's Republic of China

2 Centre for Design, Cranfield University, Cranfield, Bedfordshire, MK43 0AL, UK

3 College of Architecture and Urban-Rural Planning, Sichuan Agricultural University, Chengdu 611830, People's Republic of China

4 School of Water, Energy, and Environment, Cranfield University, Cranfield, Bedfordshire, MK43 0AL, UK

Submitted to the Academy of Management Conference

Abstract

This study examines the determinants of local government green development behaviour. Specifically, our research focuses on the internal and external factors that can affect the implementation of green development behaviour by local governments. Based on surveys of local officials, the results indicate that internal driving factors and external environmental pressures are critical predictors of implementing green development behaviours. Additionally, the basis of regional green development positively impacts the implementation of green development behaviours. The research results provide clear guidance for local governments to formulate green development policies and contribute to improving the effectiveness of green development behaviour.

Keywords

Green development; organisational behaviour; local government practice; structural equation modelling

List of abbreviations

COG	Local government leaders' green cognition
COM	Local government green development commitment
CAP	Local government green development capacity
SDR	Superior departments regulation
GDD	Green development demands of enterprises and residents
MI	Media influence
GDB	Local government green development behaviour
IDF	Internal driving factors
EEP	External environmental pressures
RGBS	Social green development base
RGBI	Industrial green development base

6.1 Introduction

Implementing green development practices has become a priority on the organisational agendas to cope with global climate change (Marrucci et al., 2021). As public organisations, local governments play a significant role in mitigating climate change and addressing environmental issues through their actions (Crucke et al., 2022). Local municipalities are more capable of solving these environmental issues than the central government (Tevapitak & Helmsing, 2019). Despite local authorities remaining at the centre of sustainability initiatives (Wang et al., 2012), they face multiple obstacles in implementing environmental sustainability (Laurian et al., 2017). On the one hand, several policy plans incentivise, guide, and monitor the adoption of green practices, such as the implementation of green procurement by local governments (Bryngemark et al., 2023). However, including environmental considerations in local (municipal) green practices is typically voluntary (Pouikli, 2021). On the other hand, local government officials are susceptible to ignoring environmental issues in pursuit of their political achievements (Ye et al., 2021). Besides, the complexity of the contextual social environment (Osborne et al., 2022) and the conflicting interests of many stakeholders involved in local decision-makers implementation of green development strategies have become ever-challenging.

Previous studies tend to prioritise the effects of local government policy implementation whilst mostly lacking the core issue of local government green behaviour in their pursuit of green development. Several scholars have explored studies related to green policies of local governments. Specifically, they focused on selecting policy instruments (Smedby, 2020). Initial evidence also examined the factors that influence local sustainable practices, comprising the internal characteristics of local governments (Anessi-Pessina & Sicilia, 2020) and the interaction of local governments with the public and local communities (Krause et al., 2019; Yudarwati & Gregory, 2022). However, little attention is given to integrating these factors and focusing on the factors that influence the green development behaviour of local governments.

Accordingly, this study seeks to examine the mechanisms that influence the green development behaviour of local governments. Local government was chosen as it is the closest institution to stakeholders such as businesses and the public (Awasthi & Walumbwa, 2022) and is a perfect context for studying the implementation of green development behaviours. Data for the study is obtained from local government departments related to green development in 12 regions in eastern, central, and western China. We sought to answer the following questions: How do internal and external factors influence the green development behaviour of local governments? Furthermore, how do the basis of regional green development, such as industry and social basis, influence the implementation of green development behaviours?

Given the complexity of local governments and their complex social environment, this study combines management commitment, institutional theory and action situations to construct a model of the factors influencing green development behaviour. Among these, managerial commitment forms the basis of our model as it significantly influences the formation of green development behaviour in local governments. In contrast to the moderating role of managerial commitment in private organisations (Colwell & Joshi, 2013), managerial commitment plays an indispensable mediating role between external environmental pressures and green development behaviour. Furthermore, this paper analyses external environmental pressures in the context of institutional and stakeholder theories, highlighting the green development needs of firms and the public. In particular, there is a demand for enterprises to transition to green actively. The study findings provide new ideas for local governments to implement green development behaviour better.

The structure of this article is as follows. Section 2 describes the theories and hypotheses related to the factors influencing the green development behaviour of local governments, and Section 3 presents the research methodology. Section 4 provides the results of the data analysis. Finally, section 5 discusses the findings, and section 6 offers conclusions and recommendations for future research.

6.2 Literature Review and Hypotheses Development

6.2.1 External Environmental Pressures and Internal Driving Factors

External factors affect organisation members regarding how they consciously select, implement, and manage their actions to achieve the expected results (Darvishmotevali & Altinay, 2022). The institutional environmental pressures highlighted in this study include coercive pressures and normative pressures. Strict central environmental regulations and requirements have contributed to a growing understanding of environmental pollution and environmental protection among local governments (Wu et al., 2020). Furthermore, institutional environmental pressures can influence local government leaders' cognitions and emotions regarding the institutional environment, leading to environmental commitment (Huang & Huang, 2016). Resnick and Siame (2021) also identified the degree of political interference as a potential factor influencing commitment. Specifically, higher levels of government need to monitor local governments to ensure that the latter have green development plans and programs in place. Furthermore, as the concept of green development continues to grow, stakeholders' demand for green development is also rising. For instance, the demand of the public for an excellent urban environment is improving. Fan et al. (2021) identified that a joint environmental monitoring system, including enterprises, the public and the media, is required to force local governments to protect environmental quality. Consequently, besides businesses and the public, the media can also impact local governments' green development understanding. Media influence will facilitate local governments to acquire knowledge about green development and the implementation of green development policies more effectively, thus immediately raising awareness of green development and improving its realisation (Benitez et al., 2018). Zhang et al. (2020) similarly stated that media influence contributes to local governments' awareness of green development. Therefore, the following hypotheses are proposed.

H1-1a: The regulation of superior departments has a significant positive impact on local government leaders' cognition of green development.

H1-1b: The regulation of superior departments has a significant positive impact on local government's green development commitment.

H1-1c: The regulation of superior departments has a significant positive impact on local government's green development capacity.

H1-2: The green development demands of enterprises and residents have a significant positive impact on local government's green development commitment.

H1-3a: Media influence has a significant positive impact on local government leaders' cognition of green development.

H1-3b: Media influence has a significant positive impact on local government's green development commitment.

H1-3c: Media influence has a significant positive impact on local government's green development capacity.

6.2.2 External Environmental Pressures and Green Development Behaviour

Galliano and Siqueira (2021) considered the interaction with the external environment as a vital aspect of organisational behaviour. In this study, we found that the external environmental pressures contain the regulation of superior departments, stakeholders' green development demands, and media influence. The strict environmental laws and assessment systems of superior government departments will affect the behaviour choice of local governments, as it is also underscored by Piña and Avellaneda (2019). China is currently implementing the strictest environmental protection regulations and environmental responsibility system, which might positively or negatively impact the green development behaviour of local governments. Jin (2017) pointed out that the central government has proposed the concept of ecological civilisation as a new rule of action for local governments, which is a fundamental factor influencing the implementation of local environmental policies (Ren, 2018)

A couple of researchers proposed that bottom-up public protest will also affect the government's actions (Gao et al., 2020). Kapera (2018) also emphasised that

stakeholders' interests must be considered in the decision-making process related to sustainable development. With the increasing attention of the public to the living environment (Shi et al., 2019), the public's requirements for regional green development continue to improve, such as the increasing demand for green products (He et al., 2019), thus prompting local governments to implement green development behaviour, which also verifies that the public can influence the formulation of environmental governance policies (Lee & Kim, 2018). In addition, this study suggests that enterprises' green development demands include three aspects. One is the improvement of entrepreneurs' awareness of green development, which requires enterprises to carry out green transformation and upgrading. The other is the green demand of the market, which promotes the continuous improvement of entrepreneurs' green development demands (Reyes-Rodríguez, 2021). The last aspect is that under strict environmental regulations and supervision, corporate social responsibility requires enterprises to carry out green development (Melissen et al., 2018). At the same time, enterprises also hope that local governments will provide them with actions such as green development publicity.

Furthermore, media influence has created external pressure on local governments. As a result, a growing number of people report through social media, and the media will disclose pollution events through reports, which plays a supportive role in environmental governance and parallels the stance of Shi et al. (2019). Furthermore, some scholars pointed out that the rational use of media will also promote the acquisition of organisational knowledge and improve organisational performance (Benitez et al., 2018). Based on this, this study believes that social supervision will affect the green development behaviour of local governments. Liu (2019) argued that the news media perform the role of environmental monitoring in environmental governance, thus helping to advance the environmental governance behaviour of local governments. Therefore, the following hypotheses are proposed,

H2-1: The regulation of superior departments has a significant positive impact on the green development behaviour of local governments.

H2-2: The green development demands of enterprises and residents have a significant positive impact on the green development behaviour of local governments.

H2-3: Media influence has a significant positive impact on the green development behaviour of local governments.

6.2.3 Internal Driving Factors and Green Development Behaviour

The internal driving factors include local government leaders' cognition of green development, green development commitment and green development capacity. Local government leaders' cognition of green development is crucial. Particularly in China, as the concept of green development continues to develop, local government leaders have a certain level of understanding of this issue. Cognition includes the processing of information, sense-making, information dissemination and reflective learning. Civil servants' motivations for green procurement have been shown to relate to awareness and knowledge (Bryngemark et al., 2023). Top managers' perceptions of the external environment shape organisational behaviour and environmental strategies (Sharma, 2000). As is consistent with social identity theory, the awareness and cognition of organisation members will affect the cognition of the organisation and thus its behaviour choices (Ashforth & Mael, 1989). The implementers' final understanding of the overall intention, specific standards, and objectives of the policy is crucial for the successful implementation of the policy. This means that local government officials need to fully understand the concepts and policies of green development.

Commitment includes attitudinal commitment and behavioural commitment (Ünal et al., 2019a). As is reflected in this study, the concept of attitudinal commitment, according to which organisations focus on the alignment of organisational values and goals with those of individuals (Salancik, 1977), emphasises that individuals develop a strong belief in organisational values, as well as a willingness to work for the benefit of the organisation. Grandia (2016) noted the importance of a willingness to implement sustainable initiatives and procurement. Willingness

influences behaviour and is constrained by the external environment (Kornilaki & Font, 2019).

Green development capacity is divided into interdepartmental coordination governance capacity and resource allocation capacity. Reyes-Rodríguez (2021) suggested that organisational capability, as an intermediary attribute, will help develop a deeper understanding of the relationship between environmental management practices and competitive advantages. Interorganisational relationship theory holds that there are different degrees of resource dependence among organisations, which can easily lead to inter-organisational conflicts, making the policy implementation process more chaotic. The ability to coordinate and organise joint governance between various departments will affect the implementation of green development behaviour. Resource allocation capacity guarantees that local governments can implement green development behaviour successfully. Improper resource allocation will impede ecological efficiency, which is in line with the finding of Wang et al. (2020). Therefore, the following hypotheses are proposed:

H3-1: Local government leaders' cognition of green development has a significant positive impact on the green development behaviour of local governments.

H3-2: Local government's green development commitment has a significant positive impact on the green development behaviour of local governments.

H3-3: Local government's green development capacity has a significant positive impact on the green development behaviour of local governments.

In summary, and in conjunction with the findings of our qualitative study (Study A), the following hypotheses are proposed.

H4-1a: Local government leaders' cognitions of green development play a mediating role in the relationship between superior department regulation and green development behaviour.

H4-1b: Local government leaders' cognitions of green development play a mediating role in the relationship between media influence and green development behaviour.

H4-2a: Local government's green development commitment plays a mediating role in the relationship between superior department regulation and green development behaviour.

H4-2b: Local government's green development commitment plays a mediating role in the relationship between green development demands of enterprises and residents and green development behaviour.

H4-2c: Local government's green development commitment plays a mediating role in the relationship between media influence and green development behaviour.

H4-3a: Local government's green development capacity plays a mediating role in the relationship between superior department regulation and green development behaviour.

H4-3b: The local government's green development capacity mediates the relationship between media influence and green development behaviour.

6.2.4 The Moderating Effect of Basis of Regional Green Development

The different resource endowments, environmental conditions, and economic bases of regions lead to heterogeneity between regions (Li et al., 2019a). Ostrom (1999) stated that the action situation affects the behaviour of actors, the communication mode between actors, and the ensuing results. In recent years, multiple scholars have also considered regional characteristics in their research, believing that regional characteristics will affect environmental performance and green development efficiency (Marulanda-Grisales & Figueroa-Duarte, 2021). Simultaneously, due to the different green industrial and social foundations in each region, the perceptions of green development held by sectoral leaders manifest variability. Accordingly, the basis of regional green development has a moderating effect on green development behaviour. However, existing studies

yielding insights on the impact of regional characteristics on local governments' implementation of green development tend to be scarce. Therefore, in the context of green development behaviour, this thesis has integrated this action situation into the model and holds that the basis of regional green development is a crucial moderating factor. This study also finds that the regional industrial and social bases affect the degree of difficulty of green development for local governments. Therefore, the following hypotheses are proposed.

H5-1a: The social base of regional green development positively moderates the relationship between internal driving factors and green development behaviour.

H5-1b: The social base of regional green development positively moderates the relationship between external environmental pressures and green development behaviour.

H5-2a: The industrial base of regional green development positively moderates the relationship between internal driving factors and green development behaviour.

H5-2b: The industrial base of regional green development positively moderates the relationship between external environmental pressures and green development behaviour.

According to the above hypotheses, this study constructs a theoretical model, as shown in Figure 6-1.

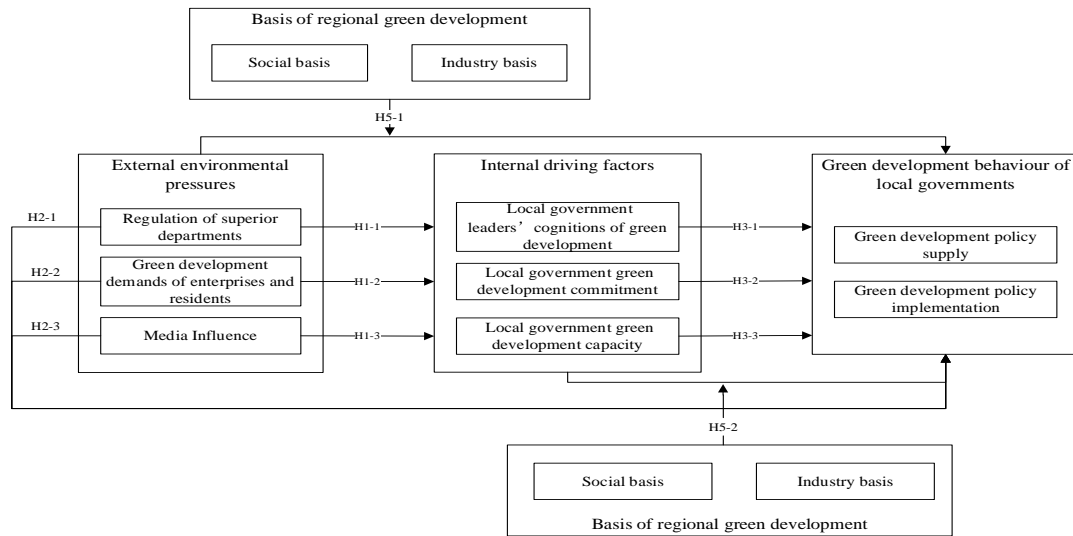


Figure6- 1The conceptual model of green development behaviour of local governments

6.3 Method

A structural equation model was also applied to validate the conceptual model and examine the relationship between internal driving factors, external environmental pressures, regional green development basis, and local government green development behaviour. This study applied a questionnaire survey for data collection and selected the sample meticulously. The main reasons for this are as follows. Firstly, the green development behaviour of local governments is a complicated issue. Secondly, officials from local government departments related to green development were selected for the survey because they could adequately understand the relevant concepts in this study and could accurately respond to the survey questions. As a result, we selected local government officials from nine sectors related to green development in twelve provinces and cities in eastern, central and western China for the questionnaire survey. The specific provinces and cities mentioned were Shanghai, Zhejiang, Jiangsu, Hebei, Fujian, and Guangdong in the east. Central provinces and cities covered include Anhui, Jiangxi, and Hubei. The western provinces consist of Sichuan, Shaanxi, and Gansu. The specific information is shown in Table 6-1.

Table6- 1 Descriptions of information of participants

Characteristics	Data categories	No.of participants	Percentage
Gender	Male	407	56.37
	Female	315	43.63
Age	21-30 years old	213	29.50
	31-40 years old	330	45.71
	41-50 years old	110	15.24
	51-60 years old	69	9.56
Position	Department Heads	33	4.57
	Frontline Employees	689	95.43
Education	Associate degree	40	5.54
	Bachelor degree	506	70.08
	Master degree	169	23.41
	Doctoral degree	7	0.97
	Development and Reform Commission	71	9.83
Department	Bureau of Industry and Information Technology	96	13.30
	Bureau of Ecology and Environment	106	14.68
	Bureau of Science and Technology	51	7.06
	Bureau of City Administration	57	7.89
	Bureau of Agriculture and Rural Affairs	66	9.14
	Bureau of Commerce	71	9.83
	Water Authority	65	9.00
	Bureau of Housing and Urban Rural Development	77	10.66
Other departments	62	8.59	

Additionally, the questionnaires have been validated by professionals, and a pre-study has been conducted by people with backgrounds similar to the target population, resulting in the final questionnaire for this study. The official questionnaire combines an online questionnaire and a field survey. This study applies the “10-times rule” principle to calculate the number of samples needed for the study (Hair et al., 2011; Le & Ikram, 2022). The study tests the reliability and validity of the questionnaire data using SPSS 26.0. Then, it examines the proposed hypotheses with the assistance of AMOS 26.0 to explore further the mechanisms between internal drivers, external environmental pressures, regional green development foundations and local government green development behaviour. The following sections describe in detail the steps involved in developing a structural equation model.

6.3.1 Measures

All items were measured using Likert-type scales from 1 (strongly disagree) to 5 (strongly agree). Appendix B lists all items of the scales used in the study.

Green development behaviour of local governments. This is the outcome variable, the two dimensions of green development behaviour (local government's green development policy formulation and local government's green development policy implementation). The study also drew on the research design of scholars such as Du et al. (2023), Vagnoni et al. (2018), and Zhan et al. (2018) to form a scale for measuring the green development behaviour of local governments. Green development policy formulation of local governments was measured using six items; the sample item includes "Local governments actively formulate regulations related to green development" ($\alpha=0.873$). Green development policy implementation of local governments was measured with eight items; the sample item includes "Local governments enforce strict environmental evaluation standards for newly introduced enterprises" ($\alpha=0.866$).

Internal driving factors. Referring to studies by Chen (2011), and Bryngemark et al. (2023). Local government leaders' green perceptions were measured using five items; sample items included "local government leaders have green values". ($\alpha = 0.824$). Referring to the studies of Colwell and Joshi (2013) and Ünal et al. (2019a), local governments' commitment to green development consisted of three items. The sample items include "Green development is a priority for local governments" ($\alpha=0.795$). Referring to the studies of Cho and Poister (2013) and Deslatte and Stokan (2020), green development capacity was measured by three items; the sample items included "capacity of local governments to address green development challenges in their regions" ($\alpha=0.796$).

External environmental pressure. Three dimensions of external environmental pressure (regulations of higher authorities, green development needs of businesses and residents, and media influence). Referring to the studies of Piña and Avellaneda (2019) and Resnick and Siame (2023), superior department regulation includes four question items, and the sample items include "the degree of perfection of the green development regulations promulgated by the higher authorities" ($\alpha=0.829$). The green development needs of enterprises and residents are measured with four items; sample items include "the extent to which residents of the region are motivated to report environmental violations to local

governments” ($\alpha=0.841$). Zhang et al.’s (2020) study, media influence was measured with five items; sample items included “the extent to which the news media publicise green living among residents in the region” ($\alpha=0.848$).

The basis of regional green development. Two dimensions of the basis of regional green development (social basis and industry basis). Seven items developed by Chen (2011) were used. Social basis was measured using four items; the sample item includes “The degree of awareness of green development of residents” ($\alpha=0.830$). Industry basis was measured using three items; the sample item includes “The degree of the industry actively changes to green and low-carbon circular development” ($\alpha=0.761$).

6.4 Results

6.4.1 Descriptive Statistical Analysis

The construct-wise descriptive statistical measures such as mean, standard deviation, and correlations were studied as presented in Table 6-2. As evident from the table, all the constructs have a mean above 3 that ranges from 3.875 to 4.383 with a slight deviation. This expounds that most respondents have responded within the scale of agreed to the strongly agreed range to most of the items measuring the influencing factors among green development behaviour. Standard deviation is used to measure the difference in opinions of survey respondents. The low standard deviation value establishes differences among the participants’ response patterns. Further, the key variables’ correlations were statistically significant at $p < 0.001$. This means that the constructs are positively related to the green development behaviour of local governments.

Table6- 2 Descriptive statistics and inter-construct correlations

Construct	Mean	SD	CR	1	2	3	4	5	6	7	8	9
1 Green development policy formulation of local governments	4.233	0.585	0.875	0.733								
2 Green development policy implementations of local governments	4.260	0.567	0.887	.772**	0.707							
3 Green cognition of local government leader	4.383	0.533	0.825	.526**	.564**	0.696						
4 Green development commitment	4.318	0.620	0.801	.699**	.715**	.537**	0.757					
5 Green development capacity	4.014	0.750	0.801	.440**	.434**	.498**	.433**	0.758				
6 Regulations of superior departments	4.131	0.629	0.828	.542**	.546**	.610**	.533**	.509**	0.740			
7 Green development demands of enterprises and residents	4.011	0.665	0.844	.424**	.434**	.414**	.443**	.375**	.518**	0.759		
8 Media influence	3.997	0.686	0.852	.601**	.645**	.511**	.541**	.519**	.628**	.602**	0.731	
9 Social green development base	3.859	0.628	0.819	.419**	.441**	.446**	.431**	.481**	.569**	.540**	.620**	0.729
10 Industrial green development base	3.916	0.668	0.759	.422**	.438**	.418**	.399**	.470**	.539**	.559**	.580**	.681**

6.4.2 Exploratory Factor Analysis

EFA was conducted on the data set to identify latent or underlying factors. Measures of sample adequacy such as Bartlett's test of sphericity (approximately $X^2=17860.98$, degree of freedom $df=990$, significance= 0.000) indicate that the co-relation matrix is significantly different from the identity matrix. KMO value (0.959) showed that data were fit for factor analysis as it was above the cut-off value of 0.6 (Kim & Mueller, 1978). Construct wise, Cronbach's alpha value was above 70% (Cronbach, 1951). Principal component analysis (PCA) was employed along with varimax rotation. The commonalities of all the measures were above the cut-off value of 0.5 (Hair et al., 2006). A minimum cut-off criterion for item deletion was factor loadings less than 0.5 (Hair et al., 2006). Ten factors were extracted, explaining a total variance of 65.490%. These factors were labelled as green cognition of local government leaders, green development commitment, green development capacity, regulations of superior departments, green development demands of enterprises and residents, media influence, social basis, industry basis, green development policy formulation of local governments and green development policy implementation of local governments.

6.4.3 Structural Model Evaluation

SEM was used to evaluate the parameters of the structural model. Firstly, the model fit was evaluated, and from the AMOS results, the CMIN/df value was 2.495, the RMSEA value was 0.046, the GFI value was 0.890, the AGFI value was 0.874, the IFI value was 0.933, the TLI value was 0.927, and the CFI value was 0.933. Secondly, the results of hypotheses testing, and the path coefficients are presented in Table 6-3. The results of the empirical study based on the AMOS output indicate a hypothesised positive relationship between the different exogenous and endogenous constructs. The structural model was assessed by examining the path coefficients (beta weights), summarising the relationship quality between the dependent and independent variables. A summary of this causal model is illustrated in Table 6-3.

Table6- 3 Summary of support for hypotheses

Paths	Standardized Regression Weights (β)	S.E.	P Value	Test results
H1-1a: SDR→COG	0.675	0.052	***	Support
H1-1b: SDR→COM	0.434	0.061	***	Support
H1-1c: SDR→CAP	0.411	0.062	***	Support
H1-2: GDD→COM	0.055	0.056	0.336	No support
H1-3a: MI→COG	0.115	0.049	*	Support
H1-3b: MI→COM	0.294	0.075	***	Support
H1-3c: MI→CAP	0.300	0.067	***	Support
H2-1: SDR→GDB	-0.109	0.053	0.131	No support
H2-2: GDD→GDB	-0.132	0.035	**	No support
H2-3: MI→GDB	0.408	0.051	***	Support
H3-1: COG→GDB	0.179	0.050	***	Support
H3-2: COM→GDB	0.685	0.050	***	Support
H3-3: CAP→GDB	-0.032	0.031	0.401	No support

Note(s): ***p-value < 0.001 level of significance.

Source(s): Compiled from AMOS output

According to the results in Table 6-4, the direct effect of higher sector regulation on local government green development behaviour is not significant. Instead, superior department regulation indirectly affects local government green development behaviour by influencing local government leaders' green development cognition, so local government leaders' green development cognition fully mediates, and hypothesis H4-1a is valid. The indirect, direct, and total effects of media influence on local government green development behaviour are all significant, so hypothesis H4-1b is valid. Second, in Table 6-4, the direct effect of superior department regulation on local government green development behaviour is insignificant. In contrast, superior department regulation indirectly affects local government green development behaviour by influencing local government green development commitment, so local government leaders' green development cognition fully mediates, and Hypothesis H4-2a is established. The indirect effect of enterprises and residents' green development demands on local government green development behaviours is insignificant, so hypothesis H4-2b is rejected. The indirect, direct, and total effects of media influence on local governments' green development behaviours through local government green development commitment are significant, so hypothesis H4-2c is established. Third, in Table 6-4, the indirect

effect of superior department regulation through the local government's green development capability, which affects the local government's green development behaviour, is insignificant, so hypothesis H4-3a is rejected. The indirect effect of media influence through local government green development capability, which in turn affects local government green development behaviour, is insignificant, so hypothesis H4-3b is rejected.

Table6- 4 Mediation effect test results

Paths	Effect	Effect value	Boot SE	Boot LLCI	Boot ULCI	P
H4-1a: SDR → COG → GDB	Total	0.171	0.057	0.049	0.286	**
	Direct	0.012	0.061	-0.101	0.130	0.838
	Indirect	0.159	0.040	0.092	0.247	***
H4-1b: MI → COG → GDB	Total	0.486	0.057	0.378	0.600	***
	Direct	0.348	0.054	0.344	0.562	***
	Indirect	0.138	0.023	0.005	0.091	**
H4-2a: SDR → COM → GDB	Total	0.190	0.056	0.074	0.303	***
	Direct	0.005	0.045	-0.082	0.093	0.865
	Indirect	0.185	0.049	0.100	0.295	***
H4-2b: GDD → COM → GDB	Total	-0.066	0.052	-0.173	0.032	0.191
	Direct	-0.108	0.042	-0.193	-0.027	**
	Indirect	0.042	0.042	-0.043	0.123	0.343
H4-2c: MI → COM → GDB	Total	0.511	0.065	0.388	0.649	***
	Direct	0.322	0.062	0.193	0.445	***
	Indirect	0.189	0.052	0.097	0.304	***
H4-3a: SDR → CAP → GDB	Total	0.175	0.056	0.051	0.288	***
	Direct	0.162	0.066	0.030	0.304	**
	Indirect	0.013	0.019	-0.022	0.053	0.362
H4-3b: MI → CAP → GDB	Total	0.482	0.057	0.375	0.598	***
	Direct	0.467	0.058	0.354	0.582	***
	Indirect	0.015	0.022	-0.023	0.066	0.356

6.4.4 Regression Analysis

Under the hypothesis of related research, the influence of internal drivers and external environmental pressure on the green development behaviour of local governments is moderated by the moderating effect of the foundation of regional green development. Accordingly, this section adopts SPSS hierarchical stepwise regression analysis to verify the moderating effect between the variables. Specifically, the interaction terms are generated after centring the internal drivers and the embedded variables of the social foundation of regional green development. In addition, the interaction terms are generated after centring the external environmental pressure and the embedded variables of the social foundation of regional green development to analyse the relationship between the internal drivers and the green development behaviours of local governments, the relationship between the external environmental pressure and the green development behaviours of local governments, and the moderating effect of the social foundation of regional green development. Moderating role: The results are shown in Table 6-5 and Table 6-6.

Table6- 5 Test results of the moderating effect of the social base of regional green development

Variable names	Local government green development behaviour					
	M1	M2	M3	M4	M5	M6
IDF	0.722***	0.676***	0.689***			
EEP				0.673***	0.673***	0.686***
RGBS		0.082**	0.016**		0.004	0.006
IDF×RGBS			0.047			
EEP×RGBS						0.107***
R^2	0.521	0.525	0.527	0.453	0.453	0.464
ΔR^2	0.521	0.005	0.002	0.453	0.000	0.011
F	782.121***	397.809***	267.056***	595.886***	297.529***	207.273***
ΔF	782.121***	6.991**	3.159	595.886***	0.000	15.095***
VIFMax	1.000	1.448	1.522	1.000	1.862	1.876

Note: *P<0.05, **P<0.01, ***P<0.001. IDF (Internal driving factors), EEP (External environmental pressures), RGBS (Social base of regional green development)

From Table 6-5, it can be seen that the coefficient of determination R² of models 1, 2, and 3 are 0.521, 0.525, and 0.527, respectively, showing a gradual increasing trend. The significance coefficient of the interaction term between internal drivers and the social basis of regional green development is 0.076, more significant than 0.05, and hypothesis H5-1a is rejected. The values of the coefficient of determination R² of model 4, model 5, and model 6 are 0.5453, 0.453, and 0.464, which show a gradual increasing trend. The coefficient of the interaction term between external environmental pressure and the social basis of regional green development is significant and positive. Additionally, this paper tested the multicollinearity problem of the regression model and judged whether there was a multicollinearity problem in the multiple regression model according to the variance inflation factor VIF. When the value of VIF was greater than 10, it indicated that there might be multicollinearity among the independent variables. The maximum value of variance inflation factor VIF of models 1, 2, 3, 4, 5, and 6 all did not exceed 10, indicating that there is no multicollinearity problem. So, the regional green development social base has a moderating role between external environmental pressure and local government green development behaviour. Therefore, hypothesis H5-1b is established.

Table6- 6 Test results of the moderating effect of the industrial base of regional green development

Variable names	Local government green development behaviour					
	M1	M2	M3	M4	M5	M6
IDF	0.722***	0.665***	0.679***			
EEP				0.673***	0.656***	0.673***
RGBI		0.107***	0.101**		0.026	0.030
IDF×RGBI			0.055*			
EEP×RGBI						0.126***
R ²	0.521	0.529	0.532	0.453	0.453	0.469
ΔR ²	0.521	0.008	0.003	0.453	0.000	0.015
F	782.121***	403.551***	271.795***	595.866***	297.529***	207.273***
ΔF	782.121***	12.494***	4.431*	595.886***	0.504	20.788***
VIF Max	1.000	1.385	1.451	1.000	1.763	1.782

Note: *P<0.05, **P<0.01, ***P<0.001. IDF (Internal driving factors), EEP (External environmental pressures), RGBI (Industrial base of regional green development)

As can be seen from Table 6-6, the values of the coefficient of determination R^2 of Model 1, Model 2, and Model 3 are 0.521, 0.529, and 0.532, respectively, showing a gradually increasing trend, while the standardised coefficients of the interaction terms of internal drivers and the industrial base of regional green development are significant and positive. Similarly, the values of the coefficient of determination R^2 of models 4, 5, and 6 are 0.453, 0.453, and 0.469, respectively, showing a gradually increasing trend. In contrast, the standardised coefficients of the interaction terms of external environmental pressures and regional green development industrial base are significant and positive. In addition, this paper tests the multicollinearity problem of the regression models. It determines whether there is a multicollinearity problem in the multiple regression models according to the variance inflation factor VIF. The maximum value of the variance inflation factor VIF of the above six models is at most 10, indicating no multicollinearity problem. Based on the above analysis, it can be obtained that there is a moderating effect of regional green development industrial base between internal drivers and local government green development behaviour, so hypothesis H5-2a is valid. The regional green development industrial base has a moderating role between external environmental pressure and local government green development behaviour; therefore, hypothesis H5-2b holds.

6.5 Discussion

This study examines the influence of internal driving factors and external environmental pressures as antecedents of green development behaviour. Specifically, we hypothesise a direct effect of internal driving factors (local government leaders' perceptions of green development, green development commitment, and green development capacity) on green development behaviour with the basis of regional green development as the boundary condition for these relationships. Our results support several hypothesised relationships. Our main findings are as follows: Firstly, we find that local government leaders' green development cognitions, green development commitments, and green development capabilities are positively related to implementing green

development behaviours. Secondly, our moderating hypothesis is supported - the regional green development base moderates the direct relationship between internal drivers and green development behaviour.

Our findings provide significant insights that offer a pathway to expanding the current understanding of local government green development behaviour. First, we examine the direct impact of green development commitments on green development behaviour. In contrast to the moderating role of managerial commitment in private organisations (Colwell & Joshi, 2013), reflected in this study, the view of attitudinal commitment, where organisations focus on the alignment of organisational values and goals with individual values and goals, emphasises the development of a strong personal belief in organisational values and the generation of willingness to work for the benefit of the organisation. Grandia (2016) indicated the importance of willingness or commitment to implement sustainable initiatives and procurement. Willingness can influence behaviour and can be conditioned by the external environment (Kornilaki & Font, 2019). Secondly, the capacity of local governments to develop green is crucial. The reason for this is that a sector can incur opportunity costs when implementing sustainable development planning if it lacks capacity or if the sector's capacity is not appropriate for the task (Deslatte & Stokan, 2020). Furthermore, as highlighted in this study, green development capacity includes inter-organisational coordination and resource allocation capacity. Organisational capacity is not monolithic (Cho et al., 2021); for example, resource allocation capacity, as articulated in this study, is a tangible capacity that includes the ability to allocate financial, human and material resources. These capacities help local governments to implement green development behaviours, and at the same time, they are subject to external environmental pressures (Wang et al., 2012). Furthermore, our findings shed new light on the role of the regional green development base, which can either facilitate or hinder the implementation of green development behaviours. This is because the regional green development base moderates green development behaviours, as it generates variability in the perceptions of green development among sector leaders due to differences in the green industry base and social base of each region.

6.6 Conclusion

This study examines the influence of internal drivers (local government leaders' perceptions of green development, commitment to green development and green development capacity) and external environmental pressures (regulation of higher authorities, demands for green development from enterprises and residents, and media influence) on green development behaviour, and investigates the moderating effect of the basis of regional green development on these relationships. Our findings suggest that regions with a good green development base, both industrial and social, are more conducive to the implementation of green development behaviours by local governments. These findings provide insights that may contribute to future research on the factors influencing green development behaviours. The generalisability of the findings is limited as this study focused on a specific sample in the context of green development in China; future research could validate our findings by replicating this study in different geographical regions and organisational contexts. Alternatively, future research should further develop the interaction between green development commitments and capabilities. Moreover, it further analyses the impact of different sectors on implementing green development behaviours.

Funding: This work was funded by the National Social Science Fund of China (grant number 22AGL028).

6.7 References

- Anessi-Pessina, E., & Sicilia, M. 2020. Do top managers' individual characteristics affect accounting manipulation in the public sector?. *Journal of Public Administration Research and Theory*, 30(3), 465-484.
- Ashforth, B. E., & Mael, F. 1989. Social identity theory and the organisation. *Academy of management review*, 14(1), 20-39.
- Awasthi, P., & Walumbwa, F. O. 2022. Antecedents and consequences of servant leadership in local governance: Evidence from three case studies. *Public Administration Review*, 82(6), 1077-1094.
- Banerjee, S. B., Iyer, E. S., Kashyap, R. K. 2003. Corporate Environmentalism: Antecedents and Influence of Industry Type[J]. *Journal of Marketing*, 67(2): 106-122.

- Benitez, J., Castillo, A., Llorens, J., & Braojos, J. 2018. IT-enabled knowledge ambidexterity and innovation performance in small U.S. firms: The moderator role of social media capability. *Information and Management*, 55(1), 131–143.
- Bryngemark, E., Söderholm, P., & Thörn, M. 2023. The adoption of green public procurement practices: Analytical challenges and empirical illustration on Swedish municipalities. *Ecological Economics*, 204, 107655.
- Chen, X., Qin, Q., & Wei, Y. M. 2016. Energy productivity and Chinese local officials' promotions: Evidence from provincial governors. *Energy Policy*, 95, 103–112.
- Chen, Y. 2011. Green organisational identity: sources and consequence. *Management Decision*, 49(3): 384-404.
- Cho Y J, Poister T H. 2013. Human resource management practices and trust in public organisations. *Public Management Review*, 15(6): 816-838.
- Colwell, S. R., & Joshi, A. W. 2013. Corporate Ecological Responsiveness: Antecedent Effects of Institutional Pressure and Top Management Commitment and Their Impact on organisational Performance. *Business Strategy and the Environment*, 22(2).
- Crucke, S., Kluijtmans, T., Meyfrootd, K., & Desmidt, S. 2022. How does organisational sustainability foster public service motivation and job satisfaction? The mediating role of organisational support and societal impact potential. *Public Management Review*, 24(8).
- Darvishmotevali, M., & Altinay, L. 2022. Green HRM, environmental awareness and green behaviours: The moderating role of servant leadership. *Tourism Management*, 88.
- Deslatte, A., & Stokan, E. 2020. Sustainability Synergies or Silos? The Opportunity Costs of Local Government organisational Capabilities. *Public Administration Review*, 80(6).
- Deslatte, A., & Swann, W. L. (2016). Is the price right? Gauging the marketplace for local sustainable policy tools. *Journal of Urban Affairs*, 38(4), 581-596.
- Du, J., Zhu, X., Li, X., Ünal, E., & Longhurst, P. 2023. Explaining the Green Development behaviour of Local Governments for Sustainable Development: Evidence from China. *behavioural Sciences*, 13(10), 813.

- Fan, W., Wang, S., Gu, X., Zhou, Z., Zhao, Y., & Huo, W. 2021. Evolutionary game analysis on industrial pollution control of local government in China. *Journal of Environmental Management*, 298.
- Galliano, D., & Siqueira, T. T. S. 2021. organisational design and environmental performance: The case of French dairy farms. *Journal of Environmental Management*, 278.
- Gao, S., Ling, S., Liu, X., Dou, X., & Wu, R. 2020. Understanding local government's information disclosure in China's environmental project construction from the dual-pressure perspective. *Journal of Cleaner Production*, 263.
- Grandia, J. 2016. Finding the missing link: Examining the mediating role of sustainable public procurement behaviour. *Journal of Cleaner Production*, 124.
- Guo, L., Qu, Y., Tseng, L. 2017. The interaction effects of environmental regulation and technological innovation on regional green growth performance. *Journal of Cleaner Production*, 162.
- He, K., Zhang, J., & Zeng, Y. 2019. Knowledge domain and emerging trends of agricultural waste management in the field of social science: A scientometric review. *Science of the total environment*, 670, 236-244.
- Huang, Y. C., & Huang, C. H. 2016. Research on Relationships among Institutional Pressure, Stewardship behaviour, Green Supply Chain Management, and organisational Performance: The Case of Electrical and Electronics Industries in Taiwan. *Journal of Computing and Information Science in Engineering*, 16(4).
- Kornilaki, M., & Font, X. 2019. Normative influences: How socio-cultural and industrial norms influence the adoption of sustainability practices. A grounded theory of Cretan, small tourism firms. *Journal of Environmental Management*, 230.
- Krause, R. M., Hawkins, C. V., Park, A. Y. S., & Feiock, R. C. 2019. Drivers of Policy Instrument Selection for Environmental Management by Local Governments. *Public Administration Review*, 79(4).
- Laurian, L., Walker, M., & Crawford, J. 2017. Implementing Environmental Sustainability in Local Government: The Impacts of Framing, Agency Culture,

and Structure in US Cities and Counties. *International Journal of Public Administration*, 40(3), 270–283.

Lee, J., & Kim, S. 2018. Citizens' e-participation on agenda setting in local governance: Do individual social capital and e-participation management matter? *Public Management Review*, 20(6), 873–895.

Li, X., Du, J., & Long, H. 2019. Green development behaviour and performance of industrial enterprises based on grounded theory study: Evidence from China. *Sustainability (Switzerland)*, 11(15).

Li, X., Dai, J., Zhu, X., He, J., Li, J., Liu, X., ... & Shen, Q. 2022. What is the mechanism of government green development behaviour considering multi-agent interaction? A meta-analysis. *International Journal of Environmental Research and Public Health*, 19(14), 8263.

Liu, T., Wang, Y., Song, Q., et al. 2017. Low-carbon governance in China —Case study of low carbon industry park pilot. *Journal of Cleaner Production*, 174.

Liu, S., Sun, Y. P., Gao, X. L., & Sui, Y. 2019. Knowledge domain and emerging trends in Alzheimer's disease: a scientometric review based on CiteSpace analysis. *Neural Regeneration Research*, 14(9), 1643-1650.

Marrucci, L., Daddi, T., & Iraldo, F. 2021. The contribution of green human resource management to the circular economy and performance of environmental certified organisations. *Journal of Cleaner Production*, 319.

Maitlis, S., & Christianson, M. 2014. Sensemaking in organisations: Taking stock and moving forward. *Academy of Management Annals*, 8(1), 57-125.

Marulanda-Grisales, N., & Figueroa-Duarte, O. D. 2021. Classifying and studying environmental performance of manufacturing organisations evidence from Colombia. *Journal of Cleaner Production*, 279.

Melissen, F., Mzembe, A. N., Idemudia, U., & Novakovic, Y. 2018. Institutional Antecedents of the Corporate Social Responsibility Narrative in the Developing World Context: Implications for Sustainable Development. *Business Strategy and the Environment*, 27(6).

Mombeuil, C. 2020. Institutional conditions, sustainable energy, and the UN sustainable development discourse: A focus on Haiti. *Journal of Cleaner Production*, 254.

- Ostrom, E. 1999. Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework. In *Theories of the Policy Process*.
- Osborne, S. P., Powell, M., Cui, T., & Strokosch, K. 2022. Value Creation in the Public Service Ecosystem: An Integrative Framework. *Public Administration Review*, 82(4).
- Piña, G., & Avellaneda, C. 2019. Central Government Strategies to Promote Local Governments' Transparency: Guidance or Enforcement? *Public Performance and Management Review*, 42(2), 357–382.
- Pouikli, K., 2021. Towards mandatory Green Public Procurement (GPP) requirements under the EU Green Deal: reconsidering the role of public procurement as an environmental policy tool. *ERA Forum*, 21, 699-721.
- Resnick, D., & Siame, G. 2023. organisational commitment in local government bureaucracies: The case of Zambia. *Governance*, 36(3), 933-952.
- Reyes-Rodríguez, J. F. 2021. Explaining the business case for environmental management practices in SMEs: The role of organisational capabilities for environmental communication. *Journal of Cleaner Production*, 318.
- Sharma, S. 2000. Managerial interpretations and organisational context as predictors of corporate choice of environmental strategy. *Academy of Management Journal*, 43(4).
- Shi, C., Shi, Q., & Guo, F. 2019. Environmental slogans and action: The rhetoric of local government work reports in China. *Journal of Cleaner Production*, 238.
- Smedby, N. 2020. Limits to polycentricity? Institutional layering and policy feedbacks of building energy performance requirements in Sweden. *Environmental Policy and Governance*, 30(2).
- Tevapitak, K., & (Bert) Helmsing, A. H. J. 2019. The interaction between local governments and stakeholders in environmental management: The case of water pollution by SMEs in Thailand. *Journal of Environmental Management*, 247, 840–848.
- Ünal, E., Urbinati, A., & Chiaroni, D. 2019a. Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry. *Journal of Manufacturing Technology Management*, 30(3).

- Ünal, E., Urbinati, A., Chiaroni, D., & Manzini, R. 2019b. Value Creation in Circular Business Models: The case of a US small medium enterprise in the building sector. *Resources, Conservation and Recycling*, 146.
- Vagnoni, E., Moradi, A. 2018. Local government's contribution to low carbon mobility transitions[J]. *Journal of Cleaner Production*, 176.
- Wang, L., Morabito, M., Payne, C. T., & Robinson, G. 2020. Identifying institutional barriers and policy implications for sustainable energy technology adoption among large organisations in California. *Energy Policy*, 146.
- Wang, X., Hawkins, C. V., Lebrede, N., & Berman, E. M. 2012. Capacity to sustain sustainability: A study of US cities. *Public Administration Review*, 72(6), 841-853.
- Wang, X., & Shao, Q. 2019. Non-linear effects of heterogeneous environmental regulations on green growth in G20 countries: Evidence from panel threshold regression. *Science of the Total Environment*, 660, 1346–1354.
- Wu, H., Li, Y., Hao, Y., Ren, S., & Zhang, P. 2020. Environmental decentralization, local government competition, and regional green development: Evidence from China. *Science of the total environment*, 708, 135085
- Yan, B., Wu, L., Wang, X. H., & Wu, J. 2021. How can environmental intervention work during rapid urbanization? Examining the moderating effect of environmental performance-based accountability in China. *Environmental Impact Assessment Review*, 86.
- Ye, F., Quan, Y., He, Y., & Lin, X. 2021. The impact of government preferences and environmental regulations on green development of China's marine economy. *Environmental Impact Assessment Review*, 87.
- Yudarwati, G. A., & Gregory, A. 2022. Improving government communication and empowering rural communities: Combining public relations and development communication approaches. *Public Relations Review*, 48(3), 102200.
- Zhan, Y., Tan, K. H., Ji, G., Chung, L., & Chiu, A. S. 2018. Green and lean sustainable development path in China: Guanxi, practices and performance. *Resources, Conservation and Recycling*, 128, 240-249.
- Zhang, W., Zhang, M., Zhang, W., Zhou, Q., & Zhang, X. (2020). What influences the effectiveness of green logistics policies? A grounded theory analysis. *Science of the Total Environment*, 714, 136731.

7 SYNTHESIS AND INTEGRATED DISCUSSION

The previous chapter synthesised the findings of other papers with similar research questions. These findings are derived from qualitative research based on grounded theory and quantitative research based on structural equation modelling, respectively. The research hypotheses are also evaluated for statistical significance and general validity. This chapter focuses on the summary of findings, contributions and research implications.

7.1 Summary of Findings

The findings of this research, as summarised in the following paragraphs, address several gaps in the knowledge relating to the green development behaviour of local governments. The critical knowledge gaps addressed in this research are:

1. The components of local governments' green development behaviours and the dimensional divisions.
2. The factors influencing the green development behaviours of local governments and a conceptual model.
3. The pathways through which these factors influence green development behaviours, providing targeted policy recommendations for local governments to implement green development behaviours effectively.

7.1.1 Contribution to Knowledge

Compared to previous research, this study has made the following contributions.

First, new institutional theory and organisational process research have similar characteristics that help explain organisational change. Therefore, this thesis deconstructs the idea that local governments' green development behaviours consist of two aspects—the formulation and implementation of green development policies—and analyses the key processes and practices of local governments' green development behaviours.

Second, this study contributes to understanding the green development behaviour of local governments in China. Most studies have been conducted in European and American regions, while Chinese studies have received less attention. The processes by which local governments in China seek to encourage localised green, sustainable practices are unclear.

Furthermore, our findings detail the measures taken by local governments to promote the greening of business production methods and public lifestyles. Significantly, local governments in China have paid more attention to corporate green production than to greening public life. However, existing studies have emphasised the relationship between communities, residents, and local government's sustainability practices. Nevertheless, the partnership between local governments and the private sector should not be ignored. These research results not only help local government departments and stakeholders deepen their understanding of green development but also help local governments realise regional green development.

Fourthly, considering the complexity of local governments and their complex social environment, this study examines the antecedents that influence the green development behaviour of local governments by applying grounded theory. This study constructs an influencing factor model of green development behaviour by integrating new institutional theory, organisational process research, and organisational motivation theory.

Finally, this study analyses the internal mechanisms between the three core influencing factors and green development behaviour. New insights are developed that will help local governments to implement green development behaviours.

7.2 Research Implications

In terms of management practice, this thesis makes several contributions.

Firstly, the paper has elaborated on local government green development behaviours and proposes a theoretical, analytical framework to facilitate local government green development behaviour. This framework can be used to

support the behavioural decisions of local governments in the context of green development. For numerous local government departments, effectively implementing green development-related policies and realising regional green development is an extensive and continuous process. This is because the institutional environment in which local governments operate is constantly changing, and there are an increasing number of stakeholders actively involved in the green development of the region. Moreover, the green development behaviour of local governments implies both environmental governance and economic development. On the one hand, local governments employ normative policies to guide enterprises towards green production and encourage the public to make their lifestyles greener. Simultaneously, local governments actively implement incentive-based support policies to promote green transformations and upgrade enterprises through market-based means, thereby promoting the green development of the regional economy. On the other hand, local governments adopt regulatory policies and promote green development through inter-organisational cross-sectoral cooperation.

Secondly, papers I and II identified that the green development behaviour of local governments depends on organisations as the carrier, thus, it is essentially a matter of behavioural choice on the part of public organisations. Simultaneously, implementing green development behaviour on the part of local governments is a complex systematic problem involving the participation of many organisations. From the perspective of inter-organisational relations, green development behaviour requires the cooperation of multiple implementation entities. For example, regional water governance requires collaborative relationships between local water authorities, environmental and ecological bureaus, agriculture and rural affairs bureaus and other departments to achieve shared green governance.

In addition, paper II derived a model of factors influencing the green development behaviour of local governments. When implementing green development behaviour, local government officials need to have sufficient knowledge and understanding of the green development philosophy and policies. In contrast, local government departments need to have clear green development plans and

directions, such as ecological and environmental protection plans and energy-saving plans. Local officials' commitment to green development translates into organisational commitment and thus influences organisational behaviour. Furthermore, implementing green development strategies by local governments is a complex and systemic issue. When implementing green development practices, local governments must also consider the regulations of higher authorities, the green development demands of stakeholders, and media influence. Moreover, local governments must consider the region's industrial and social bases when implementing green development practices, as regional differences in resource endowments, environmental conditions, and economic foundations lead to regional heterogeneity. Our findings show that local governments are more likely to implement green development behaviours in regions with a better green development base. In regions with numerous polluting enterprises related to traditional industries, local governments should allocate more human and material resources to implementing green development practices, such as supervising and assisting businesses in their transformation and upgrades.

Finally, paper III analyses the specific mechanisms by which each factor influences local governments' green development behaviour. The findings reveal that internal driving factors and external environmental pressures substantially impact the green development behaviour of local governments, whereas internal driving factors serve as a partial mediator between external environmental pressures and local governments' green development behaviour. In contrast, the basis of regional green development moderates the effects of internal drivers on green development behaviour. Furthermore, before implementing green development practices, local governments should assess their internal drivers, such as the green development understanding of local government leaders, as well as local government green development commitment and capacity. Secondly, attention must be paid to the impacts of institutional environmental pressures, such as higher levels of government, stakeholders, and the media. To facilitate the implementation of green development practices, local governments

should develop appropriate green development policies that integrate the bases of green development in the region.

8 CONCLUSIONS

Integrating the relevant theories and knowledge of process organisation research, organisational motivation theory, and new institutional theory, this thesis explores local governments' green development behaviours and the mechanisms facilitating the influencing factors from an organisational perspective. Grounded theory was adopted to analyse the green development behaviours of local governments and the key influencing factors, and research hypotheses were proposed following a literature analysis. Structural equation modelling was used to empirically test the research hypotheses, which revealed the mechanisms and influence paths of the relevant factors about the green development behaviours of local governments. Synthesising the results of qualitative and quantitative research, the main conclusions of this thesis are as follows:

First, the green development behaviour of local governments refers to the behaviour exhibited by local governments in changing from their original development mode of pursuing only economic growth to the green development mode of pursuing environmental protection and economic growth. It aims to help enterprises and residents realise the green development of production modes and lifestyles. The green development behaviour of local governments was divided into two dimensions by combining process organisational research and new institutional theory—the supply of green development policies by local governments, including the supply of guiding, supportive, and regulatory policies, and the local government's green development policy implementation, including project source control, process green supervision, and end green governance.

Second, the qualitative research analysis revealed three main influencing factors: internal driving factors, external environmental pressure, and the basis of regional green development. The internal driving factors include local government leaders' green development understanding, the local government's green development commitment, and the local government's green development capability; external environmental pressure consists of superior departmental regulations, enterprises' and residents' green development demands, and media influence,

while the basis of regional green development can be divided into the social base and the industrial base of regional green development. Secondly, the relationship structure between these influencing factors and local government's green development behaviours was analysed by combining organisational motivation theory and new institutional theory. Finally, a model of the local government's green development behaviour and the performance-influencing factors was constructed.

Third, the empirical test results show that local government leaders' green development understanding significantly affects the local government's green development behaviour. Local government green development commitment significantly positively affects local government green development behaviour. The regulation imposed by superior departments has a significant positive effect on internal driving factors and local government green development behaviour, respectively, and media influence has a significant positive effect on internal driving factors and the local government's green development behaviour.

Fourth, local government leaders' green development understanding and commitment to green development mediate the relationship between internal regulation, media influence, and local governments' green development behaviour, respectively. Furthermore, the foundation of regional green development can positively regulate the relationship between external environmental pressure and the local government's green development behaviour; for example, the regional green development industrial base can moderate the relationship between internal drivers and local government green development behaviour, while the social basis of regional green development only moderates the relationship between local government leaders' green development cognition and local government green development behaviour.

8.1 Limitations and Future Work

First, this research constructed a conceptual model of local government green development behaviours through a grounded theory approach. However, the conceptual model constructed in this thesis only addresses local governments in the context of green development in China, and the model has yet to be tested

among local governments in other countries or regions. Therefore, future research should take broader samples for analysis, such as from different regions and countries, and collect data to verify the applicability of this conceptual model of local government green development behaviours to improve the generalizability of the research conclusions.

Second, due to time and cost constraints, this study on the relationship between influencing factors and local governments' green development behaviours uses cross-sectional data. This provides a larger sample for the study, making it more representative and precluding the need to undertake a long, time-consuming longitudinal study, which leads to the loss of sample units. However, because the green development behaviour of local governments studied in this paper is dynamic, the institutional environment and the foundation of regional green development in which it is located will also change over time. Therefore, in the future, when time and conditions permit, future research should collect information on the changes in green development behaviour over time and observe the dynamic process of interaction between the influencing factors and local government green development behaviour to validate further and enrich the theoretical model proposed in this research.

Third, the green development behaviour of local governments is a complex and dynamic system and is impacted by regulations imposed by superior departments, the green development demands of enterprises, and the influence of the public and media. Future research should consider adopting more quantitative research methods, such as game theory and computer simulation, in order to deepen our understanding of the dynamic changes manifested by local governments' green development behaviour.

REFERENCES

- Ahmad, A. B., Straatmann, T., Mueller, K., & Liu, B. (2021). Employees' Change Support in the Public Sector—A Multi - Time Field Study Examining the Formation of Intentions and behaviours. *Public Administration Review*, 81(2), 231-243.
- Almandoz, J. (2012). Arriving at the starting line: The impact of community and financial logics on new banking ventures. *Academy of Management Journal*, 55(6), 1381-1406.
- Andersson, I., & James, L. (2018). Altruism or entrepreneurialism? The co-evolution of green place branding and policy tourism in Växjö, Sweden. *Urban Studies*, 55(15), 3437-3453.
- Anderson, S. E., Buntaine, M. T., Liu, M., & Zhang, B. (2019). Non - governmental monitoring of local governments increases compliance with central mandates: a national - scale field experiment in China. *American Journal of Political Science*, 63(3), 626-643.
- Andrews-Speed, P. (2016). Applying institutional theory to the low-carbon energy transition. *Energy Research & Social Science*, 13, 216-225.
- Anessi-Pessina, E., & Sicilia, M. (2020). Do top managers' individual characteristics affect accounting manipulation in the public sector?. *Journal of Public Administration Research and Theory*, 30(3), 465-484.
- Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organisation. *Academy of management review*, 14(1), 20-39.
- Awan, U., & Sroufe, R. (2022). Sustainability in the circular economy: insights and dynamics of designing circular business models. *Applied Sciences*, 12(3), 1521.
- Awasthi, P., & Walumbwa, F. O. (2022). Antecedents and consequences of servant leadership in local governance: Evidence from three case studies. *Public Administration Review*, 82(6), 1077-1094.
- Benitez, J., Castillo, A., Llorens, J., & Braojos, J. (2018). IT-enabled knowledge ambidexterity and innovation performance in small U.S. firms: The moderator role of social media capability. *Information and Management*, 55(1), 131–143.
- Berardi, U. (2012). Sustainability assessment in the construction sector: rating systems and rated buildings. *Sustainable development*, 20(6), 411-424.
- Bolton, D., & Landells, T. (2015). Reconceptualizing power relations as sustainable business practice. *Business Strategy and the Environment*, 24(7), 604-616.
- Braun, A. B., da Silva Trentin, A. W., Visentin, C., & Thome, A. (2019). Sustainable remediation through the risk management perspective and stakeholder involvement: A systematic and bibliometric view of the literature. *Environmental Pollution*, 255, 113221.

- Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, 6(1), 97-113.
- Bryngemark, E., Söderholm, P., & Thörn, M. (2023). The adoption of green public procurement practices: Analytical challenges and empirical illustration on Swedish municipalities. *Ecological Economics*, 204, 107655.
- Buijs, A., Hansen, R., Van der Jagt, S., Ambrose-Oji, B., Elands, B., Rall, E. L., ... & Møller, M. S. (2019). Mosaic governance for urban green infrastructure: Upscaling active citizenship from a local government perspective. *Urban Forestry & Urban Greening*, 40, 53-62.
- Caragliu, A., Del Bo, C., & Nijkamp, P. (2011). Smart cities in Europe. *Journal of urban technology*, 18(2), 65-82.
- Cease, B., Kim, H., Kim, D., Ko, Y., & Cappel, C. (2019). Barriers and incentives for sustainable urban development: An analysis of the adoption of LEED-ND projects. *Journal of environmental management*, 244, 304-312.
- Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis (Introducing Qualitative Methods series)*. In *International Journal of Qualitative Studies on Health and Wellbeing (Vol. 1)*
- Charmaz, K. (2017). The Power of Constructivist Grounded Theory for Critical Inquiry. *Qualitative Inquiry*, 23(1).
- Chen, C. (2006). CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature. *Journal of the American Society for information Science and Technology*, 57(3), 359-377.
- Chen, C. (2017). Science mapping: a systematic review of the literature. *Journal of data and information science*, 2(2), 1-40.
- Chen, C., Ibekwe - SanJuan, F., & Hou, J. (2010). The structure and dynamics of cocitation clusters: A multiple - perspective cocitation analysis. *Journal of the American Society for information Science and Technology*, 61(7), 1386-1409.
- Chen, S., & Golley, J. (2014). 'Green' productivity growth in China's industrial economy. *Energy Economics*, 44, 89-98.
- Chen, W. Y., & Hu, F. Z. Y. (2015). Producing nature for public: Land-based urbanization and provision of public green spaces in China. *Applied geography*, 58, 32-40.
- Chen, W. Y., Hu, F. Z. Y., Li, X., & Hua, J. (2017). Strategic interaction in municipal governments' provision of public green spaces: A dynamic spatial panel data analysis in transitional China. *Cities*, 71, 1-10.
- Chen, X., Qin, Q., & Wei, Y. M. (2016). Energy productivity and Chinese local officials' promotions: Evidence from provincial governors. *Energy Policy*, 95, 103-112.
- Chen, Y. S. (2011). Green organisational identity: sources and consequence. *Management decision*, 49(3), 384-404.

- Cidell, J. (2015). Performing leadership: municipal green building policies and the city as role model. *Environment and Planning C: Government and Policy*, 33(3), 566-579.
- Clark, J., & Manning, L. (2018). What are the factors that an opportunity sample of UK students insinuate as being associated with their wastage of food in the home setting? *Resources, Conservation and Recycling*, 130, 20–30.
- Clarke, A., & MacDonald, A. (2019). Outcomes to partners in multi-stakeholder cross-sector partnerships: A resource-based view. *Business & Society*, 58(2), 298-332.
- Cloutier, C., & Langley, A. (2020). What makes a process theoretical contribution?. *organisation Theory*, 1(1), 2631787720902473.
- Colwell, S. R., & Joshi, A. W. (2013). Corporate ecological responsiveness: Antecedent effects of institutional pressure and top management commitment and their impact on organisational performance. *Business Strategy and the Environment*, 22(2), 73-91.
- Corbin, J., & Strauss, A. (2012). *Basics of Qualitative Research (3rd ed.): Techniques and Procedures for Developing Grounded Theory*. In *Basics of Qualitative Research (3rd ed.): Techniques and Procedures for Developing Grounded Theory*.
- Creswell, J. W., & Clark, V. L. P. 2017. *Designing and Conducting Mixed Methods Research*. Sage.
- Crucke, S., Kluijtmans, T., Meyfrootd, K., & Desmidt, S. (2022). How does organisational sustainability foster public service motivation and job satisfaction? The mediating role of organisational support and societal impact potential. *Public Management Review*, 24(8).
- Csete, M., & Horváth, L. (2012). Sustainability and green development in urban policies and strategies. *Applied Ecology and Environmental Research*, 10(2), 185-194.
- Darvishmotevali, M., & Altinay, L. (2022). Green HRM, environmental awareness and green behaviours: The moderating role of servant leadership. *Tourism Management*, 88.
- Davis, F. L., & Wurth, A. H. (2003). Voting preferences and the environment in the American electorate: The discussion extended. *Society & Natural Resources*, 16(8), 729-740.
- Deslatte, A., & Stokan, E. (2020). Sustainability synergies or silos? The opportunity costs of local government organisational capabilities. *Public Administration Review*, 80(6), 1024-1034.
- Deslatte, A., & Swann, W. L. (2016). Is the price right? Gauging the marketplace for local sustainable policy tools. *Journal of Urban Affairs*, 38(4), 581-596.
- Ding, Z., Fan, Z., Tam, V. W. Y., Bian, Y., Li, S., Illankoon, I. M. C. S., & Moon, S. (2018). Green building evaluation system implementation. *Building and Environment*, 133.

- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organisational fields. *American sociological review*, 147-160.
- Du, J., Zhu, X., Li, X., Ünal, E., & Longhurst, P. (2023). Explaining the Green Development behaviour of Local Governments for Sustainable Development: Evidence from China. *behavioural Sciences*, 13(10), 813.
- Dunlop, C. A., & Russel, D. (2012). Watching the detectives: Explaining regulators' roles in the integration of sustainable development in UK public services. *Public Management Review*, 14(5).
- Dunn, S. C., Seaker, R. F., & Waller, M. A. (1994). Latent variables in business logistics research: scale development and validation. *Journal of Business logistics*, 15(2), 145.
- Fàbregues, S., Molina-Azorin, J. F., & Feters, M. D. (2021). Virtual special issue on "quality in mixed methods research". *Journal of Mixed Methods Research*, 15(2), 146-151.
- Fan, W., Wang, S., Gu, X., Zhou, Z., Zhao, Y., & Huo, W. (2021). Evolutionary game analysis on industrial pollution control of local government in China. *Journal of Environmental Management*, 298.
- Figueira, I., Domingues, A. R., Caeiro, S., Painho, M., Antunes, P., Santos, R., Videira, N., Walker, R. M., Huisingh, D., & Ramos, T. B. (2018). Sustainability policies and practices in public sector organisations: The case of the Portuguese Central Public Administration. *Journal of Cleaner Production*, 202.
- Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go?. *Journal of management*, 43(1), 200-227.
- Galliano, D., & Siqueira, T. T. S. (2021). organisational design and environmental performance: The case of French dairy farms. *Journal of Environmental Management*, 278.
- Gao, S., Ling, S., Liu, X., Dou, X., & Wu, R. (2020). Understanding local government's information disclosure in China's environmental project construction from the dual-pressure perspective. *Journal of Cleaner Production*, 263.
- Gkargkavouzi, A., Halkos, G., & Matsiori, S. (2019). Environmental behaviour in a private-sphere context: Integrating theories of planned behaviour and value belief norm, self-identity and habit. *Resources, Conservation and Recycling*, 148, 145-156.
- Glaser, B. G., & Strauss, A. L. (2017). Discovery of grounded theory: Strategies for qualitative research. In *Discovery of Grounded Theory: Strategies for Qualitative Research*.
- Goodboy, A. K., & Kline, R. B. (2017). Statistical and practical concerns with published communication research featuring structural equation modeling. *Communication Research Reports*, 34(1), 68-77.

- Grandia, J. (2016). Finding the missing link: Examining the mediating role of sustainable public procurement behaviour. *Journal of Cleaner Production*, 124, 183-190.
- Greenwood, R., & Hinings, C. R. (1996). Understanding radical organisational change: Bringing together the old and the new institutionalism. *Academy of management review*, 21(4), 1022-1054.
- Greenwood, R., Raynard, M., Kodeih, F., Micelotta, E. R., & Lounsbury, M. (2011). Institutional complexity and organisational responses. *Academy of Management annals*, 5(1), 317-371.
- Guo, L. L., Qu, Y., Tseng, M. L. (2017). The interaction effects of environmental regulation and technological innovation on regional green growth performance. *Journal of cleaner production*, 162, 894-902.
- Haaland, C., & van Den Bosch, C. K. (2015). Challenges and strategies for urban green-space planning in cities undergoing densification: A review. *Urban forestry & urban greening*, 14(4), 760-771.
- Hair Jnr, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.
- Harrison, R. L., Reilly, T. M., & Creswell, J. W. (2020). Methodological rigor in mixed methods: An application in management studies. *Journal of Mixed Methods Research*, 14(4), 473-495.
- He, C., Hou, Y., Ding, L., & Li, P. (2021). Visualized literature review on sustainable building renovation. *Journal of Building Engineering*, 44, 102622.
- He, K., Zhang, J., & Zeng, Y. (2019). Knowledge domain and emerging trends of agricultural waste management in the field of social science: A scientometric review. *Science of the total environment*, 670, 236-244.
- Herold, D. M., Fedor, D. B., Caldwell, S., & Liu, Y. (2008). The effects of transformational and change leadership on employees' commitment to a change: a multilevel study. *Journal of applied psychology*, 93(2), 346.
- Homsy, G. C., & Warner, M. E. (2015). Cities and sustainability: Polycentric action and multilevel governance. *Urban Affairs Review*, 51(1), 46-73.
- Hu, A. G., & Zhou, S. J. (2014). Green development: Functional definition, mechanism analysis and development strategy. *China Popul. Resour. Environ*, 24, 14-20.
- Huang, Y. C., & Huang, C. H. (2016). Research on Relationships among Institutional Pressure, Stewardship behaviour, Green Supply Chain Management, and organisational Performance: The Case of Electrical and Electronics Industries in Taiwan. *Journal of Computing and Information Science in Engineering*, 16(4).
- Huwel, L., Van Eessen, J., Gunst, J., Malbrain, M. L., Bosschem, V., Vanacker, T., ... & Benoit, D. D. (2023). What is appropriate care? A qualitative study into

the perceptions of healthcare professionals in Flemish university hospital intensive care units. *Heliyon*, 9(2).

Irga, P. J., Braun, J. T., Douglas, A. N. J., Pettit, T., Fujiwara, S., Burchett, M. D., & Torpy, F. R. (2017). The distribution of green walls and green roofs throughout Australia: Do policy instruments influence the frequency of projects?. *Urban Forestry & Urban Greening*, 24, 164-174.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research*, 1(2), 112-133.

Kennet, M., & Heinemann, V. (2006). Green Economics: setting the scene. Aims, context, and philosophical underpinning of the distinctive new solutions offered by Green Economics. *International Journal of Green Economics*, 1(1-2), 68-1

Klein, N., Ramos, T. B., & Deutz, P. (2022). Factors and strategies for circularity implementation in the public sector: An organisational change management approach for sustainability. *Corporate Social Responsibility and Environmental Management*, 29(3).

Kong, D., Feng, Q., Zhou, Y., & Xue, L. (2016). Local implementation for green-manufacturing technology diffusion policy in China: From the user firms' perspectives. *Journal of Cleaner Production*, 129.

Kornilaki, M., & Font, X. (2019). Normative influences: How socio-cultural and industrial norms influence the adoption of sustainability practices. A grounded theory of Cretan, small tourism firms. *Journal of Environmental Management*, 230.

Krause, R. M., Hawkins, C. V., Park, A. Y. S., & Feiock, R. C. (2019). Drivers of Policy Instrument Selection for Environmental Management by Local Governments. *Public Administration Review*, 79(4).

Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management review*, 24(4), 691-710.

Langley, A. (2007). Process thinking in strategic organisation. *Strategic organisation*, 5(3), 271-282.

Langley, A. N. N., Smallman, C., Tsoukas, H., & Van de Ven, A. H. (2013). Process studies of change in organisation and management: Unveiling temporality, activity, and flow. *Academy of management journal*, 56(1), 1-13.

Langley, A., & Tsoukas, H. (2010). Introducing perspectives on process organisation studies. *Process, sensemaking, and organizing*, 1(9), 1-27.

Lau, C. M., & Woodman, R. W. (1995). Understanding organisational change: A schematic perspective. *Academy of management journal*, 38(2), 537-554.

Laurian, L., Walker, M., & Crawford, J. (2017). Implementing Environmental Sustainability in Local Government: The Impacts of Framing, Agency Culture, and Structure in US Cities and Counties. *International Journal of Public Administration*, 40(3), 270–283.

Lazzarini, L. (2018). The role of planning in shaping better urban-rural relationships in Bristol City Region. *Land Use Policy*, 71, 311-319.

- Lee, J., & Kim, S. (2018). Citizens' e-participation on agenda setting in local governance: Do individual social capital and e-participation management matter? *Public Management Review*, 20(6), 873–895.
- Lewis, L. K., Schmisser, A. M., Stephens, K. K., & Weir, K. E. (2006). Advice on communicating during organisational change: The content of popular press books. *The Journal of Business Communication* (1973), 43(2), 113-137.
- Li, B., & Wu, S. (2017). Effects of local and civil environmental regulation on green total factor productivity in China: A spatial Durbin econometric analysis. *Journal of Cleaner Production*, 153, 342-353.
- Li, C. H., Yang, W. G., & Shih, I. T. (2021). Exploration on the gap of single-and double-loop learning of balanced scorecard and organisational performance in a health organisation. *Heliyon*, 7(12).
- Li, X., Du, J., & Long, H. (2018). A comparative study of Chinese and foreign green development from the perspective of mapping knowledge domains. *Sustainability*, 10(12), 4357.
- Li, X., Du, J., & Long, H. (2019a). Dynamic analysis of international green behaviour from the perspective of the mapping knowledge domain. *Environmental Science and Pollution Research*, 26(6), 6087–6098.
- Li, X., Du, J., & Long, H. (2019b). Green development behaviour and performance of industrial enterprises based on grounded theory study: Evidence from China. *Sustainability (Switzerland)*, 11(15).
- Li, X., & Liu, X. (2018). *Green Development: The Choice of Our Times* (pp. 3–8).
- Li, X., Dai, J., Zhu, X., He, J., Li, J., Liu, X., ... & Shen, Q. (2022). What is the mechanism of government green development behaviour considering multi-agent interaction? A meta-analysis. *International Journal of Environmental Research and Public Health*, 19(14), 8263.
- Lin, B., & Benjamin, N. I. (2017). Green development determinants in China: A non-radial quantile outlook. *Journal of Cleaner Production*, 162.
- Liu, B., Sun, S. (2022). Commitment to change during institutional reforming: A comparative and exploratory research. *Journal of East China University of Science and Technology (Social Science Edition)*, 37(5): 63-76. (In Chinese). [https://1008-7672\(2022\)05-0063-14](https://1008-7672(2022)05-0063-14)
- Liu, Y., & Dong, F. (2021). How technological innovation impacts urban green economy efficiency in emerging economies: A case study of 278 Chinese cities. *Resources, Conservation and Recycling*, 169, 105534.
- Liu, S., Sun, Y. P., Gao, X. L., & Sui, Y. (2019). Knowledge domain and emerging trends in Alzheimer's disease: a scientometric review based on CiteSpace analysis. *Neural Regeneration Research*, 14(9), 1643-1650.
- Llamas-Sanchez, R., Garcia-Morales, V., & Martin-Tapia, I. (2013). Factors affecting institutional change: A study of the adoption of Local Agenda 21 in Spain. *Journal of organisational Change Management*, 26(6).

- Mabon, L., Shih, W. Y., Kondo, K., Kanekiyo, H., & Hayabuchi, Y. (2019). What is the role of epistemic communities in shaping local environmental policy? Managing environmental change through planning and greenspace in Fukuoka City, Japan. *Geoforum*, 104, 158-169.
- March, J. G., & Olsen, J. P. (1983). The new institutionalism: organisational factors in political life. *American political science review*, 78(3), 734-749.
- Marulanda-Grisales, N., & Figueroa-Duarte, O. D. (2021). Classifying and studying environmental performance of manufacturing organisations evidence from Colombia. *Journal of Cleaner Production*, 279.
- McDowall, W., Geng, Y., Huang, B., Barteková, E., Bleischwitz, R., Türkeli, S., Kemp, R., & Doménech, T. (2017). Circular Economy Policies in China and Europe. *Journal of Industrial Ecology*, 21(3).
- Mekala, G. D., & MacDonald, D. H. (2018). Lost in transactions: analysing the institutional arrangements underpinning urban green infrastructure. *Ecological Economics*, 147, 399-409.
- Melissen, F., Mzembe, A. N., Idemudia, U., & Novakovic, Y. (2018). Institutional Antecedents of the Corporate Social Responsibility Narrative in the Developing World Context: Implications for Sustainable Development. *Business Strategy and the Environment*, 27(6).
- Mombeuil, C. (2020). Institutional conditions, sustainable energy, and the UN sustainable development discourse: A focus on Haiti. *Journal of Cleaner Production*, 254.
- Monks, F. (2003). *China Human Development Report 2002: Making Green Development a Choice*. Produced by Stockholm Environment Institute in collaboration with UNDP. [Hong Kong: Oxford University Press, 2002. 152 pp. ISBN 0-19-593603-5.]. *The China Quarterly*, 174, 539-541.
- Mousa, S. K., & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of cleaner production*, 243, 118595.
- Nelson, J. P. (2002). "Green" voting and ideology: LCV scores and roll-call voting in the US senate, 1988-1998. *Review of Economics and Statistics*, 84(3), 518-529.
- Ordóñez, C., Threlfall, C. G., Livesley, S. J., Kendal, D., Fuller, R. A., Davern, M., ... & Hochuli, D. F. (2020). Decision-making of municipal urban forest managers through the lens of governance. *Environmental Science & Policy*, 104, 136-147.
- Ostrom, E. (2011). Background on the institutional analysis and development framework. *Policy studies journal*, 39(1), 7-27.
- Peng, X. (2020). Strategic interaction of environmental regulation and green productivity growth in China: green innovation or pollution refuge?. *Science of The Total Environment*, 732, 139200.
- Peters, B. G. (2019). *Institutional theory in political science: The new institutionalism*. Edward Elgar Publishing.

- Piña, G., & Avellaneda, C. (2019). Central Government Strategies to Promote Local Governments' Transparency: Guidance or Enforcement? *Public Performance and Management Review*, 42(2), 357–382.
- Pow, C. P., & Neo, H. (2013). Seeing red over green: Contesting urban sustainabilities in China. *Urban Studies*, 50(11), 2256-2274.
- Pu, Z., & Fu, J. (2018). Economic growth, environmental sustainability and China mayors' promotion. *Journal of Cleaner Production*, 172, 454-465.
- Rathner, J. A., & Byrne, G. (2014). The use of team-based, guided inquiry learning to overcome educational disadvantages in learning human physiology: a structural equation model. *Advances in physiology education*, 38(3), 221-228.
- Resnick, D., & Siame, G. (2023). organisational commitment in local government bureaucracies: The case of Zambia. *Governance*, 36(3), 933-952.
- Retzlaff, R. C. (2009). The use of LEED in planning and development regulation: an exploratory analysis. *Journal of planning education and research*, 29(1), 67-77.
- Revell, K. (2013). Promoting sustainability and pro-environmental behaviour through local government programmes: examples from London, UK. *Journal of Integrative Environmental Sciences*, 10(3-4), 199-218.
- Reyes-Rodríguez, J. F. (2021). Explaining the business case for environmental management practices in SMEs: The role of organisational capabilities for environmental communication. *Journal of Cleaner Production*, 318.
- Rodriguez-Plesa, E., Dimand, A. M., & Alkadry, M. G. (2022). Community social capital, political values, or organisational capacity? Indicators of engagement in sustainable public procurement at the local level. *Journal of Cleaner Production*, 338, 130556.
- Rubashkina, Y., Galeotti, M., & Verdolini, E. (2015). Environmental regulation and competitiveness: Empirical evidence on the Porter Hypothesis from European manufacturing sectors. *Energy Policy*, 83, 288-300.
- Rvspk, R., Priyanath, H. M. S., & Megama, R. G. N. (2020). Methods and rules-of-thumb in the determination of minimum sample size when applying structural equation modelling: A review. *Journal of Social Science Research*, 15(2), 102-109.
- Salancik, G. R. (1977). Commitment and the control of organisational behaviour and belief, *New Directions in organisational behaviour*, Vol. 1, pp. 1-54.
- Schad, J., Lewis, M. W., Raisch, S., & Smith, W. K. (2016). Paradox research in management science: Looking back to move forward. *Academy of Management Annals*, 10(1), 5-64.
- Schneider, S., & Spieth, P. (2013). Business model innovation: Towards an integrated future research agenda. *International Journal of Innovation Management*, 17(01), 1340001.
- Scott, W. R., & Davis, G. (2015). *organisations and organizing: Rational, natural and open systems perspectives*. Routledge.

- Sharma, S. (2000). Managerial interpretations and organisational context as predictors of corporate choice of environmental strategy. *Academy of Management journal*, 43(4), 681-697.
- Shi, C., Shi, Q., & Guo, F. (2019). Environmental slogans and action: The rhetoric of local government work reports in China. *Journal of Cleaner Production*, 238.
- Shih, W. Y., Mabon, L., & De Oliveira, J. A. P. (2020). Assessing governance challenges of local biodiversity and ecosystem services: Barriers identified by the expert community. *Land use policy*, 91, 104291.
- Shuai, S., & Fan, Z. (2020). Modeling the role of environmental regulations in regional green economy efficiency of China: Empirical evidence from super efficiency DEA-Tobit model. *Journal of environmental management*, 261, 110227.
- Smedby, N. (2020). Limits to polycentricity? Institutional layering and policy feedbacks of building energy performance requirements in Sweden. *Environmental Policy and Governance*, 30(2).
- Song, M., Du, J., & Tan, K. H. (2018). Impact of fiscal decentralization on green total factor productivity. *International Journal of Production Economics*, 205, 359-367.
- Song, Y., Zhang, X., & Zhang, M. (2021). The influence of environmental regulation on industrial structure upgrading: Based on the strategic interaction behaviour of environmental regulation among local governments. *Technological Forecasting and Social Change*, 170, 120930.
- Sovacool, B. K., Axsen, J., & Sorrell, S. (2018). Promoting novelty, rigor, and style in energy social science: Towards codes of practice for appropriate methods and research design. *Energy research & social science*, 45, 12-42.
- Stoddart, M. C. J., Tindall, D. B., & Greenfield, K. L. (2012). "Governments Have the Power"? Interpretations of Climate Change Responsibility and Solutions Among Canadian Environmentalists. *organisation and Environment*, 25(1).
- Sun, C., Tong, Y., & Zou, W. (2018). The evolution and a temporal-spatial difference analysis of green development in China. *Sustainable cities and society*, 41, 52-61.
- Sun, Y., Ding, W., Yang, Z., Yang, G., & Du, J. (2020). Measuring China's regional inclusive green growth. *Science of the Total Environment*, 713.
- Teddlie, C., & Tashakkori, A. (2012). Common "core" characteristics of mixed methods research: A review of critical issues and call for greater convergence. *American behavioural scientist*, 56(6), 774-788.
- Tellis, W. (1997). Application of a case study methodology. *The qualitative report*, 3(3), 1-19.
- Tevapitak, K., & (Bert) Helmsing, A. H. J. (2019). The interaction between local governments and stakeholders in environmental management: The case of water pollution by SMEs in Thailand. *Journal of Environmental Management*, 247, 840–848.

- Trappey, A. J. C., Trappey, C., Hsiao, C. T., Ou, J. J. R., Li, S. J., & Chen, K. W. P. (2012). An evaluation model for low carbon island policy: The case of Taiwan's green transportation policy. *Energy Policy*, 45.
- Tsoukas, H., & Chia, R. (2002). On organisational becoming: Rethinking organisational change. *organisation science*, 13(5), 567-582.
- Tzoulas, K., Korpela, K., Venn, S., Yli-Pelkonen, V., Kaźmierczak, A., Niemela, J., & James, P. (2007). Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. *Landscape and urban planning*, 81(3), 167-178.
- Ünal, E., Urbinati, A., & Chiaroni, D. (2019a). Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry. *Journal of Manufacturing Technology Management*, 30(3).
- Ünal, E., Urbinati, A., Chiaroni, D., & Manzini, R. (2019b). Value Creation in Circular Business Models: The case of a US small medium enterprise in the building sector. *Resources, Conservation and Recycling*, 146.
- Vagnoni, E., & Moradi, A. (2018). Local government's contribution to low carbon mobility transitions. *Journal of Cleaner Production*, 176, 486-502.
- Van de Ven, A. H. (1992). Suggestions for studying strategy process: A research note. *Strategic management journal*, 13(S1), 169-188.
- Visnjic, I., Jovanovic, M., & Raisch, S. (2022). Managing the transition to a dual business model: tradeoff, paradox, and routinized practices. *organisation Science*, 33(5), 1964-1989.
- Walker, R. M., & Andrews, R. (2015). Local government management and performance: A review of evidence. *Journal of public administration research and theory*, 25(1), 101-133.
- Wang, K., Wang, Y. X., Li, K., & Wei, Y. M. (2015). Energy poverty in China: An index based comprehensive evaluation. *Renewable and Sustainable Energy Reviews*, 47, 308-323.
- Wang, M. X., Zhao, H. H., Cui, J. X., Fan, D., Lv, B., Wang, G., ... & Zhou, G. J. (2018). Evaluating green development level of nine cities within the Pearl River Delta, China. *Journal of Cleaner Production*, 174, 315-323.
- Wang, Q., & Yi, H. (2021). New energy demonstration program and China's urban green economic growth: Do regional characteristics make a difference?. *Energy Policy*, 151, 112161.
- Wang, X., Hawkins, C. V., Lebrede, N., & Berman, E. M. (2012). Capacity to sustain sustainability: A study of US cities. *Public Administration Review*, 72(6), 841-853.
- Wang, X., Van Wart, M., & Lebrede, N. (2014). Sustainability leadership in a local government context: The administrator's role in the process. *Public Performance & Management Review*, 37(3), 339-364.
- Wang, S., Zhao, D., & Chen, H. (2020). Government corruption, resource misallocation, and ecological efficiency. *Energy Economics*, 85, 104573.

- Weston, R., & Gore Jr, P. A. (2006). A brief guide to structural equation modeling. *The counseling psychologist*, 34(5), 719-751.
- Wheeler, S. M. (2008). State and municipal climate change plans: The first generation. *Journal of the American planning association*, 74(4), 481-496.
- Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'. *Landscape and urban planning*, 125, 234-244.
- Wu, H., Li, Y., Hao, Y., Ren, S., & Zhang, P. (2020a). Environmental decentralization, local government competition, and regional green development: Evidence from China. *Science of the total environment*, 708, 135085
- Wu, H., Hao, Y., & Ren, S. (2020b). How do environmental regulation and environmental decentralization affect green total factor energy efficiency: Evidence from China. *Energy Economics*, 91, 104880.
- Wu, J., Xu, M., & Zhang, P. (2018). The impacts of governmental performance assessment policy and citizen participation on improving environmental performance across Chinese provinces. *Journal of Cleaner Production*, 184, 227-238.
- Wu, M., Long, R., Bai, Y., & Chen, H. (2021). Knowledge mapping analysis of international research on environmental communication using bibliometrics. *Journal of Environmental Management*, 298, 113475.
- Xie, H., Chen, Q., Lu, F., Wang, W., Yao, G., & Yu, J. (2019). Spatial-temporal disparities and influencing factors of total-factor green use efficiency of industrial land in China. *Journal of Cleaner Production*, 207, 1047-1058.
- Xu, M., Liu, X., Zheng, X., Ren, N. (2019). The effects of the perception of organisational change meaning on employees' work outcomes: Work engagement and work burnout as dual mediation mechanisms. *Science of Science and management of S.&T*, 40(5): 134-149. (In Chinese). [https://1002-0241\(2019\)05-0134-16](https://1002-0241(2019)05-0134-16)
- Yan, B., Wu, L., Wang, X. H., & Wu, J. (2021). How can environmental intervention work during rapid urbanization? Examining the moderating effect of environmental performance-based accountability in China. *Environmental Impact Assessment Review*, 86.
- Yang, Y. (2021). Study on the relationship between green technology path selection of industrial enterprises and local government behaviour--An empirical analysis based on provincial panel data. *Enterprise.Economy*, 40(11): 33-44. (In Chinese). <https://10.13529/j.cnki.enterprise.economy.2021.11.004>
- Yang, Y., Su, X., & Yao, S. (2021). Nexus between green finance, fintech, and high-quality economic development: Empirical evidence from China. *Resources Policy*, 74, 102445.
- Yao, S. (2021). Fuzzy-based multi-criteria decision analysis of environmental regulation and green economic efficiency in a post-COVID-19 scenario: the case of China. *Environmental Science and Pollution Research*, 28(24), 30675-30701.

- Ye, F., Quan, Y., He, Y., & Lin, X. (2021). The impact of government preferences and environmental regulations on green development of China's marine economy. *Environmental Impact Assessment Review*, 87.
- Yudarwati, G. A., & Gregory, A. (2022). Improving government communication and empowering rural communities: Combining public relations and development communication approaches. *Public Relations Review*, 48(3), 102200.
- Zeng, S., Liu, Y., Liu, C., & Nan, X. (2017). A review of renewable energy investment in the BRICS countries: History, models, problems and solutions. *Renewable and Sustainable Energy Reviews*, 74, 860-872.
- Zhan, Y., Tan, K. H., Ji, G., Chung, L., & Chiu, A. S. (2018). Green and lean sustainable development path in China: Guanxi, practices and performance. *Resources, Conservation and Recycling*, 128, 240-249.
- Zhang, B. (2016). Review of logic of local government behaviour in China. *Journal of Zhejiang Gongshang University*, 139(4), 71-81 (In Chinese). <https://10.14134/j.cnki.cn33-1337/c.2016.04.010>
- Zhang, B., Chen, X., & Guo, H. (2018). Does central supervision enhance local environmental enforcement? Quasi-experimental evidence from China. *Journal of Public Economics*, 164, 70–90.
- Zhang, J., Chang, Y., Zhang, L., & Li, D. (2018). Do technological innovations promote urban green development?—A spatial econometric analysis of 105 cities in China. *Journal of cleaner production*, 182, 395-403.
- Zhang, J., Jiang, L., Liu, Z., Li, Y., Liu, K., Fang, R., ... & Li, F. (2021). A bibliometric and visual analysis of indoor occupation environmental health risks: Development, hotspots and trend directions. *Journal of Cleaner Production*, 300, 126824.
- Zhang N., Deng, J., Ahmad, F., Draz, M. U. (2020). Local Government Competition and Regional Green Development in China: The Mediating Role of Environmental Regulation. *International Journal of Environmental Research and Public Health*, 17(10), 3485.
- Zhang, W., Zhang, M., Zhang, W., Zhou, Q., & Zhang, X. (2020). What influences the effectiveness of green logistics policies? A grounded theory analysis. *Science of the Total Environment*, 714, 136731.
- Zhao, J., Shahbaz, M., & Dong, K. (2022). How does energy poverty eradication promote green growth in China? The role of technological innovation. *Technological Forecasting and Social Change*, 175, 121384.
- Zhao, X., Ding, X., & Li, L. (2021). Research on environmental regulation, technological innovation and green transformation of manufacturing industry in the Yangtze River Economic Belt. *Sustainability*, 13(18), 10005.
- Zhu, Q., Jia, R., & Lin, X. (2019). Building sustainable circular agriculture in China: economic viability and entrepreneurship. *Management Decision*, 57(4), 1108-1122.

APPENDICES

Appendix A Survey Questionnaire

A.1 Influencing Factors of Local Government Green Development Behaviour and its Role Mechanism Survey Questionnaire

Dear Madam/Mr:

Greetings! This is a questionnaire for the status of local government green development behaviour. This questionnaire aims to understand better the local government's green development behaviour and internal and external influencing factors and then better promote regional green development by employing policy supply, policy implementation, and other means. This questionnaire is anonymous; please answer according to the situation, and your answer has an essential reference value for this study. In order to ensure the quality of scientific research, we expect you to express your ideas truthfully, and we sincerely thank you for your great support and help!

Part I: General Information

Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>
Age	Under 30 years old <input type="checkbox"/> 31~40 years old <input type="checkbox"/> 41~50 years old <input type="checkbox"/> over 50 years old <input type="checkbox"/>
Position	Department Heads <input type="checkbox"/> Frontline Employees <input type="checkbox"/>
Education	Associate degree <input type="checkbox"/> Bachelor degree <input type="checkbox"/> Master degree <input type="checkbox"/> Doctoral degree <input type="checkbox"/>
Departments	Development and Reform Commission <input type="checkbox"/> Bureau of Industry and Information Technology <input type="checkbox"/> Bureau of Ecology and Environment <input type="checkbox"/> Bureau of Science and Technology <input type="checkbox"/> Bureau of City Administration <input type="checkbox"/> Bureau of Agriculture and Rural Affairs <input type="checkbox"/> Bureau of Commerce <input type="checkbox"/> Water Authority <input type="checkbox"/> Bureau of Housing and Urban Rural Development <input type="checkbox"/>

Part II: Questionnaire items

Independent variable	No.	Description of items	Reference sources
Green cognition of local government leader	COG1	Local government leaders have green values.	Anessi-Pessina and Sicilia (2020) Banerjee et al. (2003) Wang et al. (2012) Chen et al. (2016) Ünal et al. (2019)
	COG2	Local government leaders emphasize green development in the region.	
	COG3	Local government leaders have knowledge of green development.	
	COG4	Local government leaders have a clear understanding of the responsibility for green development.	
	COG5	Local government leaders are familiar with the work related to green development in the region.	
Green development commitment	GDC1	Green development is a priority for local governments.	Anessi-Pessina and Sicilia (2020) Banerjee et al. (2003) Wang et al. (2012) Chen et al. (2016) Ünal et al. (2019)
	GDC2	Local governments have clear green development goals.	
	GDC3	Local governments have a clear direction for green development.	
Green development capacity	CAP1	Capacity of local governments to address green development challenges in their regions.	Anessi-Pessina and Sicilia (2020) Banerjee et al. (2003) Wang et al. (2012) Chen et al. (2016) Ünal et al. (2019)
	CAP2	Capacity of local governments to coordinate work related to green development.	
	CAP3	Capacity of local governments to mobilize resources to support green development efforts.	
The basis of regional green development	RGB1	The degree of awareness of green development of residents.	Zhan et al. (2016)
	RGB2	The degree of the quality of residents meets the requirements of green development.	
	RGD3	The degree of awareness of green development of local entrepreneurs.	
	RGD4	The degree of the quality of local entrepreneurs meets the requirements of green development.	
	RGD5	The degree of the industry actively changes to green and low-carbon circular development.	
	RGD6	The degree of transformation from industry to service industry in the region.	
	RGD7	The degree of transformation from labor-intensive to knowledge-intensive in the region.	
Regulations of superior departments	SDR1	The degree of perfection of the green development regulations promulgated by the higher authorities.	Liu et al. (2017) Mombeuil (2020) Wang et al. (2020) Yan et al. (2021)
	SDR2	The degree of strictness of the higher authorities' supervision of green development in the region.	
	SDR3	The degree of soundness of the assessment system of green development in the region by the higher authorities.	
	SDR4	The degree of fulfillment of the assessment results of green development in the region by the higher authorities.	
Green development demands of	GDD1	The extent to which residents of the region are motivated to report environmental violations to local governments.	

enterprises and residents	GDD2	The extent to which residents of the region demand green products.	McDowall et al. (2017) Vagnoni et al. (2018) Shi et al. (2019) Ye et al. (2021) Du et al. (2023) Wang et al. (2012) Guo et al. (2017) Shi et al. (2019) Du et al. (2023)
	GDD3	The extent to which enterprises reflect competitors' environmental violations positively to local governments.	
	GDD4	The extent to which enterprises demand green development support policies.	
Media Influence	MI1	The extent to which the news media expose environmental violations by enterprises in the region.	
	MI2	The extent to which the news media publicize green living among residents in the region.	
	MI3	The extent to which the news media expose non-green living behaviours such as littering by residents in the region.	
	MI4	The extent to which the news media expose the government's ineffective implementation of green development.	
	MI5	The extent to which the news media pay attention to the government's promotion of green development.	
Local government green development policy formulation	GDBS1	Local governments actively formulate regulations related to green development.	
	GDBS2	Local governments actively formulate fiscal and taxation policies that encourage green development of enterprises.	
	GDBS3	Local governments actively formulate land policies that encourage green development of enterprises.	
	GDBS4	Local governments actively formulate information service policies that promote green development of enterprises.	
	GDBS5	Local governments actively formulate subsidy policies for purchasing green products.	
	GDBS6	Local governments actively formulate preferential policies for green travel.	
Green development policy implementation	GDBI1	Local governments enforce strict environmental evaluation standards for newly introduced enterprises.	
	GDBI2	Local governments enforce strict standards on emissions and consumption reduction and pollution reduction technology for enterprises.	
	GDBI3	Local governments regularly monitor and assess the environmental impact of enterprises' production and operation activities.	
	GDBI4	Local governments strictly penalize enterprises for environmental violations.	
	GDBI5	Local governments actively build green industries.	
	GDBI6	Local governments actively guide enterprises in green transformation.	
	GDBI7	Local governments encourage residents to purchase green products.	
	GDBI8	Local governments actively advocate green living for residents.	

Appendix B Ethical Approval Letter



7 June 2022

Dear Miss Zhu ,

Reference: CURES/16182/2022

Title: Research on the motivation and influence mechanism of green development behaviour of local governments

Thank you for your application to the Cranfield University Research Ethics System (CURES).

We are pleased to inform you your CURES application, reference CURES/16182/2022 has been reviewed. You may now proceed with the research activities you have sought approval for.

If you have any queries, please contact CURES Support.

We wish you every success with your project.

Regards,

CURES Team