



Wang, Qihui (2026) THE HELICAL MODELS OF INNOVATION AND SOCIAL INNOVATION ECOSYSTEMS: APPLICABILITY AND SYNERGY IN CHINA'S RURAL REVITALIZATION STRATEGY. Doctoral thesis, The University of Sunderland.

Version: UNSPECIFIED

Available under license: Creative Commons: Attribution-Noncommercial-Share Alike 4.0

Downloaded from: <https://sure.sunderland.ac.uk/id/eprint/20824/>

#### **Which version am I reading (articles, book chapters and books)**

Pre-print (or submitted version): the version of an article or chapter before any peer-review. Can be submitted to a publisher or added to a pre-print server.

AAM: Author Accepted Manuscript - The version of the article formally accepted for publication after the peer-review process. It includes the changes made by the author(s) in line with peer-reviewers' comments. It has not undergone the publisher's formatting, type-setting and copyediting.

VOR: Version of Record - The version published on the publisher's website which includes formatting, typesetting and copyediting.

#### **Usage guidelines**

Please refer to the usage guidelines at <http://sure.sunderland.ac.uk/policies.html> or alternatively contact [sure@sunderland.ac.uk](mailto:sure@sunderland.ac.uk).



THE HELICAL MODELS OF INNOVATION AND SOCIAL INNOVATION ECOSYSTEMS:  
APPLICABILITY AND SYNERGY IN CHINA'S RURAL REVITALIZATION STRATEGY

QIHUI WANG

A thesis submitted in partial fulfilment of the requirements of the University of Sunderland for the  
Degree of Doctor of Philosophy

October 2026

# Table of Contents

|                                                                                                                                                    |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----|
| TABLE OF FIGURES .....                                                                                                                             | 7  |
| LIST OF TABLES .....                                                                                                                               | 8  |
| ABSTRACT.....                                                                                                                                      | 10 |
| ACKNOWLEDGEMENT .....                                                                                                                              | 11 |
| 1 INTRODUCTION .....                                                                                                                               | 12 |
| 1.1 My Research Journey.....                                                                                                                       | 12 |
| 1.2 Introduction.....                                                                                                                              | 13 |
| 1.3 Social Innovation .....                                                                                                                        | 15 |
| 1.3.1 Social Innovation with Territorial Development.....                                                                                          | 16 |
| 1.3.2 Social Innovation Ecosystems.....                                                                                                            | 17 |
| 1.4 Innovation Ecosystems and Helical Models of Innovation.....                                                                                    | 18 |
| 1.5 Problem Statement .....                                                                                                                        | 19 |
| 1.6 China’s Rural Revitalization Strategy.....                                                                                                     | 21 |
| 1.7 Research Aims, Questions and Objectives.....                                                                                                   | 22 |
| 1.8 Research Significance .....                                                                                                                    | 23 |
| 1.9 Research Methodology .....                                                                                                                     | 24 |
| 1.10 Outline of Thesis.....                                                                                                                        | 25 |
| 2 LITERATURE REVIEW .....                                                                                                                          | 26 |
| 2.1 Introduction.....                                                                                                                              | 26 |
| 2.2 Innovation Ecosystem.....                                                                                                                      | 28 |
| 2.3 Discussion of Chinese Innovation System, Innovation Ecosystem, and Social Innovation .....                                                     | 30 |
| 2.4 Social Innovation .....                                                                                                                        | 34 |
| 2.4.1 Key Innovation Attributes .....                                                                                                              | 34 |
| 2.4.2 Research Fields.....                                                                                                                         | 37 |
| 2.4.3 Social Innovation and Rural Development.....                                                                                                 | 38 |
| 2.4.4 The Particularities and Advantages of Social Innovation in Promoting the Future Rural Development.....                                       | 40 |
| 2.4.5 Discussion of the Applicability of Social Innovation, Technological Innovation, and other Innovation Paradigms in Rural Revitalization ..... | 47 |
| 2.4.6 Social Innovation Ecosystems.....                                                                                                            | 49 |
| 2.5 Research Gaps.....                                                                                                                             | 51 |

|                                                                                                  |    |
|--------------------------------------------------------------------------------------------------|----|
| 2.6 Theoretical and Conceptual Foundations.....                                                  | 53 |
| 2.6.1 Methods of Integrating Interdisciplinary Theoretical Mechanisms .....                      | 53 |
| 2.6.2 The Evolution of the Helical Models of Innovation.....                                     | 54 |
| 2.6.2.1 Triple Helix model .....                                                                 | 54 |
| 2.6.2.2 The Quadruple Helix and Quintuple Helix innovation systems .....                         | 55 |
| 2.6.2.3 The debates .....                                                                        | 56 |
| 2.6.2.4 Neo-Triple Helix model of innovation ecosystems .....                                    | 56 |
| 2.7 Integrating the Helical Models of Innovation with Social Innovation and Capacity-Building... | 58 |
| 2.8 Conceptualising Social Innovation Ecosystem .....                                            | 59 |
| 2.8.1 Key Components in Social Innovation Ecosystems .....                                       | 59 |
| 2.8.1.1 Innovation genes.....                                                                    | 61 |
| 2.8.1.2 Social structure .....                                                                   | 63 |
| 2.8.1.3 Sustainable development .....                                                            | 64 |
| 2.8.2 Relations among Key Components .....                                                       | 66 |
| 2.8.2.1 Innovation genes and social structures .....                                             | 66 |
| 2.8.2.2 Innovation genes and sustainable development .....                                       | 67 |
| 2.8.2.3 Social structure and sustainable development .....                                       | 68 |
| 2.8.3 Two Interconnected Layers of Helical Interactions .....                                    | 68 |
| 2.8.3.1 Innovation dynamics .....                                                                | 68 |
| 2.8.3.2 Sustainable development dynamics .....                                                   | 69 |
| 2.8.3.3 Framework conditions.....                                                                | 70 |
| 2.9 Conclusion .....                                                                             | 72 |
| 3 RESEARCH METHODOLOGY.....                                                                      | 73 |
| 3.1 Introduction.....                                                                            | 73 |
| 3.2 Research Paradigm.....                                                                       | 74 |
| 3.2.1 Ontology.....                                                                              | 74 |
| 3.2.2 Epistemology.....                                                                          | 75 |
| 3.2.3 The Paradigm in this Research.....                                                         | 77 |
| 3.3 Research Design: Case Study Research.....                                                    | 78 |
| 3.3.1 Research Questions and Conceptual Framework.....                                           | 78 |
| 3.3.2 The Enquiry Phases and Objects.....                                                        | 79 |
| 3.3.3 Data Collection and Analysis .....                                                         | 80 |

|                                                                                          |     |
|------------------------------------------------------------------------------------------|-----|
| 3.4 Research Context .....                                                               | 81  |
| 3.4.1 Dashigai Village .....                                                             | 81  |
| 3.4.2 Guyan Painting Village .....                                                       | 82  |
| 3.5 Sampling and Participant Selection .....                                             | 83  |
| 3.5.1 Logic and Criteria for Case Selection.....                                         | 83  |
| 3.5.2 Typology of Sampling Strategies.....                                               | 83  |
| 3.5.3 Research Participants and Sample Size.....                                         | 85  |
| 3.5.4 Discussion about Saturation, Purposive Sampling, and Positionality .....           | 86  |
| 3.6 Data Collection Method and Tool.....                                                 | 88  |
| 3.6.1 Interview .....                                                                    | 88  |
| 3.6.2 Interview Questions .....                                                          | 89  |
| 3.6.3 The Link between Interview Questions and Conceptual Framework.....                 | 92  |
| 3.7 Data Analysis Method.....                                                            | 94  |
| 3.8 Conclusion .....                                                                     | 95  |
| 4 DATA ANALYSIS .....                                                                    | 96  |
| 4.1 Introduction.....                                                                    | 96  |
| 4.2 Data Processing.....                                                                 | 97  |
| 4.3 Themes and Sub-themes .....                                                          | 97  |
| 4.3.1 Theme 1: Innovation Genes .....                                                    | 97  |
| 4.3.1.1 Sub-theme 1: Government dominant leadership.....                                 | 97  |
| 4.3.1.2 Sub-theme 2: Enterprises responsible initiative .....                            | 103 |
| 4.3.2 Theme 2: Dynamics of Innovation Genes .....                                        | 110 |
| 4.3.2.1 Sub-theme 1: Interactive actions (ideas/products/activities/services...) .....   | 110 |
| 4.3.2.2 Sub-theme 2: Multi-function performance .....                                    | 116 |
| 4.3.2.3 Sub-theme 3: Mechanism of knowledge flow .....                                   | 119 |
| 4.3.3 Theme 3: Social Structures Mutual Empowerment with Innovation Genes.....           | 120 |
| 4.3.3.1 Sub-theme 1: Top-down (innovation genes to civil society).....                   | 120 |
| 4.3.3.2 Sub- theme 2: Bottom-up (civil society to innovation genes).....                 | 124 |
| 4.3.4 Theme 4: Dynamics of Sustainable Development.....                                  | 126 |
| 4.3.4.1 Sub-theme 1: Value co-creation relates to Sustainable Development Goals (SDGs) . | 127 |
| 4.3.4.2 Sub-theme 2: Co-evolution mechanism to innovation genes .....                    | 130 |
| 4.3.4.3 Sub-theme 3: Co-evolution mechanism to social structures.....                    | 132 |

|                                                                        |     |
|------------------------------------------------------------------------|-----|
| 4.3.5 Theme 5: Social Contexts Conditions .....                        | 133 |
| 4.3.5.1 Sub-theme 1: Institutional/policy environment .....            | 134 |
| 4.3.5.2 Sub-theme 2: Social culture/climate environment .....          | 136 |
| 4.3.5.3 Sub-theme 3: Resources environment .....                       | 138 |
| 4.4 Conclusion .....                                                   | 139 |
| 5 FINDINGS .....                                                       | 140 |
| 5.1 Introduction .....                                                 | 140 |
| 5.2 Data Saturation .....                                              | 141 |
| 5.3 The Dynamic Mechanism of Social Innovation Ecosystems .....        | 142 |
| 5.3.1 Finding 1: The Dynamic Mechanism of Triple Helix .....           | 142 |
| 5.3.1.1 <i>Innovation genes-motivations</i> .....                      | 142 |
| 5.3.1.2 <i>Innovation genes- functions</i> .....                       | 143 |
| 5.3.1.3 <i>Core dynamic mechanism</i> .....                            | 144 |
| 5.3.2 Finding 2: The Dynamic Mechanism of Quadruple Helix .....        | 147 |
| 5.3.2.1 <i>Civil society-the identity and function</i> .....           | 147 |
| 5.3.2.2 <i>Mutual empowerment with innovation genes</i> .....          | 148 |
| 5.3.3 Finding 3: The Dynamic Mechanism of Quintuple Helix .....        | 151 |
| 5.3.3.1 <i>Co-evolution with social innovation ecosystem</i> .....     | 151 |
| 5.3.3.2 Contextual factors .....                                       | 154 |
| 5.4 Conclusion .....                                                   | 156 |
| 6 DISCUSSIONS .....                                                    | 157 |
| 6.1 Introduction .....                                                 | 157 |
| 6.2 Discussion on the Findings with Social Innovation Ecosystems ..... | 158 |
| 6.2.1 The Discussion of Finding 1 .....                                | 158 |
| 6.2.1.1 <i>Innovation genes</i> .....                                  | 158 |
| 6.2.1.2 <i>Innovation dynamics</i> .....                               | 160 |
| 6.2.2 The Discussion of Finding 2 .....                                | 162 |
| 6.2.2.1 <i>Civil society</i> .....                                     | 162 |
| 6.2.2.2 <i>Mutual empowerment with innovation genes</i> .....          | 163 |
| 6.2.3 The Discussion of Finding 3 .....                                | 164 |
| 6.2.3.1 <i>Co-evaluation with social innovation ecosystem</i> .....    | 164 |
| 6.2.3.2 Contextual factors .....                                       | 165 |

|                                                                                                          |     |
|----------------------------------------------------------------------------------------------------------|-----|
| 6.3 Discussion on the Compatibility of Helical Models of Innovation in Social Innovation Ecosystems..... | 167 |
| 6.3.1 Reflection on the Triple Helix of Social Innovation Ecosystems.....                                | 167 |
| 6.3.2 Reflection on the Quadruple Helix of Social Innovation Ecosystems .....                            | 168 |
| 6.3.3 Reflection on the Quintuple Helix of Social Innovation Ecosystems .....                            | 169 |
| 6.4 Insight into the Social Innovation Ecosystem in Rural Development .....                              | 170 |
| 6.5 Conclusion .....                                                                                     | 172 |
| 7 CONCLUSIONS.....                                                                                       | 173 |
| 7.1 Introduction.....                                                                                    | 173 |
| 7.2 Summary of the Thesis and its Theoretical Contributions .....                                        | 173 |
| 7.3 How the Research Objectives Were Attained .....                                                      | 175 |
| 7.4 Lessons for Rural Development from the Case Studies.....                                             | 175 |
| 7.5 Practical and Policy Implications.....                                                               | 178 |
| 7.5.1 Government .....                                                                                   | 178 |
| 7.5.2 Enterprise .....                                                                                   | 178 |
| 7.5.3 University.....                                                                                    | 179 |
| 7.6 Limitations .....                                                                                    | 179 |
| 7.7 Questions for Further Research.....                                                                  | 180 |
| REFERENCES .....                                                                                         | 182 |
| APPENDICES .....                                                                                         | 207 |
| APPENDIX I .....                                                                                         | 207 |
| PARTICIPANTS INFORMATION SHEET .....                                                                     | 207 |
| APPENDIX II .....                                                                                        | 208 |
| ETHIC REVIEW APPROVAL FORM.....                                                                          | 208 |

# TABLE OF FIGURES

|                                                                                                      |     |
|------------------------------------------------------------------------------------------------------|-----|
| Figure 2.1 Essential Attributes of the Conceptual Understanding of Social Innovation.....            | 37  |
| Figure 2.2 The Evolution from Triple Helix Model to Neo-Triple Helix Innovation Ecosystems .....     | 58  |
| Figure 2.3 Innovation Genes/Innovation Dynamics .....                                                | 63  |
| Figure 2.4 Innovation Genes in Social Structures.....                                                | 64  |
| Figure 2.5 Innovation Genes and Social Structures relating to Sustainable development Goals .....    | 66  |
| Figure 2.6 The Social Innovation Ecosystem .....                                                     | 70  |
| Figure 2.7 The Social Innovation Ecosystems with Conditional Frameworks .....                        | 72  |
| Figure 5.1 The Triple Helix Mechanism of Social Innovation Ecosystems.....                           | 147 |
| Figure 5.2 The Quadruple Helix Mechanism of Social Innovation Ecosystems .....                       | 151 |
| Figure 5.3 The Mechanism of Quadruple Helix to Quintuple Helix of Social Innovation Ecosystems ..... | 153 |
| Figure 5.4 The Helical Dynamic Mechanism of Social Innovation Ecosystems .....                       | 156 |

# LIST OF TABLES

|                                                                                                                        |     |
|------------------------------------------------------------------------------------------------------------------------|-----|
| Table 2.1 Comparison of the Neo- Endogenous Theory with the Social Innovation Paradigm .....                           | 44  |
| Table 2.2 The Analogy between Neo-Triple Helix Model of Innovation Ecosystems and the Social Innovation Ecosystem..... | 59  |
| Table 3.1 Qualitative Enquiry Phases of Multiple-Case .....                                                            | 80  |
| Table 3.2 Participants Information.....                                                                                | 86  |
| Table 3.3 Case Interview Questionnaire (University).....                                                               | 90  |
| Table 3.4 Connections between Questions, Sources and Considerations .....                                              | 92  |
| Table 4.1 Samples of quotes about government dominant leadership .....                                                 | 98  |
| Table 4.2 Samples of quotes about government dominant leadership .....                                                 | 100 |
| Table 4.3 Samples of quotes about government dominant leadership .....                                                 | 101 |
| Table 4.4 Samples of quotes about government dominant leadership .....                                                 | 102 |
| Table 4.5 Samples of quotes about enterprises responsible initiative .....                                             | 104 |
| Table 4.6 Samples of quotes about enterprises responsible initiative .....                                             | 105 |
| Table 4.7 Samples of quotes about enterprises responsible initiative .....                                             | 106 |
| Table 4.8 Samples of quotes about enterprises responsible initiative .....                                             | 107 |
| Table 4.9 Samples of quotes about university collaboration capacity .....                                              | 108 |
| Table 4.10 Samples of quotes about university collaboration capacity .....                                             | 110 |
| Table 4.11 Samples of quotes about interactive actions of Dashigai village .....                                       | 112 |
| Table 4.12 Samples of quotes about interactive actions of Guyan Painting village .....                                 | 114 |
| Table 4.13 Samples of quotes about interactive actions of Guyan Painting village .....                                 | 115 |
| Table 4.14 Samples of quotes about multi-function performance .....                                                    | 117 |
| Table 4.15 Samples of quotes about multi-function performance .....                                                    | 118 |
| Table 4.16 Samples of quotes about multi-function performance .....                                                    | 119 |
| Table 4.17 Samples of quotes about mechanism of knowledge flow .....                                                   | 120 |
| Table 4.18 Samples of quotes about top-down empowerment of Dashigai village .....                                      | 122 |
| Table 4.19 Samples of quotes about top-down empowerment of Guyan Painting village .....                                | 123 |
| Table 4.20 Samples of quotes about bottom-up empowerment of Dashigai village.....                                      | 124 |
| Table 4.21 Samples of quotes about bottom-up empowerment of Guyan Painting village .....                               | 125 |
| Table 4.22 Samples of quotes about bottom-up empowerment of Guyan Painting village .....                               | 126 |
| Table 4.23 Samples of quotes about value co-creation relates to SDGs .....                                             | 128 |
| Table 4.24 Samples of quotes about value co-creation relates to SDGs .....                                             | 129 |
| Table 4.25 Samples of quotes about co-evolution mechanism to innovation genes .....                                    | 130 |
| Table 4.26 Samples of quotes about co-evolution mechanism to innovation genes .....                                    | 131 |
| Table 4.27 Samples of quotes about co-evolution mechanism to social structures .....                                   | 132 |
| Table 4.28 Samples of quotes about co-evolution mechanism to social structures .....                                   | 133 |

|                                                                                                  |     |
|--------------------------------------------------------------------------------------------------|-----|
| Table 4.29 Samples of quotes about co-evolution mechanism to institutional/policy environment... | 134 |
| Table 4.30 Samples of quotes about co-evolution mechanism to institutional/policy environment... | 135 |
| Table 4.31 Samples of quotes about social culture/climate environment .....                      | 137 |
| Table 4.32 Samples of quotes about social culture/climate environment .....                      | 138 |
| Table 4.33 Samples of quotes about resources environment .....                                   | 139 |

# ABSTRACT

Over the past decade, research on social innovation has grown substantially, yet much of it remains fragmented and lacks a robust systems perspective. Existing approaches often focus on micro or meso level analyses and typically either overlook broader systemic dynamics or rely on frameworks originally designed for technological innovation. This paper addresses these limitations by proposing a novel conceptual framework for social innovation ecosystems through the integration of the helical models of innovation and with insights from the social innovation. In the meanwhile, based on the conceptual framework established in this research, through empirical research further investigates the multilayered dynamic interactions among the government, university, enterprise and civil society, and the element of social context is also being considered.

This study is qualitative research and adopts case study research based on China's rural revitalization strategy as the background. The study adopts semi-structured interviews, conducts in-depth research on multi-actors (the government, university, enterprise and civil society) in Dashigai village and Guyan Painting village, Zhejiang Province, and uses thematic analysis and manual coding to systematically sort out, interpret and sublimate the first-hand data. It is found that the social innovation ecosystem is an integrated dynamic evolution system with interconnection and co-evolution attributes, and the application of the helical models of innovation in social innovation ecosystems shows different system mechanism characteristics.

This study illustrates its significance in social innovation area which has long lacked systematic mechanisms and integrated comprehensive frameworks. Due to the lack of paradigm guidance of social innovation ecosystem, most existing practices are trapped in fragmented case narratives, resulting in serious misalignment between theoretical construction and practical evolution. The development of social innovation ecosystems is of great significance to drive the institutionalized embedding of social innovation in multiple scenarios, especially to strengthen its position in national innovation systems and organizational strategies. Besides, it is helpful to enhance the inevitability of future social innovation actions, efficient diffusion and sustainable development.

This research contributes to proposes and constructs a forward-looking system framework. Besides, through empirical research, the helical mechanism is truly internalized in the social innovation ecosystem, and the ambiguity of cross-domain paradigm application is resolved. Furthermore, it strengthens and expands the theoretical cornerstone of social innovation and provides a clear theoretical guide for the practical action of multi-actor collaborative of social innovation development. Finally, through the in-depth reflection on the synergy of the system mechanism in the two fields, it provides profound conceptual insights for the balanced development and shortcomings of the overall innovation ecosystem in the future.

# ACKNOWLEDGEMENT

I would like to express my sincerest respect and gratitude to my supervisors, Yashar Salamzadeh and Doyin Olorunfemi, and the school management team. During this journey, my supervisor pointed out the way forward for me with their excellent professional ability and strong sense of responsibility, which allowed me to complete this thesis efficiently and with high quality in time. Besides, they set brilliant example and taught me many principles and wisdom on both professional conduct and personal integrity. When I fell into a trough and was shrouded in past setbacks and haze, it was their careful teaching and encouragement that led me to regain my confidence and get out of the predicament step by step.

The successful completion of this study is inseparable from the strong support of all sectors of society. I would like to thank Professor Yuzhuo Cai, Department of Education Policy and Leadership, The Educational University of Hong Kong, Co-Director, Global research Institute for Finnish, European and Global South Education. At my felt most lost and stuck in a deadlock of my research, he affirmed my innovative ideas from an expert perspective with keen insight and put forward constructive suggestions. Besides, I would like to express my heartfelt gratitude to Dr. Weizhong Yu, Jianhua Lei and Guozhu Sun, with their support made me had the opportunity to deeply touch the pulse and discover the true picture of China's rural development.

Behind the emotional and material backgrounds, I must thank my parents and my close partner Vladyslav Sokolov. My parents selfless support that gives me the opportunity to broaden my horizons and pursue a higher level of spiritual wisdom in overseas. I am gratitude to my partner who are firmly stand by my side even I am busy with study and gave me lots of invisible support and strength in every moment of my fatigue and depression. Finally, I would like to solemnly thank myself for never giving up. Despite facing a series of consecutive setbacks, I have never bowed to fate. From the initial fears, setbacks and blows, to reinventing myself little by little on the rubble, this tempering has made me stronger than ever.

‘The road ahead is long and arduous, but I shall spare no effort to explore the truth’. I know that I have just opened the door to knowledge exploration. Thanks to this research path, it not only laid a solid foundation for my future continuous learning but also taught me a sense of awe of knowledge. In the years to come, I will continue to cultivate with this tenacity and wisdom and strive to help more people in need with what I have learned one day.

# 1 INTRODUCTION

## 1.1 My Research Journey

The deeper real motivation behind this research mainly stems from my love for the countryside. Based on my observations of rural development in Zhejiang Province during my time there, I realize that the national strategy for rural revitalization is not simply a top-down policy implementation in a single dimension but represents a profound and dynamic practice of social innovation. Besides, in the early careful review of innovation field, I keenly realized that the mainstream innovation paradigm is overly biased toward technological and economic rationality, while the highly complex rural social transformation urgently calls for the application of social innovation paradigms to solve complex rural problems. Before officially launching the in-depth research, what I hope most is to penetrate the top-down macro policy surface and restore the real and vivid practice of rural revitalization strategies at the local level through firsthand narratives from actors, especially I wish to approach this from multiple perspectives, thoroughly capture the insights and concerns of participants from various organizations, to understand their true understanding, core values, and deeper concerns regarding rural revitalization.

To open research opportunities and obtain authoritative key information, I joined the China Academy of Art as an employee through relevant social networks. As a top national university with a high reputation in social issues, this platform provided me with essential support in terms of trust and networking for my empirical research. During this period, I actively sought out experts and key personnel in relevant fields within the institution. Through preliminary professional discussions and the establishment of trust, I not only received valuable guidance and recommendations, but also overcame the interpersonal barriers that hindered the data collection and access to the fieldwork. In fact, before starting this job, my research journey faced numerous setbacks from the beginning. In the second year of my research journey, it was interrupted due to the pandemic. Subsequently, affected by the pandemic, two of my supervisors resigned one after another, causing my research journey to be stuck in a state of continuous interruptions and stagnation. Faced with external doubts and a sense of isolation, I felt like a ship lost in the dark ocean, unable to see any lighthouses or a clear direction. I even felt as if I was abandoned by the whole world. I was deeply trapped in self-doubt, depression, and the pain of being on the verge of giving up. But after enduring repeated anxieties and through some time of reflection, I decided to regain my faith and move forward again.

My determination to never give up gave me the opportunity to experience the positive aspects in later stages. I was able to engage in in-depth dialogue with leaders of various organizations, visit real rural conditions, and obtain detailed first-hand qualitative corpora, this process was very interesting. In addition, the evolution of conceptual models from vague conceptual concepts to clear closed loops in coding brought a highly sense of academic fulfilment and strengthen my resilience in follow-up heavy

coding workload. Looking back on this journey, these challenges have transformed me both academically and spiritually. In my research, I learned to approach problems from a critical perspective, stepping outside existing frameworks. For example, through careful consideration and the introduction of interdisciplinary approaches, I developed a conceptual framework for social innovation ecosystems, this allowed me to reflect on traditional technological innovation models and adapt them to different contexts. But most importantly, experiencing the entire process from identifying problems to strictly adhering to academic standards in conducting independent research and verification greatly enhances my sense of respect for academic exploration, and greatly develops the psychological resilience to carry out and complete complex research projects independently.

## 1.2 Introduction

The focus of this thesis is to identify social innovation ecosystems and discover its innovation dynamics mechanism. For a long time, technological innovation has been in the spotlight as the dominant field of innovation, it is nominated as an important factor in promoting economic development and national competitiveness, no matter for national system of innovation, the regional innovation system or the focus on the innovation ecosystem, almost revolve around technological innovation. Although Schumpeter pointed out that the ‘creative destruction’ caused by entrepreneur and technological innovation is the core driving force behind the long-term evolution of economies and societies, and it constitutes the inherent nature of the development of capitalism (Schumpeter, 1942). Pinto et al. (2024) critically indicated that such technological disruption often leads to significant social unrest, class differentiation and cultural fragmentation while restructuring industries (Pinto *et al.*, 2024). This not only reveals the inherent paradox of the duality nature of technological innovation, both as a problem solver and problem creator, but also confirms that an excessive focus on technical rationality and entrepreneur as heroic catalyst may lead to a structural neglect of the participation of broader social actors in the governance of social issues (Howaldt, 2019).

This has prompted scholars in the technical field and other fields to further reflect on the systemic mechanisms of innovation, especially the relationship between innovation and social dimensions and its impact on sustainable development issues. Innovation categories with social attributes are increasingly emerging, such as frugal innovation (Ahuja et al., 2012), the bottom of pyramid innovation (Srinivasan and Goel 2005), doing well by doing good innovation (Varadarajan and Kaul 2018). Especially, social innovation is considered to be an important innovation paradigm that will trigger profound social changes and transformation mechanisms in the 21<sup>st</sup> century (Dias and Partidário, 2019; Howaldt, 2019). Although some innovative practices have been developed in the social sphere, reflecting the characteristics of social innovation, unlike technological innovation, which has relatively mature systemic mechanisms guiding its practice, many social innovation practices often lack clear and effective theoretical support and systemic operation mechanisms, resulting in a significant time lag

effect between theoretical construction and cutting-edge innovation practice (Bataglin and Kruglianskas, 2022; OECD, 2025).

In recent years, China's rural revitalization strategy has garnered considerable attention and is a crucial national policy. Guided by this strategy, rural practices across provinces and cities have explored and experimented with diverse approaches to achieve rural revitalization. In a sense, China's rural revitalization strategy represents a large-scale mobilization of social innovation, with distinct strategic characteristics (Chen, Knierim and Bock, 2022). Villages across China are actively exploring new development strategies, redefining and revitalizing rural values, and contributing significantly to addressing social issues related to rural development and urban-rural development. This practice suggests the necessity of non-technical innovation in addressing social problems and needs (Lu *et al.*, 2025). The evolution of the innovation paradigm has significantly surpassed the traditional model of a specific subject performing a predetermined function in the corresponding space, such as the Triple Helix model (Leydesdorff and Etzkowitz, 1998). Instead, it moves toward a collaborative network that deeply integrates multiple social forces. The actor, functional and value dimension of innovation are further extended, with the redefinition of the role of civil society, the dynamic evolution of social relations, and the transformation of knowledge sharing forms, the innovation field shows a high degree of situational diversity in a multi-dimensional context (Parjanen and Pässilä, 2025). This evolutionary process profoundly reveals the ecosystem characteristics of contemporary innovation, that is, innovation is no longer an isolated functional realization, but a product of the collaborative evolution and value co-creation of various elements within complex systems (Babu *et al.*, 2020).

Although China's rural revitalization strategy has greatly stimulated the endogenous driving force and innovation vitality of rural development, most of the existing overall actions are still in the stage of fragmented practice and have not yet formed a mature theoretical framework or systematic innovation system (Lin *et al.*, 2025). This stems from, firstly, the limitation of the theoretical cognitive dimension of social innovation in China (Zhang, Auricchio and Selloni, 2025); and, secondly, the inadequate and vague of research on the mechanisms of social innovation ecosystems (Terstriep, Rehfeld and Kleverbeck, 2020; Berg-Postweiler and Leicht-Scholten, 2024). This situation makes it difficult for academic and policy circles to clearly define and deeply analyse the systematic operation mechanism behind these grassroots practices, which in turn restricts the theoretical sublimation and paradigm transformation from spontaneous exploration to structural and sustainable models to a certain extent (Berg-Postweiler and Leicht-Scholten, 2024). relevant discussions and research of social innovation have undeniably highlighted that social innovation is not simply presented as an innovation paradigm but rather involves a more complex and holistic consideration of the mechanisms of its innovation ecosystem (Phillips, Luo and Wendland-Liu, 2024). Therefore, it is urgent to deepen the understanding of social innovation from a systems perspective.

### 1.3 Social Innovation

In the past two decades of academic evolution, social innovation has transcended traditional concept of technological innovation frameworks and is defined as a new paradigm that addresses thorny social challenges and leads structural transformations (Grimm *et al.*, 2013; P. Appiah and Grimm, 2025). As a potential force driving social systemic change, it has aroused widespread attention and discussion in contemporary academic context. Although social innovation has become the focus of interdisciplinary discussions, the theoretical construction surrounding this concept still exhibits significant fragmentation. Due to the lack of a unified definition, this term assumes different connotations within various disciplinary contexts, and no cohesive, clear, and concrete theoretical consensus has yet been reached in the academic community (Beckman *et al.*, 2023; Havas, 2025; Pacheco, Turro and Urbano, 2025).

Besides, current discussions on social innovation research tend to focus excessively on a single sectoral perspective, such as social entrepreneurship (Zahra *et al.*, 2009; Dacin, Dacin and Tracey, 2011; Dwivedi and Weerawardena, 2018; Fauzi, Muhamad Tamyaz and Kumar, 2025), but ignores the deep concern for its systematic approach and operation mechanism. Although the endogenous characteristics of social innovation and the complexity and multi-dimensionality of the elements involved have long highlighted the essential characteristics of the innovation ecosystem, the existing theoretical construction has not been fully integrated with its systematic attributes. Scholars generally agree that a single organization is no longer able to cope with today's complex and highly interconnected social challenges, and that the macro nature of social innovation requires it to go beyond a narrow departmental perspective (Melece, 2015; Beckman *et al.*, 2023; Irungu *et al.*, 2023). Many cutting-edge practices have proved that social innovation activities have moved away from the rationality of pure economic tools and the drive of financial interests, and have been deeply embedded in the cross-departmental leadership and multi-organizational collaboration network based on the concept of synergy and co-creation (Phills, Deiglmeier and Miller, 2008; Terstriep, Rehfeld and Kleverbeck, 2020; Domanski, Kaletka and Krüger, 2023), so as to build a systemic change force that transcends the boundaries of individual organizations.

Scholars believe that local and regional development will become one of the most critical frontier areas in future social innovation research. Different from the fragmented perspective of a single sector, research in this field indicates 'innovation in social relations', emphasises the deep participation of civil society and the collaborative interaction between multiple actors (Moulaert *et al.*, 2005; Moulaert, Simmons and Parra, 2024), which highlights the ecosystem characteristics of social innovation. This innovative nature based on specific social and institutional contexts not only breaks down traditional sectoral barriers, but also highlights the structural supporting role played by multiple actors in addressing complex social challenges (Bosworth, McAreavey and Kennedy, 2025).

### 1.3.1 Social Innovation with Territorial Development

The diversity of rural problems or challenges is getting attention from the academia, civic public and policy makers, especially after the financial crisis, which exacerbates the social problems and gradually marginalized some rural development. Today, the social-economic change of rural is more necessary than urban, that's why social innovation in rural development gain especially interests and most often be used (Bock, 2012; Slee, Lukesch and Ravazzoli, 2022). Rural issues are not only the local problems but relates to a national's economic, political, and cultural, and the whole civic public wellbeing. Understanding and motivating social innovation in rural area is play a significant role both in stimulating the economic modernization development and diversified value transformation of rural (Bosworth *et al.*, 2016; Bosworth, McAreavey and Kennedy, 2025).

Social innovation is recognised a key element in the organisation and regional development of any institution, movement, or social network (Rover, De Gennaro and Roselli, 2017; Steiner, Calò and Shucksmith, 2023). Good social innovation initiatives can help offset markets failure, especially after the influence of financial crisis, the local community needs to help themselves through social innovation to achieve the targets which market and public policy cannot satisfied, citizens and businesses as self-reliant development actors, taking change and development into their own hands, replacing government involvement to achieve development and growth (Neumeier, 2017; Millard and Fucci, 2023). It emphasised the innovation strategy and decision-making process based on local participate or actors, local people and institutions are perceived the best experts in innovation process and problem solving (Kopoteva and Nikula, 2014; Baselice *et al.*, 2021). Although it is necessary to encouraging more economic activities through bottom-up ways to stimulates local development in diversity, in China or the other developing countries, due to polices difference, more strategies have to remain top-down ways, therefore the development of rural areas also requires the support of public policies (Zhang, Lin and Mao, 2024). Besides, although local communities know well about the local conditions, resources, cultural and history, and stimulating rural development needs respect local context, the knowledge, abilities, and resources from external urban and cross-border could give insights to local problems solving and help revitalize local innovation development (Noack and Federwisch, 2019; Klemens *et al.*, 2023).

It indicates the diversity development of rural economic to a certain extent needs dynamic synergy mechanism, it is not only requiring the interact among various agents, participants, or actors, but interact between people with local resources (Culkin and Kyriakopoulos, 2024). There still exist ambiguity of what is the starting point for collaboration among stakeholders to implement social innovation, and which actors or combination of actors make social innovation possible in rural areas, the role they play in these processes (Vercher, 2022), and building formal and informal networks that connect external resources (such as research institutions) with local actors is key to solving global challenges (Guerrero-

Ocampo *et al.*, 2024). Therefore further clarifying the relationship between the government, university and cross-border organizations has become central to effectively promoting future rural development (Morales and Kristensen, 2026). These point to the need to understand the application of social innovation in promoting rural development from the lens of social innovation ecosystems.

### 1.3.2 Social Innovation Ecosystems

To some extent, the innovation ecosystem is significantly diverse and highly integrated across the dimensions (Neudert, Smolka and Bösch, 2024). Existing systematic studies have shown that the conceptual complexity and core characteristics of social innovation have far exceeded the micro paradigm of a single subject as the determinant, and this exclusive perspective is easy to ignore other key functional attributes in the comprehensive framework of social innovation (Domanski, Howaldt and Kaletka, 2020). Although the driving role of enterprises, universities, governments and civil society (i.e., the Quadruple Helix model) has been reflected at the practical and theoretical levels, and scholars have emphasised the significance of ‘cross-sector fertilization’ to the development of social innovation (Phills, Deiglmeier and Miller, 2008; Montanari, 2011), the empirical research on the dynamic interaction and evolution logic between these heterogeneous subjects is still insufficient.

This indicates research on social innovation has reflected an urgent call to identify and develop its innovation ecosystem, the research of social innovation ecosystems is scarce and the mechanism of it in promoting innovative activities are still rather vague (Terstriep, Rehfeld and Kleverbeck, 2020; Berg-Postweiler and Leicht-Scholten, 2024), only few studies that explicitly focus on the discourse of social innovation ecosystems. It is worth noting that the construction of social innovation ecosystems is increasingly shifting towards an interdisciplinary perspective (Domanski, Howaldt and Kaletka, 2020; Morawska-Jancelewicz, 2021), which is mainly due to the limitations of earlier research in this field, traditional literature often focuses on the lens of micro approaches, resulting in a long-term lack of deep concern for systemic innovation pathways. This trajectory of development forms a stark contrast with the field of technological innovation. For decades, technological innovation has consistently focused on advancing theoretical exploration at the systemic level, particularly through systematic paradigms represented by the helical models of innovation (Cai and Lattu, 2022), which have provided solid theoretical support and methodological guidance for the structured evolution of technological innovation.

Nowadays, no matter social innovation and technological innovation, it is almost imperative to consider the Triple Helix, Quadruple Helix, and N-tuple helix from the perspective of innovation regionalization (Galvao *et al.*, 2019). It illustrates that it is necessary to integrate different innovation models in a transformational innovation strategy (Terstriep, Rehfeld and Kleverbeck, 2020; Neudert, Smolka and Bösch, 2024). Even if some studies try to employ helical models of innovation from technological innovation field to promote the understanding of social innovation mechanism, but usually either lack

of rigorous consideration or neglect to dialectically discuss the differences of innovation nature and potential synergies between them, thus failing to effectively integrate the insights of the two fields.

## 1.4 Innovation Ecosystems and Helical Models of Innovation

Compared with social innovation which focuses on its conceptual development and micro-level, technological innovation has always focused on the development of its system mechanisms. The national system of innovation and related innovation policies has been developed since 1990 (Nelson, 1994; Freeman, 1995), which have a particular science and technology focus, and in such context, the Triple Helix model of innovation holds a clear economics purpose (Leydesdorff and Etzkowitz, 1998). Along with innovation and social development, the acknowledgement of innovation around science and technology based on knowledge economy has been expand further to knowledge democracy and socio-ecology (Carayannis, Campbell and Grigoroudis, 2022), and the traditional innovation model of Triple Helix have developed to Quadruple (public society) and Quintuple Helix (natural environments) innovation systems (Carayannis and Campbell, 2010), and the holistic consideration of Neo-Triple Helix model of innovation ecosystem which dialectically integrated Triple Helix, Quadruple and Quintuple Helix (Cai, 2022).

The evolution of technological innovation systems reflects a shift in scholars' ideological understanding of innovation. First, innovation no longer hinges on economic development based on technology development by a limited number of innovation actors (universities-enterprises-governments). Instead, the Triple Helix model emphasises R&D in specific spaces, government regulatory control, and the interactive functionality of others, such as academic enterprises and entrepreneurial universities (Leydesdorff and Etzkowitz, 1998; Etzkowitz, 2008), to achieve economic development benefits tailored to specific market targets and targeted at a limited audience. The Quadruple and Quintuple Helix innovation systems strengthen the social connectivity of innovation, with the concept of knowledge democracy emphasising the importance of social media and the public as a social discourse context for innovation implementation (Carayannis and Campbell, 2010; Carayannis, Campbell and Grigoroudis, 2022). Second, the dimensionality of innovation has expanded. The focus on economic objectives has further incorporated social considerations and sustainable development, albeit to a limited extent. Finally, the mechanisms of innovation systems have been refined. Neo-Triple Helix model of innovation ecosystem solves the coordination and compatibility issues between its theoretical framework and dynamic mechanism caused by the expansion of the innovation spiral mechanism, further integrates the multi-spiral elements into an innovation ecosystem, which shed the light on integrating the spatial relationships of helical models of innovation and their dynamic synergy mechanism (Cai, 2022).

Nevertheless, the main attention of innovation system literally still carried out around the dimension of technological breakthrough and economic growth. In the Quadruple Helix model, the functions of the

social dimension are often limited to knowledge production, democratic construction, and the discourse influence of the public and the media as the background of innovation. In contrast, social innovation focuses more on the substantive participation and dynamic interaction of various actors in the social structure. This deep involvement of multiple actors in the innovation process means that innovation is not limited to rhetoric at the discourse level but is truly embedded in social fabric through concrete social actions. Under this paradigm, the role of the public has shifted from a passive innovation context to an active driving force, incentivizing a broader social group to participate in innovation, thus transcending the narrow category of beneficiaries, such as user innovation (Smith *et al.*, 2025). This shift in participation mode indicates the reconstruction of existing relationships and system dynamics between innovation subjects, which will further shape and improve the operation mechanism and evolution path of the future innovation ecosystem. Furthermore, the sustainability concerns addressed by the Quintuple Helix primarily focus on the impact of innovation on the ecological environment. However, sustainable development extends beyond ecological issues to encompass broader, more pernicious social issues facing the public. This is precisely the difference in the core innovation attributes of social innovation compared to technological innovation: social innovation concerns broad social problems related to sustainable development goals (Jareh, 2025), emphasises the impact of substantive innovation on social value, while non-technical innovation remains focused on the economic benefits of technology, prioritizing social value as a spillover effect or shadow impact of technological development.

## 1.5 Problem Statement

The above discussion highlights several pressing issues in social innovation research. First, the conceptual and theoretical perspectives on social innovation need to shift further from micro to meso and macro dimensions (OECD, 2025). Scholars are increasingly recognizing the need to understand the complex interactions and co-creation within social innovation ecosystems (Howaldt, Domanski and Kaletka, 2016) and to establish appropriate governance frameworks (Domanski, Howaldt and Kaletka, 2020). Second, a more systematic approach is necessary (European Commission, 2025). This implies identifying and developing an inclusive social innovation ecosystem framework that captures the core innovation characteristics of social innovation and integrates its essential elements. Third, technological innovation research has a richer tradition of applying systems approaches, necessitating a cross-disciplinary approach to dialectically understand and develop social innovation ecosystems. Finally, insights into and exploration of the innovation dynamic mechanisms of social innovation ecosystems are needed to further enrich and strengthen their theoretical foundations and connect relatively fragmented knowledge chains (Havas, 2025).

The modern innovation paradigm embodies the essential transformation from the traditional linear, one-way, and sequential path to a networked and systematic architecture (Morawska-Jancelewicz, 2021).

For a long time, social innovation research has focused too much on fragmented analysis of a single industry or specific field, resulting in a lack of deep insight into the macro and cross-disciplinary context of the academic community. This limitation is inherently contradictory to its innovation attributes. The discourse of contemporary social innovation clearly points out that social innovation is a highly complex innovation paradigm with multi-level connotations. It is not only committed to solving deeply nested social problems, but also aims to drive structural social change, and its interdisciplinary and cross-border essential characteristics are deeply embedded and subject to diverse social situations and institutional backgrounds (Howaldt, Hölsgens and Kaletka, 2024; World Economic Forum, 2025).

This confirms that social innovation is inherently a systemic innovation paradigm. Research focused on a single sector is no longer sufficient to further understand and integrate its conceptual knowledge and strengthen its theoretical foundation. A more fundamental issue lies in the lack of a systematic perspective in both theoretical understanding and empirical research, which further hinders the examination of the dynamic mechanisms underlying social innovation, and in turn, significantly restricts the ability to gain a deep understanding of the dynamics of innovation among various actors and organizations. Due to the lack of universal and guiding conceptual framework, the existing social innovation research is often fragmented, limited to the descriptive differences of practical cases in different contexts (Phillips, Luo and Wendland-Liu, 2024). It may further exacerbate the conceptual ambiguity and logical confusion in the theoretical sense of this field (Pacheco, Turro and Urbano, 2025).

However, even if the research of social innovation has developed considerably, the exploration on its system level is relatively scarce. Although some scholars have been deeply aware of the systemic nature of social innovation, due to the lack of specialized research on its internal operating mechanism and evolutionary path, it has turned to drawing insight from interdisciplinary theoretical frameworks and analytical tools to understand the complex system mechanism of social innovation. However, the problem is, while few research adopts systematic approaches of Quadruple and Quintuple models, but have not yet offered a theoretical explanation of the ecosystems' operational mechanisms (Bellandi, Donati and Cataneo, 2021; Morawska-Jancelewicz, 2021), possibly due to the inherent limitations of these models (Cai and Lattu, 2022). In addition, they usually lack of dialectically discussion the synergy and adaptation between different innovation systems, ultimately failed to effectively integrate the wisdom of these two fields. Despite the challenges of applying cross-disciplinary insights to social innovation ecosystems, there is a consensus among scholars on the importance of integrating various innovation models within a transformative innovation strategy (Terstriep, Rehfeld and Kleverbeck, 2020).

As an innovation paradigm with complicated innovation attributes, scatteration, fragmentation and unsystematic approaches are detrimental to the sustainable capture and creation of the innovation value and understanding potential innovation dynamics. This not only hinders the theoretical development of

the social innovation ecosystem but also fails to provide action guidelines for social innovation practices. More importantly, this systematic lack and conceptual ambiguity at the theoretical level further weakens the motivation of policymakers and related organizations to institutionalize social innovation and hinders the process of deeply embedding it into the core of future national innovation systems and organizational strategies.

## 1.6 China's Rural Revitalization Strategy

Rural development is an important concern for almost all countries. For a long time, China pay attention to the exploration of rural development. Since the reform and opening in 1978, from the very beginning strategy of 'construction of new rural areas' to the strategy of 'rural revitalization' in today, China has achieved world-renowned achievements in poverty alleviation in rural area (Jiang, 2017; Sun, Zhang and Wang, 2025), which be called the Chinese miracle. While the rural problems in China not limited to poverty. In recently years, the question of unbalanced development between urban and rural areas is imperative to notice, the main contradiction of society is transformed into 'the contradiction between unbalanced, inadequate development and the people's ever-growing needs for a better life'. It indicates beside the basic needs, the need for improve the quality of life is as important as the quantity of life, especially for rural area (Ma and Mu, 2024). Therefore, President Xi proposed the strategy of 'rural revitalization' in the report of the 19th National Congress of the Communist Party of China in October 2017, and it is emphasised again at the 20th national congress in October 2022 (*Full text of the report to the 20th National Congress of the Communist Party of China*, 2023). It emphasis that in the implementation of rural revitalization strategy is a key measure to build a beautiful rural and beautiful China, an important foundation for building a modern economic system, an effective way to inherit China's excellent traditional culture, a solid strategy for improving the pattern of modern social governance, and an inevitable choice for realizing the common prosperity of all the people (Y. Zhang *et al.*, 2023).

Social innovation as an innovation paradigm which acquire lively discussion and attention in western and has been recognized as an integral part of rural development, it remains a big room to further exploring both in its empirical and theoretical research, but the significance of social innovation in stimulating social development just acquired little attention in China (Zhang, Auricchio and Selloni, 2025). Rural revitalization in China is a crucial national strategy, its strategic significance and dimensions have long reflected the characteristics of social innovation and its related innovation ecosystem level, rather than remaining at the policy discourse level. So far China's rural revitalization practices are more focused on diverse and decentralized case descriptions (Ying *et al.*, 2025), few studies recognized the conceptual reflection, refinement, and enlightenment on the broader innovation systemic mechanisms behind this strategy or underlying its practice (Ding *et al.*, 2025), which represent a lack of both an interpretation of the concept of social innovation and a deep understanding of the

innovation dynamic of social innovation ecosystem. This result in inadequate of development in further refining and theorizing various complex practice and hinders further clarification and sublimation of its innovation dynamic mechanism.

As mentioned above, social innovation research urgently calls for further clarification and exploration of its innovation ecosystem and the insight of its dynamic mechanism, and it is significance to put social innovation research under different socio-political, economic, and cultural contexts. Focusing on the territorial development practice of rural revitalization provides a broad space and hotbed for further improvement of social innovation theoretical research. China's unique and complex social, cultural and institutional environment can provide valuable practical experience for further understanding the concept composition and dynamic mechanism the social innovation ecosystems, it is necessary to further exploring and deepening this innovation paradigm under the context of socialism with Chinese characteristic context.

## 1.7 Research Aims, Questions and Objectives

Therefore, the purpose of this research is to identify social innovation ecosystems and discover its innovation dynamics mechanism. The research objects of this research are included organizations from the government, university, enterprise, and civil society, and the research setting is at the context of China's rural revitalization strategy. The main research questions of this research are: **How do multi-actor innovation dynamics within social innovation ecosystems function in the context of China's rural revitalization strategy?**

To answer this question, two necessary steps need to be taken. First theoretically, identify and build social innovation ecosystems. By dialectically reflecting upon the potential synergies between cross-disciplinary innovation models (helical models of innovation) and the systemic characteristics of social innovation (currently not fully integrated), and by integrating the fundamental attributes, core elements, and dimensions of social innovation, we identify the essential conceptual components and potential dynamic mechanisms of the social innovation ecosystem. The social innovation ecosystems in this research are consists of three key components, namely innovation genes, social structures, and sustainable development goals, and the relationship between two of them respectively are described as well. Second empirically, clarify and discover innovation dynamics mechanism in case study research. The social innovation ecosystem built in this research consists of two interconnected layers of helical interactions: innovation dynamics and sustainable development dynamics, the details are scrutiny in chapter 3. According to this, related sub-questions are also incorporated like: 1) what is the motivation of organizations being involved in rural revitalization strategy? 2) how different organizations interact and collaborate with each other? 3) what are their respective organizational functions? 4) how the innovation genes empower and interact with civil society? 5) what kinds of social contexts factor influence the organizations practising social innovation?

Specifically, the objective of this research is:

RO1: To develop a comprehensive conceptual framework of social innovation ecosystems by critically integrating the core inherent characteristics of social innovation and the interdisciplinary helical models of innovation.

RO2: To empirically investigate the innovation dynamic mechanism of multi-actors among the government, university, enterprise, and civil society within the context of China's rural revitalization.

RO3: To critically examine the helical models originates from technological innovation in the application to social innovation contexts and further reflect and develop the helical models of innovation that reveals the underlying mechanisms of evolution in the social innovation ecosystem.

RO4: To drive policy insights for guiding future rural and the other social innovation practitioners based on the comprehensive framework established in the study and inspire reflections for the imbalance between technological and social innovation to achieve dynamic equilibrium in entire innovation ecosystem.

## 1.8 Research Significance

Based on the identification of the problems, this study reflects several important aspects. 1) the importance of refining the concept of social innovation; 2) the importance of further exploring and developing a comprehensive framework of social innovation ecosystems; 3) the importance of exploring the dynamic mechanisms of innovation within the social innovation ecosystem; 4) the importance of dialectically drawing on and integrating cross-disciplinary innovation paradigms while preserving the essential characteristics of social innovation and clarifying their synergistic effects; 5) the importance of promoting the practical application of social innovation paradigms in different regional contexts and enriching understanding of the importance of social innovation in promoting rural development; 6) fill the relevant gaps in research on social innovation in China, and address the current issue of the lack of systematic and holistic conceptual awareness; 7) the importance of further expanding the social dimension of innovation ecosystems and identifying more participants and the potential shifts in the associated innovation dynamics.

Social innovation research lacks a unified understanding of its concepts and definitions. This study identifies, refines, interprets, and integrates the relatively fragmented conceptual characteristics and elements of social innovation from a new perspective, further enriching and strengthening understanding of the concept. Given the relative paucity of research on the concept of social innovation in China, the insights provided by this study will further enhance understanding and dissemination of this paradigm. The social innovation ecosystem has been described as a theoretical approach and heuristic model (Domanski, Howaldt and Kaletka, 2020), and fail to identify it will result in social

innovation practices often transcend and challenge existing institutional context (Terstriep, Rehfeld and Kleverbeck, 2020; Phillips, Luo and Wendland-Liu, 2024). However, it is also significance to dialectically identify and develop the importance of social innovation ecosystems (Berg-Postweiler and Leicht-Scholten, 2024), it means it is necessary to rigorously clarify the synergy between interdisciplinary innovation system mechanisms and social innovation. This study provides insights into the systemic concept of social innovation from a novel perspective while adhering to the essence of social innovation. Which provides important theoretical and dynamic guidance for more effective and clearer future social innovation practices, avoiding non-dialectical vague application of interdisciplinary innovation system mechanisms and misinterpreting the dynamic mechanisms of social innovation.

Advancing exploring and understanding of social innovation ecosystems is conducive to further enriching social innovation conceptual characteristics and laying out its theoretical foundation, differentiating and integrating the more fragmented subject knowledge (Pacheco, Turro and Urbano, 2025). Especially, breaking the single-path-dependent mindset to understanding social innovation at a multisectoral perspective, which is helpful to further clarify and address deficiencies in exploring and understanding the complex dynamic mechanisms of social innovation (Havas, 2025; World Economic Forum, 2025). In addition, pay attention to the dynamic interaction among multi-actors will stimulates the exploration, generation, development, diffusion, and sustainability of social innovation practices in different social context. This is particularly prominent and important in the research on social innovation promoting territorial development, especially in rural area (Bosworth, McAreavey and Kennedy, 2025). Finally, the study provides important insights for enriching theoretical research on innovation ecosystems. Currently, theoretical research on innovation ecosystems remains primarily focused on business and technology, failing to effectively integrate broader social dimensions (Parjanen and Pässilä, 2025). Therefore, this study has important theoretical implications for enriching the social value dimension often neglected in the field of technological innovation, the lack of theoretical development of systemic mechanisms in the field of social innovation, and the overall imbalance in the innovation ecosystem.

## 1.9 Research Methodology

This study mainly follows a qualitative strategy, with philosophical ontology and epistemology anchored in the constructivism interpretive social sciences. Out of the research question to be explored based on this study, the case study research will be conducted. Case study research is seen as ‘a bridge across paradigms’ (Luck, Jackson and Usher, 2006), and is suitable for interpreting complicated phenomenon of social world, it usually refers to the intersection of diverse interests and variables, which is helpful for research to have a deep and comprehensive understanding of social phenomenon (Bryman, 2012). Besides, case study ‘it is not assigned to a fixed ontological, epistemological or methodological

position' (Rosenberg and Yates, 2007) , but it has the ability to adapt to a range of philosophical positions because its fluidity and evolution among them, so through case study there can be opportunities to design studies that fit into the inherent complexity of the research problem (Harrison *et al.*, 2017a).

This study adopts a multiple case study method and selects two representative cases for in-depth analysis. In the data collection stage, semi-structured interviews are mainly used as the core tool. This method is highly flexible and in-depth. It can not only ensure that the interviews are carried out around the core research objectives, but also conduct retrospective questions based on the real-time feedback of the interviewees, thereby capturing the participants' unique insights, potential motivations and emotional dimensions of complex phenomena (Creswell, 2013). To ensure the rigor of the research tool, the development of the enquiry questionnaire was closely based on the conceptual framework and highly connected to the research questions. This study designed four sets of nuances differentiated questionnaires for the four major innovation entities of the government, university, enterprise and civil society, which show a mutual verification manner from different organizational perspectives and significantly enhanced the validity and credibility of the research. In the data analysis process, this study strictly followed the six standardized steps of thematic analysis and used manual coding to conduct in-depth interpretation and sublimation of the original data (Braun and Clarke, 2023). Although computer-assisted software is increasingly popular, manual coding shows a high degree of rationality case studies. It strengthens the 'interpretive nature' of the researcher as the subject of analysis (David, 2017). Through repeated reading and perception of the data, fragmented information is transformed into attributes and categories with theoretical significance, and ultimately a logical leap from raw data to qualitative discovery is achieved.

## 1.10 Outline of Thesis

The foundation of this research is the concept of innovation ecosystems, more specifically, social innovation ecosystems. Therefore, the literature review in Chapter 2 focuses on two research areas. First, it analyses, refines, and attempts to conceptualize the concept of social innovation. This chapter briefly discusses the development of social innovation and the discussions it has sparked in recent decades as a new innovation paradigm. This chapter focuses on and integrates the basic definition, core attributes and dimensions, and related fields of social innovation, most importantly, reflections on the social innovation ecosystem and its urgent need for further development. Second, it reviews relevant content on innovation ecosystems, more specifically, helical models of innovation of technological innovation, including the Triple helix model, Quadruple and Quintuple helix innovation systems, and the Neo-Triple helix innovation ecosystem. Besides, proposes a conceptual framework of a social innovation ecosystem. This framework integrates the helical models of technological innovation as the main field and the conceptual attributes of social innovation as the adaptation field. Through dialectical

discussion of the synergistic effect of these two, it develops a conceptual framework of a comprehensive social innovation ecosystem. In order to conduct an effective investigation, a rigorous philosophical and methodological foundation is required. Chapter 3 explains the philosophical paradigm, methodology and concrete method that underpins the research and the subsequent approach to obtaining data. Chapter 4 primarily present the qualitative data analysis and findings. This combines case study analysis with thematic analysis of interview transcripts using manual coding. Chapter 5 systematically presents the core empirical findings derived from qualitative analysis and constructs the key conceptual model of this study. Chapter 6 provides an in-depth critical discussion by triangulating these empirical findings with the existing literature in direct relation to the primary research questions. Finally, Chapter 7 synthesizes the overarching thesis, systematically articulating the main theoretical contributions, implications for broader case studies, actionable insights for policymakers and practitioners, as well as the research limitations and fruitful avenues for future inquiry.

## 2 LITERATURE REVIEW

### 2.1 Introduction

The national system of innovation and related innovation policies has been developed since 1990 (Nelson, 1994; Freeman, 1995), which have a particular science and technology focus, and in such context, the Triple Helix model (universities-industries-governments) of innovation holds a clear economics purpose (Leydesdorff and Etzkowitz, 1998; Zadeegan, Ghazinoory and Nasri, 2025). With the rapid development of technological innovation, Industry 4.0 is gradually transitioning to Industry 5.0, as Schumpeter said that innovation is a process of ‘creative destructive’, there will be destruction with creation (Nicholls, Simon and Gabriel, 2015; Pacheco and Iwaszczenko, 2024). Alongside the new breakthrough of technology, new social challenges are following as well, therefore scholars highlights the ‘human-centred’ innovation attributes of Industry 5.0, which brings the new discourse for reconsideration about the relationship between the technology, society and humanity (Carayannis, Campbell and Grigoroudis, 2022; Garan and Güneş, 2025). For instance, some scholars have attempted to quantify both innovation and sustainability by establishing links between environmental sustainability, quality of life, and economic advancement within urban regions, examining innovation processes catalysed by innovation policies and the knowledge economy (Cantafio and Ieromonachou, 2019). It represents that the acknowledgement of innovation around science and technology based on knowledge economy has been expand further to knowledge democracy and knowledge society (Carayannis, Campbell and Grigoroudis, 2022; Diessner *et al.*, 2025); the traditional innovation model of Triple Helix have developed to Quadruple (public society) and Quintuple Helix (natural environments) innovation systems (Carayannis and Campbell, 2010; Marchesani and Ceci, 2025), and the holistic consideration of Neo-Triple Helix model of innovation ecosystem (Cai, 2022; Rabelo Neto

*et al.*, 2024).

Correspondingly, social innovation has sparked the interest among scholars in last two decades. Social innovation is closely related to sustainable development (Repo and Matschoss, 2020; Humphreys and Imas, 2022; Bucio-Mendoza and Solis-Navarrete, 2025), aims at addressing various social needs or challenges (Mulgan, 2007; Scaffidi, Micelli and Nash, 2025), leading potential social and institutional change (Cajaiba-Santana, 2014; Howaldt and Schwarz, 2025), it emphasises innovation in social relations, referring to actions and contribution from diversity participants (Moulaert, Maccallum and Hillier, 2013; OECD, 2025), the innovative value is created through co-creation and not limited to private interests and advocates for the creation of shared value (Porter and Kramer, 2011; Leyen *et al.*, 2025) to improve either the quality or quantity of life (Pol and Ville, 2009; Avelino *et al.*, 2024).

Compared with technological innovation, social innovation mainly focuses on the social value impact caused by innovation rather than technology based economic or business impact. It focuses on broader issues related to sustainable development goals rather than just limited to the ecological environment. Nonetheless, this does not mean that social innovation is a purely social consideration and ignores the economic dimension. The social innovation practice of some large multinational companies shows that it is not only a tool to achieve social goals but also can achieve shared value creation through reasonable strategic arrangements (Kramer and Pfitzer, 2016; Tabares, Dionisio and Parida, 2025). Furthermore, compared with the helical models of innovation, it involves a wider and more diverse set of actors in the social structure and emphasises features of substantive participation, empowerment and governance, co-creation, and even collective action, which highlights the qualities of ‘innovation in social relations’ rather than just considering the social public as the context for innovation (Moulaert, Maccallum and Hillier, 2013; Parjanen and Pässilä, 2025). At the same time, the value generated by innovation covers a wider range of social groups rather than limited stakeholders or main market audience (Phills, Deiglmeier and Miller, 2008; Phillips, Luo and Wendland-Liu, 2024).

No matter for technological innovation or social innovation, the innovative attributes highlight the characteristics of the innovation ecosystem. However, even if the research of social innovation has developed considerably, it is relatively centred on its conceptual understanding or focus on single sectors’ perspectives, which is contrast to the continuous evolution of technological innovation at the level of its system mechanisms. Some studies try to employ helical models of innovation in technological area to promote the understanding of social innovation ecosystems, but usually either lack of rigorous dialectical consideration or ignoring its relationship with social innovation attributes, failing to effectively integrate insights from both domains. The development of innovation both in technological and social area illustrates the primary discourse of innovation is no longer satisfied focus on economic growth dominated by technological and specific organization (Fagerberg, 2018;

Kuhlmann, 2018; Schot and Steinmueller, 2018; González-Martínez, García-Pérez-De-Lema and Castillo-Vergara, 2025; Li and Duan, 2025), but with more comprehensive considerations at the perspectives of innovation ecosystems. Nowadays, no matter social innovation and technological innovation, it is almost imperative to consider the Triple Helix, Quadruple Helix, and n-tuple helix from the perspective of innovation regionalization (Galvao *et al.*, 2019; Hossen *et al.*, 2025). It illustrates that it is necessary to integrate different innovation models in a transformational innovation strategy (Terstriep, Rehfeld and Kleverbeck, 2020; Boni, Velasco and Ghosh, 2025).

Therefore, the main purpose of this research is focus on developing social innovation ecosystems and exploring its innovation dynamics by integrating the wisdom of social innovation conceptual attributes and helical models of innovation (including Triple, Quadruple, and Quintuple Helix models). Although get inspiration from different innovation system may exists possible limitations, the discourse and boundary of innovation around technology and society have inevitably become more integrated and intertwined. This research by dialectically integrating their both insights bring new possible collisions to the development of social innovation ecosystem, which may inspire for future scholars, policymakers and various potential social actors who are interested in social innovation research and practices.

## 2.2 Innovation Ecosystem

The general concept of an system idea stems from: a system consists of a set of elements and a set of relationships between those elements (Bertalanffy, 1968). The most well-known source for the discussion of the system concepts comes from Moore's 1993 first introduction to the concept of business ecosystems (Moore, 1993; Kumari *et al.*, 2025), after this the topic around business ecosystem is growing interests, and scholars construct an analogy between a business ecosystem and a biological ecosystem (Iansiti and Levien, 2004; Mariani and Dwivedi, 2024) , and Adner further proposed the conceptual terminology of innovation ecosystem, which highlights the importance of coherence and coordination between the various actors (suppliers/partners/customers) and the company during innovation process to finally succeed in the realization of innovation marketization (Adner, 2006; Wang and Xie, 2025), this has a similar concern to Iansiti and Levien's conceptual proposition, and further emphasise also placed on the layout and planning methods of the innovation ecosystem (Adner, 2012; Baldwin *et al.*, 2024). Scholars highlighted characteristics of innovation ecosystems including actor networks, value creation and collaboration, products, services, and resources (Gomes *et al.*, 2018; Walrave *et al.*, 2018; Arroyabe *et al.*, 2024), which shows some common and important characteristics of innovation ecosystems, such as emphasizing the co-creation of value and the co-evolution between elements, in recent years, scholars especially emphasis the exploration of its multi-agent dynamic mechanism and governance structure.

Although the discussion on the innovation ecosystem has been continuously enriched, the definition of innovation ecosystems remains vague and lacks interdisciplinary coherence (Gomes *et al.*, 2018; Thomas and Autio, 2019; Granstrand and Holgersson, 2020), even if there is no shortage of scholars who have made efforts to do so. Especially, innovation ecosystems often have blurred boundaries with business ecosystems. The concept of innovation ecosystem is constantly explored across disciplines, holistically the concentration literally still carried out around the dimension of business ecosystem, such as pay attention to platform construction (Gawer and Cusumano, 2014; Jacobides, Cennamo and Gawer, 2024), and related roles during innovation ecosystem at the birth stage (Dedehayir, Mäkinen and Roland Ortt, 2018; Secundo *et al.*, 2025). In specific contexts, many studies revolve around the technological dimension. Scholars emphasise that innovation ecosystems focus more on value creation while business ecosystems focus more on value capture, Oh *et al.* (2016) question it from its roots that claimed interdisciplinary analogies should not stop at metaphors, but clarify analogical relationships, but apparently the currently analogies between natural ecosystems versus business or innovation ecosystems is not rigorous enough.

Nevertheless, for a long time, the exploration of innovation ecosystems in technological innovation fields, specifically, the helical models of innovation, is constantly pay attention to the evolution of its systemic mechanisms. It has been continuously evolved from relatively micro to macro perspectives and further clarifies the coordination and adaptation mechanisms of interdisciplinary analogies. Etzkowitz and Leydesdorff (2000) claimed that the ecosystem perspective more generally reflects the characteristics of networking and co-production for contemporary innovation (Etzkowitz and Leydesdorff, 2000). Carayannis and Cambell (2009) suggested the essential elements of co-evolving between innovation networks and knowledge clusters in shaping innovation ecosystems (Carayannis and Campbell, 2009; Diessner *et al.*, 2025), and further mentioned the significance of public society and natural environment in innovation generation at the perspectives of innovation participants and ecological sustainability, which nominated as Quadruple Helix and Quintuple Helix innovation systems (Carayannis and Campbell, 2019a; Hossen *et al.*, 2025). Indirectly, to a certain extent, this slightly responds to the problem of the lack of ecological elements in the analogy with innovation ecosystems. Cai (2022) proposed that the conceptualization of innovation ecosystems is largely based on the ‘socio-ecological system’ developed by Kenneth Boulding, a co-founder of general systems theory (Cai, 2022). Cai developed the Neo-Triple Helix model of innovation ecosystems through interdisciplinary integration of Lewontin’s ecological Triple Helix conceptual metaphor and framework understanding, which essentially integrates the spatial relationships and retains their core conceptual propositions between the elements of technology or economics (Triple Helix), society (Quadruple Helix) and nature (Quintuple Helix) in a holistic innovation ecosystem, and theoretically and logically shed lights on the interdisciplinary analogy problems from different perspectives (Cai, 2022; Afzal, Li and Andez-Lara,

2024; Rabelo Neto *et al.*, 2024).

The evolution of the helical models of innovation mainly reveals changes about innovation ecosystems at the following points. First, the mode of the innovation. The innovation modes break the path of unidirectional, linear or sequential to the modes of non-linear, recursive which refers to complexed networked, interactive and systemic process. Second, the main innovation actors. The main actors in innovation as institutional spheres consist of elites and authoritative subjects (university-industry-government) gradually transition to open to society, which incorporates media and culturally based public (Quadruple Helix) and to a certain extent represents the social inclusiveness of innovation generation. Third, the expansion of innovation dimensions. The reconsideration of the value dimensions of innovation indirectly indicates the transformation of its driving forces. Traditional modes focus on technology-based economic development or competitiveness developing to the consideration of ecological sustainability (Quintuple Helix). Finally, the transformation of knowledge modes. The reliance of innovation generation on technology transfer which pay attention to academic enterprises and entrepreneurship universities (mode 2) has shifted towards an open and inclusive participation of knowledge co-creation for advocating knowledge democracy (mode 3).

The evolution of helical models of innovation represents how technological innovation focus on its systematic transformation towards innovation ecosystems, the expansion of kernel elements indicates the necessary consideration not only about the reflection on the innovation modes but also about how to develop a systemic mechanism which can inclusively integrate the essential components and their dynamic synergy, and the Neo-Triple Helix model of innovation ecosystem give insights into this complex mechanism. The helical models of innovation heuristically shed light on understanding the innovation genes and their interactive dynamic mechanism. Nevertheless, the development of innovation ecosystems still has its limit in real integrating social dimensions and sustainable development issues, the motivation of its core innovation attributes is centred in business area or technological success in pursuing economic effectivity.

## 2.3 Discussion of Chinese Innovation System, Innovation Ecosystem, and Social Innovation

Different from the national system of innovation in western that research emphasises the core role played by enterprises as the main body in promoting innovation, in China's national innovation system during the transition period, the state and the government mainly played a leading role, which is mainly reflected in the state's participation and leading role in policy guidance and resource allocation in innovation activities (Liu and White, 2001; Cao and Shi, 2021; Bussy and Zheng, 2023). Before and after reform and opening up, the path of China's national innovation system has gone from a relatively

closed and unitary planned economy to a model that emphasises technology transfer, introduction, digestion, absorption, and re-innovation (Lee, 2013). This model has enabled China for 40 years to achieve the development results of developed countries in 200 years, achieving industrialization and technological catch-up relatively efficiently, highlighting China's performance at incremental innovation. In the new century, China's model of innovation has once again undergone an ideological shift, emphasising the development of independent innovation, can understand it as from Made in China to Create in China, which reflects the transformation of China's national innovation system mechanism from incremental or imitative innovation based on technology transfer to disruptive and destructive independent innovation (Yip and McKern, 2016; Tse *et al.*, 2024). Scholars have proposed that China is transforming from a technology catcher to a global technology leader, especially for breakthroughs in emerging fields (Lundvall and Rikap, 2022), which indirectly reflects the Chinese government's institutional advantages in the national innovation system.

In the paradigm shift, the state and government still play a central role in the innovation system, and scholars have emphasised the need to further strengthen the role and autonomy of enterprises in innovation in order to better promote China's capabilities in technology and comprehensive national competitiveness (Yang *et al.*, 2019). This emphasises the need to promote the Triple Helix model, that is, the collaboration and interaction mechanism between universities, enterprises and governments, in order to improve the efficiency of knowledge flow and innovation that meets market needs (Murillo-Luna and Hernández-Trasobares, 2023). Therefore, China's national innovation system pays special attention to the collaboration of industry, academia and research in stimulating technological development under regional innovation systems. Practicing Triple Helix model in China has always emphasised the need for continuous localization, scholars mentioned that China's national innovation system is adapting from a statist model to a more interactive and cooperative Triple Helix mode, which is further balancing the coordination mechanism between government guidance and market autonomy to accelerate the formation of innovation networks and improve the effectiveness of innovation outputs (Ye and Wang, 2019; Luo and Zhao, 2024). On the one hand, the core leadership of the government is conducive to ensuring the efficiency of policy intervention and implementation, resource allocation, and financial support. On the other hand, this may bring challenges and obstacles to the subjectivity and collaboration of each actor in the Triple Helix model to fully and freely perform their functions in promoting innovation.

However, some scholars have suggested that China's government dominance is gradually weakening, and local governments are playing more of a supporter and coordinator role in innovation, they usually rationalize strategy formulation by complying with central policies, promote the establishment of innovation platforms and networks, and provide corresponding policy incentive mechanisms and infrastructure construction to catalyse innovation (Dai *et al.*, 2024). Although this still shows a strongly

policy-oriented, innovative development relies more on the delivery and conversion of knowledge and technology between enterprises and universities. That is, the effectiveness of the connection between industry, academia and research is particularly important in promoting the economic benefits brought by innovation. Therefore, universities develop innovative knowledge R&D and transfer capabilities that respond to market demand, and enterprises' knowledge absorption, innovation management, and technology management capabilities determine the development of innovation to a certain extent (Cohen and Levinthal, 2000; Ye and Wang, 2019; Coviello *et al.*, 2024). This puts forward requirements for effective cooperation and interaction between enterprises and universities in innovation. For example, new technology transfer centres, science parks and new R&D institutions play an important role as China's localized institutional innovation under the Triple Helix model to bridge the gap between them in order to more efficiently promote the formation of cooperation networks and the efficient transfer and flow of knowledge (Leydesdorff, 2012b; Leydesdorff and Smith, 2022), accelerating regional innovation and economic development through coordination of market mechanisms and government guidance, as well as the flexibility and decentralization of the national innovation system.

It can be shown that China's national innovation system still revolves around technological innovation. The government's policy guidance and institutional norms, the technical tilt of universities in knowledge research and development and application, and the attention of enterprises to economic benefits based on technological innovation all reflect the technical and economic attention of the national innovation system (Sun, 2002; Jia, Tang and Kan, 2020; Liu, Fu and Schiller, 2024). Scholars mentioned that China in its innovation strategy still remain space for further integrating the Quadruple and Quintuple Helix innovation systems based on Triple Helix model. This reflects the lack of an overall coordination mechanism for China's national innovation system to further incorporate the social dimension and the sustainable development dimension as well as the innovation dynamics between them. The Quadruple and Quintuple Helix innovation systems do incorporate social participation of the public as a social media as the background of public opinion, and the Quintuple helix proposes the ecological driving force and impact of innovation (Carayannis and Campbell, 2019a). However, as mentioned above, the overall helical model of innovation is still developed around the category of technological innovation to ensure economic benefits. Therefore, in general China's national innovation system shows a tendency to excessively focus on technological innovation and neglect of consideration of social innovation, which is also relatively missing part in the reflection of innovation systems and innovation ecosystems both in theoretically and empirically area.

Currently, with the acceleration and complexity of global economic, social environmental and regional issues, diverse social problems are becoming increasingly prominent, especially those related to the Sustainable Development Goals. Innovation is no longer limited to focusing solely on the efficacy of technology as a panacea for economic and social production, or with key authoritative leading actors

placing value around promoting the economic benefits generated by technology (Schot and Steinmueller, 2018). Innovation has inevitably evolved into a more complex, multi-faceted, multi-agent and interactive model in terms of dimensions, participants and dynamic mechanisms (Pacheco, Turro and Urbano, 2025). The government's policy leadership needs to improve the consideration of social innovation in its system mechanism (Domanski, Howaldt and Kaletka, 2020; Parjanen and Pässilä, 2025); as an important knowledge production and dissemination organization, universities should not be limited to the role of technical knowledge in creating economic value, but also strengthen the focus on non-technical knowledge or art universities (Carayannis and Campbell, 2019a), as well as the impact of universities as important social organizations and their knowledge application on creating beneficial social value; enterprises, as the main profit-making entities, should rethink their strategic positioning of innovation to promote their impact on social benefits or shared value creation (Phillips, Luo and Wendland-Liu, 2024). This requires strengthening the emphasis on social innovation paradigms in transforming innovation systems and further improving the reflection on the mechanisms of innovation ecosystems. It is not only reflected in the need to balance the weight, role and influence of technology and society in innovation development, but also the need to establish a comprehensive framework to accommodate and coordinate the complex dynamic mechanism of innovation among multiple actors and dimensions.

Technological innovation and social innovation are the Yin and Yang sides of innovation. Whether in the East or the West, the overemphasis on technological innovation in national innovation systems has led to the neglect of the role of social innovation in solving broader social needs and challenges and leading potential social changes in the future (Gaziulusoy and Erdoğan Öztekin, 2019; Jareh, 2025). However, social innovation has ignored the systemic approach, which will aggravate its further institutionalization in the national innovation system and its impact on its strategic practice. In fact, China's policies and strategic orientations at the national level have highlighted the attributes of social innovation and have reflected its social rather than technological innovation ecosystem mechanisms in a wide range of practices, such as China's rural revitalization strategy. However, there is currently a lack of theoretical refinement and clarification of the innovation paradigm behind this mechanism, resulting in a lack of effective theoretical guidance in practice, which remains scattered and vague (Zhang, Auricchio and Selloni, 2025). The concept and understanding of the social innovation paradigm are relatively scarce in China's innovation system and in its practical exploration under its guidance. In addition, research on social innovation ecosystems, as well as in the interdisciplinary construction of social innovation ecosystems, dialectically exploring the main characteristics of social innovation and the synergistic mechanism of the helical models of innovation are relatively scarce for the development of social innovation ecosystems. This not only affects the theoretical construction of social innovation ecosystems and their understanding of the dynamic mechanism of innovation, although this currently

also has limitations in the helical models of innovation, it further affects the complementarity and integration of the two and the overall reflection on innovation ecosystem research.

Whether in the field of technological innovation or social innovation, it shows the need to further strengthen the reflection on the social and sustainable development dimensions of the innovation ecosystem. However, the exploration and development of social innovation at the level of its system mechanism is relatively lagging behind, which shows the importance of interdisciplinary mechanisms to develop social innovation ecosystems. All along, technological innovation continues to evolve at the level of its system mechanism, which provides insights for dialectical discussion, integration and comprehensive understanding, and the development of a compatible and flexible social innovation ecosystem framework. On the one hand, this framework dialectically integrates the wisdom of the technological innovation system mechanism, on the other hand, it retains the core conceptual attributes of social innovation, while potentially bridging the overall lack of the innovation ecosystem.

## 2.4 Social Innovation

### 2.4.1 Key Innovation Attributes

With the emergence of various situations such as regional wars and pandemic, various social issues are coming to the fore, technological innovation, aimed at enhancing overall competitiveness and economic benefits, is no longer regarded as the sole means of driving social change and economic development. At the same time, social innovation is seen as an innovative paradigm that solves evil social problems and key social transformational forces in the 21<sup>st</sup> century is highlighted by scholars (Banda, 2025). Scholars believe that the history of social innovation predates technological innovation and can be traced back to the 1920s, and Drucker (1957) even mentioned that *'social innovation can be traced back nearly 200 years'* (Edwards-Schachter and Wallace, 2017). Social innovation is first rooted in the sociological heritage (Ayob, Teasdale and Fagan, 2016), before the 20th century, social innovation was used to explain social changes or social movements, and was closely related to socio-political and religious topics etc (Edwards-Schachter and Wallace, 2017; Satalkina and Steiner, 2022). Scholars who practiced the concept of social innovation during this period, although it is not clearly defined as a term, usually came from a wide range of fields like political economists, historians, philosophers, etc (Satalkina and Steiner, 2022). In the 20<sup>th</sup> and 21<sup>st</sup> centuries, social innovation became an independent term and began to be widely used, the concept began to gain frequent controversy and discussion, and the number of publications related to the term increased suddenly (Ayob, Teasdale and Fagan, 2016). Especially in the 21<sup>st</sup> century, the discussion on the connotation and definition of the concept of social innovation has been interpreted across disciplines (Bataglin, 2021). Scholars define the type of social innovation development in this period as the evolution of the 'utilitarian approach', while the other is considered to be relatively 'radical' in relation to the discussion of social relations and social change

(Ayob, Teasdale and Fagan, 2016; Fu and Cooper, 2025).

As a new paradigm of innovation, social innovation has attracted the interest and attention from policy makers and various sectors, and scholars try to interpret social innovation from different disciplinary perspectives, but there are still ambiguity and fragmentation in the understanding of its theories and the definition of its concepts (Phillips, Luo and Wendland-Liu, 2024). Among the diverse approaches to comprehending social innovation, two predominant perspectives emerge, one rooted in sociology and the other in economics (Nicholls and Murdock, 2012; Păunescu, 2014; van der Have and Rubalcaba, 2016). From an economic standpoint, to regard it as a tool-based solution, and to emphasise that social innovation represents a method that is more effective, efficient and sustainable than existing approaches, through introducing new ideas, products, services etc. committed to solving pressing societal challenges, the core logic lies in transcending the limitations of private interests and aiming to achieve incremental of the overall well-being of humanity. This perspective focuses on addressing social needs overlooked by the market and tackling a range of social issues or challenges (Mulgan, 2007; Phills, Deiglmeier and Miller, 2008; Pol and Ville, 2009). Research adopting this economic perspective frequently explores areas such as entrepreneurship (Weerawardena and Mort, 2006), corporate social innovation (Mirvis *et al.*, 2016), creating shared value (Porter and Kramer, 2011).

From a sociological viewpoint, social innovation is viewed as a unity of process and purpose, with an emphasis on the transformative force it generates as a purposeful and planned form of social practice. Under this paradigm, social innovation gives birth to new practice models through the creative reorganization of existing resources, and relies on the logic of collective action to finally achieve deep social change and structural transformation (Cajaiba-Santana, 2014; Howaldt, Domanski and Kaletka, 2016). This perspective often intersects with elements of psychology, regional development, structural and institutional theories, offering a multi-dimensional understanding of social innovation (Westley and McConnell, 2010; Cajaiba-Santana, 2014; van Wijk *et al.*, 2019).

Although the definition of social innovation in the academic community presents different preference and controversies, it is crucial to acknowledge that these differences in perspective are not mutually exclusive, instead, they are interconnected and complementary, collectively reveal the systemic characteristics of social innovation. In these academic discourses, social innovation is portrayed as a dynamic process involving multiple actors and their collaborative networks (Howaldt and Schwarz, 2025), relate to governance, empowerment and associated social contexts factors (Moulaert, Simmons and Parra, 2024). Therefore, it indicates social innovation is a complex concept that intertwines multiple dimensions and involves multiple types of elements (Parjanen and Pässilä, 2025). This multifaceted nature means that social innovation covers both the instrumental effectiveness of the micro dimension and the structural change at the macro level, and the process dynamic as the meso level, thus constituting

its depth and breadth as a systematic mechanism nature. For instance, studies on regional development often demonstrating its interplay nature from micro to macro level (Bosworth, McAreavey and Kennedy, 2025). No matter from which perspectives, the value generated by social innovation typically embodies a ‘duality of social, economic, and other objectives’(Terstriep *et al.*, 2015; Tabares, Dionisio and Parida, 2025a), but the essence lies in social value creation, which is fundamentally different from technological innovation.

Despite the diverse perspectives present in social innovation research, several common themes and understandings have emerged:

1. **Key Motivators and Actors (Micro-Level):** Research highlights the pivotal role played by various sectors and groups in driving social innovation. This includes social entrepreneurship and corporate social innovation (Mirvis *et al.*, 2016; Leyen *et al.*, 2025), universities (Bayuo, Chaminade and Göransson, 2020; Málovics *et al.*, 2025a), public sectors and civil society (Neumeier, 2017b; Livingstone, 2025).
2. **Main Approaches and Networks (Meso-Level):** The importance of multi-actor collaboration and interaction in fostering innovation is emphasised (Slitine, Chabaud and Richez-Battesti, 2024). Innovations often arise through new ideas in activities, products, services, processes, or models (Pol and Ville, 2009; Cunha, Ferreira, *et al.*, 2025), or through collective social practices (Cajaiba-Santana, 2014; Howaldt and Schwarz, 2025).
3. **Main Objectives and Social Impacts (Macro-Level):** Social innovation is recognized as an effective means to fulfil unmet social needs and address complex social issues or challenges (Mulgan, 2007; Banda, 2025). It acts as a catalyst for potential broad social changes (Cajaiba-Santana, 2014; Howaldt, Domanski and Kaletka, 2016) , enhancing either the quality or quantity of life (Pol and Ville, 2009), and can also lead to the transformation of existing systems, structures, and institutions (Edwards-Schachter and Wallace, 2017; Sataalkina and Steiner, 2022)
4. **Value Creation:** At its core, social innovation is about creating social value, contributing to the well-being of society as a whole rather than individual gains (Phills, Deiglmeier and Miller, 2008). However, it also encompasses socio-economic and technological values; for instance, corporate social innovation represents a means for profit-oriented enterprises to create shared value for both the economy and society (Mirvis and Googins, 2017; Fu and Cooper, 2025), distinct from traditional corporate social responsibility approaches.

Figure 2.1 illustrates the general conceptual attributes of social innovation and their interrelations.

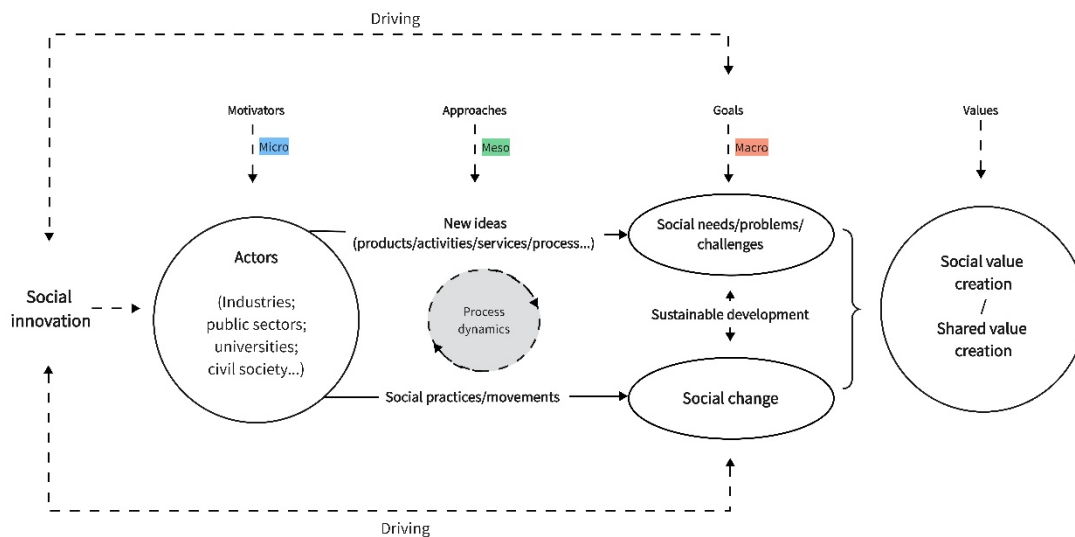


Figure 2.1 Essential Attributes of the Conceptual Understanding of Social Innovation

Source: the author

## 2.4.2 Research Fields

It is clearly to see that social innovation is not just a buzzword, it has been used in various disciplines as a new innovative way to address diversity social problems or challenges, it shows of a characteristic both an instrumental and an outcome. The well-known program that practiced by the Nobel Peace Prize winner Mohammed Yunus who innovated the micro-credit lending aiming at helps the poor people access to the resources of funds (Bayulgen, 2008). Based on the impact of this case, many studies on the role of social innovation in creating shared value have appeared in the fields of business and management. In some large multinational companies, business practices related to social innovation of achieving a win-win situation in terms of commercial benefits and social targets have been developed (Mirvis *et al.*, 2016; Bitencourt *et al.*, 2024). Accordingly, the research in this area more focus on corporate social innovation (RAMI'REZ, 1999; Porter and Kramer, 2011; Herrera, 2016; Kramer and Pfitzer, 2016; Crisafulli, Dimitriu and Singh, 2020; Tabares, Dionisio and Parida, 2025) or social entrepreneurship (Mair and Martí, 2006; Dacin, Dacin and Tracey, 2011; Dwivedi and Weerawardena, 2018; Zahra, 2020; Fauzi, Muhamad Tamyaz and Kumar, 2025; Yoon and Ho, 2025), the former one through social innovation greatly enhancing the overall reputation and core competitiveness of the company; and the latter one meets more resources and balance problems when dealing the business with social targets.

In addition to business and management, social innovation also extends to active exploration and interdisciplinary study in various fields. For example, some research relates social innovation to technological innovation, especially in recent years, research pay attention to the application of digital technology in promoting social innovation, and eco-economic and sustainability (Wittmayer *et al.*, 2019;

Rodrigo and Palacios, 2021; Scheidgen *et al.*, 2021; Nowaczyk-Basińska, 2025). In public sector, new attempts have also been made by the university, non-profit organizations and public policy practices under the subject of social innovation (Arocena and Sutz, 2021; Bellandi, Donati and Cataneo, 2021b; Solis-Navarrete, 2025). Besides, there are also some relevant studies in the field of psychology, art and territorial development (Moulaert and Sekia, 2003; Moulaert *et al.*, 2005; Nordberg, Mariussen and Virkkala, 2020; Ding *et al.*, 2025). Different from the other perspectives, the social innovation with territorial development to a certain extent presents the characteristics of the social innovation ecosystem mechanism (Ding *et al.*, 2025). Research in this area connects to capacity building at a systematic level, which embodies the features of new relationship creation and interaction between diversity actors in addressing social challenges or needs to improve human well-being and promote sustainable development.

### 2.4.3 Social Innovation and Rural Development

Since the 21<sup>st</sup> century, social innovation, as a key mechanism for driving rural transformation and sustainable development, has increasingly become a core topic in global rural research and policy making. Social innovation is closely linked to sustainable development issues. In diverse rural practices, social innovation covers multiple topics such as rural industrial revitalization, agricultural promotion, ecological sustainability, rural governance, community building, heritage protection, and urban-rural transformation. It opens new space for social innovation in addressing rural problems and empowering rural development, regional and national cooperation, and global sustainable development research (Sarfo *et al.*, 2025).

Currently, at the level of methodological approaches and empirical evidence, studies on social innovation that aim to empower rural development focus on qualitative research. Based on the regional distribution and findings from existing empirical studies, scholars have mainly identified these empirical results from three dimensions. In terms of rural economic transformation and spatial restructuring, empirical studies of European villages have shown that bottom-up social innovation practices can effectively leverage local heterogeneous resources, thereby serving as a driving force for the diversification, prosperity, and modernization of rural economies (Bosworth *et al.*, 2016; Vercher, 2022). Meanwhile, case studies focusing on developing regions such as China have further expanded this dimension of space and governance. Through field investigations in specific rural areas and analysis of spatial changes, it has been demonstrated that social innovation plays a structural role in optimizing rural spatial arrangements and reshaping rural governance networks (Ding *et al.*, 2025). In terms of industrial ecosystem integration and the internal motivation within communities, scholars often use in-depth case studies to explore mechanisms for resource integration. Relevant studies indicate that social innovation can effectively reorganize the ecological and material elements within and outside rural

areas. By leveraging the internal capital of communities, it facilitates the coordinated development of rural circular economy and value of ecological products (Celik *et al.*, 2024). In the context of agricultural extension, empirical studies conducted in local agricultural communities across various countries show that social innovation, by fostering new types of actors and cooperation mechanisms, significantly enhances farmers' resilience to external socio-economic fluctuations, as well as their ability to develop on their own (Avelino *et al.*, 2019; Kandel *et al.*, 2025). In the area of empowering vulnerable groups and reshaping the connections in the digital society, studies on marginalized groups have enhanced the inclusive nature of social innovation. In the rural areas on the periphery of Europe reveal that micro-social innovation initiatives have transformed the ways in which traditional marginalized groups, such as the elderly, can participate in community life, to enhance the strength of micro-social capital and local relationships networks (Lombardi *et al.*, 2020; Noack and Federwisch, 2020). Furthermore, recent research on the experiences related to the digital transformation of rural areas indicates that the combination of digital tools and community innovation activities can effectively break down generational barriers. This approach provides practical ways for the living preservation of local rural cultural heritage (García-Mieres *et al.*, 2025).

It deserves to be noted that in research on social innovation promoting rural development, China and the West show significant differences in theoretical understanding and practical approaches to rural social innovation. Western academic and practical research shows a strong reliance on bottom-up and local-based governance paths. In Western contexts, rural social innovation is often rooted in highly developed civil societies and mature community organizations, emphasizing autonomous participation of rural residents, endogenous exploration of social enterprises, and horizontal network cooperation among diverse actors (Vercher, 2022; Steiner, Calò and Shucksmith, 2023). For example, the EU's LEADER program is a typical example of this paradigm (Bosworth, McAreavey and Kennedy, 2025). The core logic of this practise is that the community-led development model can more accurately identify and utilize unique local resources, thereby more effectively responding to the actual needs of rural communities (Bosworth, McAreavey and Kennedy, 2025). In research addressing complex rural issues, the LEADER Program is frequently discussed as a highly representative innovative project. Its core philosophy is not to impose fixed, standardized solutions on rural areas, but to emphasise continuously strengthening deep interaction with local communities through an open and inclusive approach (Kopoteva and Nikula, 2014). The evolution and choice of governance paths are also deeply influenced by the macro-institutional environment, which shows unique policy momentum and governance characteristics in rural practices in some East Asian and transitional countries (Steiner, Calò and Shucksmith, 2023; Xin, 2026). Like research focusing on China's experiences indicates that rural social innovation practices exhibit more pronounced characteristics of a top-down system. It suggest that rural social innovation in China relies heavily on the national rural revitalization strategy, as well

as the rapid mobilization of administrative and social capital by governments at various levels to transform rural industries and spatial patterns within a short period of time (Huang, Broto and Westman, 2024; Ding *et al.*, 2025).

In addition, related studies generally emphasise that the core value of social innovation in building new types of social relations to overcome rural development challenges. In this process, the initiative of key actor such as government, enterprises, and universities plays a decisive role in breaking through the bottleneck of traditional rural development (Sarfo *et al.*, 2025). On the other hand, it indicates the active participation, deep embedding, and establishment of social trust by civil society and grassroots community groups are important supports for the effective implementation and long-term operation of social innovation in rural scenarios (Castro-Arce and Vanclay, 2020; Richter and Christmann, 2021). Through the continuous construction, multidimensional interaction and reshaping of rural development models and evolution by diverse social actors, rural communities can flexibly respond to diverse and interwoven social challenges and dynamic changes (Vercher, Bosworth and Esparcia, 2022), fundamentally reshaping the resource flow patterns and value creation paths in the urban-rural transformation process (Jia and Desa, 2020).

The discussions on how social innovation in promoting rural development reflect the core characteristics of social innovation ecosystems to varying degrees. This leads to the necessary attention and contribution in further exploring and developing the social innovation ecosystem constructions in rural area. Scholars emphasise that cross-sectoral collaboration, the integration of various resources, and the flow of local social capital play a crucial role in fostering innovation in rural areas (Vercher, 2022). This requires the establishment of efficient grassroots connected governance model, closely linking scattered, spontaneous grassroots social innovation practices with the overall systematic transformation of rural areas, thereby laying a solid governance foundation for long-term sustainable development in rural areas (Castro-Arce and Vanclay, 2020; Marini Govigli *et al.*, 2020).

#### 2.4.4 The Particularities and Advantages of Social Innovation in Promoting the Future Rural Development

Against the backdrop of the profound intertwining of globalization and social transformation in the 21<sup>st</sup> century, rural areas are facing a complex and systemic dilemma, including intensified population loss and aging, single economic structure, fragile ecological environments, insufficient public service supply, and broken traditional social bonds etc (Baselice *et al.*, 2021; Celik *et al.*, 2024). Faced with these highly complex and dynamically evolving real challenges, social innovation, as an innovation paradigm characterized by comprehensiveness, multidimensionality, and systematic attributes, demonstrates stronger explanatory power and practical action guide value in breaking through rural development

bottlenecks and guiding rural areas toward sustainable transformation compared to traditional rural development theories.

Since the second half of the 20<sup>th</sup> century, rural areas in Western countries have undergone profound socio-economic transformations. The traditional exogenous development model has long relied on external capital, technology introduction, and top-down policy interventions, but has revealed limitations in addressing rural decline, environmental degradation, and regional development inequality. Against this backdrop, Sustainable Development Theory (Murdoch, 1993), Endogenous Development Theory (Ploeg and Dijk, 1995), and Neo-Endogenous Development Theory have been introduced and applied in Western rural research (Ray, 1997). Sustainable development theory is understood from a macro perspective, emphasizing that while meeting the needs of the present does not compromise the ability of future generations to meet their needs (Murdoch, 1993). In Western rural development research, this theory mainly emphasises the balance and coordination of three core elements: ecological, economic, and social sustainability (Marsden, 1999). This is also mentioned in the enterprise sustainable development model and is known as the triple bottom line. The core of rural sustainable development theory lies in systematic coordination and cross-generational equity, rejecting the old model of sacrificing the environment for short-sighted economic growth, and advocating for viewing the countryside as a complex system interwoven with social, economic, and ecological subsystems, emphasizing long-term development and comprehensive balance (Murdoch, 1993; Bulkeley *et al.*, 2026).

Comparatively, endogenous development theory often focuses on micro or local levels and is a reflection on the traditional top-down exogenous development. This theory emphasises that the driving force of rural development should originate from within the community (Ploeg and Dijk, 1995). It mainly focuses on activating local resources, with bottom-up decision-making mechanisms and development capabilities in local communities, the added benefits of development value tend to remain locally rather than spread outward. The core of endogenous development theory is bottom-up control and local identity. It advocates that the decision-making power for rural development must rest with local people, and the fundamental goal of development is to enhance the autonomy of local communities and improve the resilience of rural areas against external shocks (Lowe, Murdoch and Ward, 1995; Zang *et al.*, 2023). Although endogenous development theory emphasises local dominance, in the context of globalization and regional integration, purely isolated endogenous development easily degenerates into closed development (High and Nemes, 2007; Shortall, 2008). Around the year 2000, the neo-endogenous development theory emerged. It more reflects the flow of internal and external resources at the meso level, with a core feature emphasising local and external interaction, such as building networked links between local and external networks, with rural communities and local actors acting as key nodes translating and absorbing external resources, and multi-level governance initiated

from both bottom-up and top-down (Ray, 1997; Qu and Zollet, 2023). The neo-endogenous development theory mainly emphasises complementary internal and external resources and collaborative network governance, which breaks the simple opposition between endogenous and exogenous.

In contrast, rural development in China is often closely integrated with policy initiatives at the theoretical level, shifting Western theories, for example, endogenous and neo-endogenous theories to distil localized academic concepts and explanatory frameworks, reflecting a theoretical system with local Chinese characteristics. In the early days of reform and opening up, the transformation of the urban-rural dual structure and the theory of urban-rural integration were emphasised in rural development (Liu, Yang and Lin, 2022). At that time, China faced a severe urban-rural separation, and academia explored mechanisms from urban-rural opposition to urban-rural coordination, ultimately moving toward urban-rural integration (Yang *et al.*, 2021). Its core mechanism emphasises two-way flow of factors and spatial balance, meaning that the countryside is not a vassal of the city or a place for factor extraction, but rather a space for factor restructuring and value reshaping on equal footing with the city. By strengthening the two-way free flow of production factors such as labour, land, and capital between urban and rural areas, basic subsistence is addressed to improve agricultural and rural productivity (Hualou *et al.*, 2023). This period reflects the exogenous characteristics of rural development.

Entering the 21<sup>st</sup> century, the country further proposed the construction of socialist new countryside and beautiful countryside, aiming to address the severe infrastructure challenges in rural areas and the need for ecological civilization and liveability (Long *et al.*, 2010), highlighting the application of sustainable development theory in China's rural development. With rapid industrialization and urbanization, rural areas face crises of hollowing out due to people leaving and houses being empty, industries declining, and environmental degradation (Chen *et al.*, 2021). In 2017, the country proposed the Rural Revitalization Strategy as a phased policy goal to fully achieve common prosperity by 2035, scholars quickly regarded the countryside as a multifunctional and complex system, with the policy theoretical core emphasising comprehensive promotion of rural revitalization and innovative development, possessing innovative ecosystem characteristics (Liu, Zang and Yang, 2020). The countryside is a dynamic, multi-body system interwoven with culture, economy, resources, and environment, the essence of rural revitalization is the overall reconstruction and empowerment of the regional system structure and functions of rural areas (Tu and Long, 2017). It links rural revitalization with the important goal of national-style modernization for common prosperity, further highlighting its ability to empower participants and create shared value (Lu *et al.*, 2026). The rural revitalization strategy reflects some characteristics and elements of neo-endogenous in promoting rural development,

but its essence and practice more highlight the systemic characteristics of the social innovation ecosystem.

Researchers' attention further shifts from the main rural theory of neo-endogenous to the social innovation paradigm stems from the latter's deep integration and organic extension of the former's theoretical essence. And more importantly, social innovation, as a systemic paradigm, shows tolerance and integration beyond traditional development paths, and can more accurately match the complex social ecology and multi-dimensional development dilemmas of rural areas.

- 1) First, compared to the core problem of the neo-endogenous theory, which focuses too much on the local versus external dominance problems, it tends to confine the focus to how to keep resources within a specific rural geographic space (Navarro-Valverde *et al.*, 2022). However, the challenges faced by modern rural development, such as industrial transformation, resource revitalization, and promoting urban-rural integration, are highly complex and cross geographic boundaries (Noack and Federwisch, 2020). Social innovation breaks traditional geographical limitations, emphasises centring on social issues and needs, attracts and encourages deep collaboration between external organizations and local forces, and achieves a leap from purely rural economic retention to overall transformation of potential rural social innovation systems (Richter and Christmann, 2023; Di Maso *et al.*, 2025).
- 2) Second, the neo-endogenous development model in Western practices heavily depends on policy project support from governments or regional autonomous organizations, once the external project cycle ends or funding is terminated, local networks often face the risk of shutdown (Mattijssen *et al.*, 2026). Social innovation emphasises the combination of commercial feasibility and social value, focusing more on resource expansion through diversified market approaches and social capital. It does not rely solely on policy funding or problem-solving limited to fixed models but focuses on mining and enhancing existing local rural capabilities and resources and cultivating sustainable capacity (Navarro-Valverde *et al.*, 2022). Through innovative actions, services, products or models to addresses core local issues or meets local development needs, stimulating self-circulating momentum for rural development (Bucio-Mendoza and Solis-Navarrete, 2025).
- 3) Third, social innovation is an innovation paradigm that inherently possesses the characteristics and methods of an ecosystem, possessing the ability to integrate heterogeneous elements and network dynamics with greater strength. The supralocal networks mentioned by the neo-endogenous theory usually have relatively fixed structures, mostly around government community local enterprises. Social innovation involves multi-helix interaction, promoting multi-party collaboration and resource integration (Neumeier, 2017; Casais and Soares, 2024). Social innovation breaks down barriers in single disciplines and fields, building bridges for

cooperation among the government, enterprise, university, and civil society to jointly advance rural revitalization, reflecting the networked dynamic nature of ecosystems and the synergy among multiple organizations (Bock, 2016; Bellandi, Donati and Cataneo, 2021).

- 4) Finally, Social innovation focuses on rebuilding social relations and empowerment. The neo-endogenous theory places greater emphasis on internal and community leadership, often overlooking the development of innovative governance models that coordinate multiple internal and external actors (Navarro-Valverde *et al.*, 2022). The social innovation paradigm demonstrates the innovation and development of potential social relationships in the process of diversified problem-solving, it emphasises direct participation and empowerment of beneficiaries, such as civil society organizations, mobilizing marginalized groups to participate in the practice and distribution of benefits in the innovation process (Sarkki *et al.*, 2024). This makes solving rural issues sustainable rather than relying solely on external or local resources, fundamentally stimulating genuine internal vitality.

Table 2.1 Comparison of the Neo- Endogenous Theory with the Social Innovation Paradigm

|                           | Neo-Endogenous Development                                                                                                                                      | Social Innovation Paradigm                                                                                                                                                                                                                                                                                                      |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Origins                   | Relate to the development of geography and sociology (stemmed from reflections on exogenous/endogenous models)                                                  | Relate to the innovation and system studies, management and sociology (originating from the need to go beyond technological/economic innovations dimensions in solving social problems and satisfy social needs)                                                                                                                |
| Core attention            | Breaking the binary opposition between endogenous and exogenous factors, focus on how external resources can be transformed into benefits for local development | Solving complex social problems and challenges, sharing the benefits of value creation, innovating in social relationships, and promoting social change                                                                                                                                                                         |
| Representative attributes | Complementary internal and external resources                                                                                                                   | Reconstruction or innovation of social relations and collaborative creation of systemic value                                                                                                                                                                                                                                   |
| Driving mechanism         | Rely on the complementarity between bottom-up community efforts and top-down policy initiatives                                                                 | Crossing the boundaries of markets, governments, and civil society, through the collaboration of multiple actors and mutual empowerment                                                                                                                                                                                         |
| About external            | The external entities are mainly providers of resources, funds, and policies, while the local entities act as receiving and translating nodes                   | Crossing regional and organizations, external entities and local actors represent heterogeneous nodes within an ecological network. Through collaborative efforts among multiple actors, cross-border exchanges, knowledge sharing, and mutual empowerment, these nodes can work together towards co-governance and co-creation |
| Types and                 | Emphasis is placed on rural                                                                                                                                     | Involves innovation in governance,                                                                                                                                                                                                                                                                                              |

|                                                    |                                                                                                                                      |                                                                                                                                                                 |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| boundaries of innovation                           | development projects such as diversification of the rural economy, cultural tourism, and the development of local specialty products | services, products, activities, models, and relationships through collaboration among multiple participants to address the diverse social issues in rural areas |
| Potential relationship transformation between them | From Local control<br>From Networking<br>From Local resources translation                                                            | To empowerment and multi-governance<br>To multi-helix ecosystems<br>To value co-creation                                                                        |

Source: synthesized from the Neo- Endogenous Theory (Ray, 1997, 2006; Bosworth *et al.*, 2016) and the author

The neo-endogenous development theory focuses more on who should be the main actor in rural development and how to balance internal and external resources (Ray, 2006), while the social innovation model possesses diversified, multi-helix dynamic synergy in an ecosystem characteristic, reflecting how rural areas can achieve sustainable transformation through social relationship restructuring and multi-actor dynamic co-creation when facing complex social crises (Bock, 2016; Richter and Christmann, 2023). Therefore, the social innovation ecosystem paradigm does not completely reject the neo-endogenous theory, but rather incorporates a systemic perspective based on its internal and external connections, including perspectives on sustainable development issues and innovation dynamics, providing more inclusive and adaptive insights and frameworks for the increasingly multi-participant collaboration in solving complex and diverse rural problems and achieving rural revitalization and sustainable development. For example, scholars propose using social innovation to compensate for the shortcomings of LEADER in rural development. By emphasizing community empowerment and reshaping social relations through social innovation, enabling villages to more sensitively capture external innovation opportunities, possess stronger risk resilience, and reshape social relationships to promote greater social inclusion (Bosworth, McAreavey and Kennedy, 2025).

Besides, in rural development research, new growth theory and institutional theory have also attracted the attention of some scholars in building rural innovation system (Yin, Chen and Li, 2019, 2022). The core of the new growth theory is to emphasise the decisive role of knowledge investment and technological innovation in long-term economic growth, it believes that continuous knowledge accumulation is the fundamental cornerstone of driving endogenous growth (Kim and Nelson, 2000; Xu, Tanamee and Romprasert, 2025). However, it is difficult for an economic model that relies solely on knowledge and technology factors to directly smooth the gap between urban and rural areas. Rural areas generally face multiple practical obstacles such as weak innovation infrastructure, underdeveloped knowledge and information trading markets, low social trust in risk-taking, short-term behaviour, and vulnerability to poverty, resulting in extremely high cultural and environmental barriers to knowledge

creation and dissemination (A. Husen, K. Loos and H.A. Siddig, 2017; Chaudhary *et al.*, 2023). At this time, institutional theory starts from the perspective of supplementing the shortcomings of market allocation of resources and advocates the introduction of multiple entities such as the public sector and non-profit organizations through institutional changes to provide institutional guarantees and incentive mechanisms for individual talents and innovative activities (Yin, Chen and Li, 2022). Scholars point out building community-based network and intermediary platform, innovation in rural revitalization requires the participation of multiple parties in such an open social process (Yin, Chen and Li, 2019, 2022).

This shows that neither economic factor or institutional regulation alone can independently solve the systemic problems of rural diversity, which drives the academic community to move towards a more open and inclusive comprehensive innovation paradigm. Nonetheless, scholars' advocate technology, institutional management and community-based networks in rural innovation system have largely itself embraced and applied a wide range of social innovation approaches. At the level of social practice and change, social innovation covers attention to technology and institutions (Cajaiba-Santana, 2014; Albuquerque and Siqueira, 2025). In social innovation, technology as a tool or method can effectively promote the development of social innovation, and the reconstruction of social relations and social practice caused using technology is one of the manifestations of social innovation (Fahmi and Arifianto, 2022). Second, although it mentions communities, its starting point is still largely based on the new growth theory and industrial or technological systems frameworks. Traditional economic or technological innovation theories tend to simplify rural areas into agricultural output value (OECD, 2025), while social innovation focuses on public welfare, creates shared value, and solves a series of rural social and sustainable development issues including ecological problems (Bucio-Mendoza and Solis-Navarrete, 2025), which can prevent rural communities from being hollowed out in the process of pursuing economic growth. In addition, social innovation breaks through the limitations of top-down and activate both endogenous and exogenous power (Perikangas, Kostilainen and Kainulainen, 2024). Therefore, in a sense, the social innovation paradigm and its ecosystem rely on the participation, empowerment and governance of multi-helix actor, the innovation of social relations, and the high sensitivity to situations, which compatible meet the needs of the complex rural environment, and provide an inclusive and systematic path for rural transformation scenarios that are diverse and require a high degree of flexibility and adaptability.

The intrinsic connection between social innovation and rural development still holds vast research space in terms of empirical exploration and theoretical construction. From both systematic and macro perspectives, social innovation demonstrates the distinct attributes and paradigm characteristics of an innovation ecosystem in addressing rural difficulties and driving rural transformation. Existing research generally emphasises that social innovation aims to solve rural problems by reshaping social

relationships and promoting multi-actor collaboration (O'Shaughnessy, Christmann and Richter, 2023). Among these, the diverse interconnected networks formed by the government, enterprise, and university, along with deep empowerment and broad participation from civil society, together form the core driving forces of this ecosystem (Sarfo *et al.*, 2025). These actors have provided effective pathways to alleviate social pains and capture development opportunities by activating rural endogenous resources, promoting knowledge co-creation and sharing, and guiding profound transformations in governance paradigms (Celik *et al.*, 2024). However, regarding the comprehensive social innovation ecosystem framework encompassing multiple elements, and the dynamic interaction mechanisms among multiple actors is still lacks systematic theoretical refinement and in-depth empirical analysis.

#### 2.4.5 Discussion of the Applicability of Social Innovation, Technological Innovation, and other Innovation Paradigms in Rural Revitalization

The complexity of rural revitalization necessitates the adoption of an ecosystem-based perspective, and the ecosystem-oriented characteristics inherent in social innovation provide unique theoretical insights and practical approaches for reshaping rural development at the systemic level (Lombardi *et al.*, 2020; O'Shaughnessy, Christmann and Richter, 2023). However, when discussing about the social innovation ecosystems and the driving forces behind rural revitalization, it is essential to further understand why traditional technological innovation frameworks, which are based on systematic methods and helix mechanisms and have already reached a relatively high level of maturity, cannot be directly applied in this context. Although technological innovation offers a relatively comprehensive framework for mechanism design, its inherent attributes and value orientation prevent it from independently undertaking the task of systemic rural sustainable development. In contrast, social innovation demonstrates insightful explanatory power and practical applicability in addressing the complex challenges faced by rural areas. This is evident in the following key areas:

First, there are fundamental differences between their innovative cores and value orientations. Technological innovation is rooted in the knowledge economy and breakthroughs in technology. Its core logic lies in using technological iterations to promote economic growth and enhance market competitiveness (Kandel *et al.*, 2025). Essentially, it focuses on creating private value and maximizing the benefits for those with limited purchasing power. On the other hand, social innovation aims to address complex social issues, meet practical needs, and address the challenges faced by marginalized groups, embodying a people-oriented approach to innovation (Bataglin and Kruglianskas, 2022). Its value orientation is to create shared value and improve the well-being of society as a whole, particularly for vulnerable and marginalized communities (Bitencourt *et al.*, 2024). This non-utilitarian value orientation determines that technological innovation can only serve as a technical tool for rural revitalization, providing support but unable to replace social innovation as the driving force behind

comprehensive rural development. Second, the consideration of inherent tension between market mechanisms and the characteristics of rural areas. Technological innovation is highly dependent on economic rationality and market-driven mechanisms. However, rural areas generally possess inherent traits such as high investment costs, numerous interwoven issues, and long return periods (Georgios and Barraí, 2023). Under the utilitarian logic of maximizing economic benefits, market participants lack the intrinsic motivation to invest core resources in rural areas on a long-term basis, which can easily lead to market failures (Q. Zhang *et al.*, 2023). Even when technological innovation strives to balance economic and social benefits, the nature of its economic logic makes it difficult to ensure that various stakeholders make sustained and stable efforts in addressing long-term rural challenges (Bååth and Fuentes, 2025).

Third, the depth of collaboration mechanisms among participants and the reshaping of social relations varies. The social dimension in technological innovation has its limitations and does not fully reflect the specific circumstances of rural contexts. Although recent technological innovations have incorporated social and ecological considerations (such as Quintuple Helix), these are often confined to a single aspect of the ecological environment. The primary goal remains to gain public recognition to justify the economic benefits of the technological advancements. Meanwhile, within this framework (such as Quadruple Helix), the public often serves merely as a discourse or supervisor of innovation, remaining in a passive position that receives feedback from the periphery without substantial involvement. In contrast, social innovation encompasses a comprehensive approach to sustainable development goals that includes ecological aspects and advocates for innovation and change in social relations (Moulaert, Simmons and Parra, 2024). It emphasises collaboration among various stakeholders based on a shared vision and values aimed at addressing challenging rural issues and enhancing public welfare. This involves genuine participation from civil society, empowerment, and collaborative governance, thereby continuously providing resources and intrinsic momentum for rural development.

Finally, considering the compatibility of the systematic ecological paradigm with the complex rural environment. In comparison to other derived innovation paradigms such as User Innovation, Frugal Innovation, and Bottom of the Pyramid Innovation (Bhatti and Prabhu, 2019), these approaches, while highly valuable for targeted projects in specific fields, lack the systematic ecological framework inherent in social innovation, usually hard to integrate various elements and value orientations in an organic manner (P. B. Appiah and H. M. Grimm, 2025). Rural areas are localized environments deeply embedded in diverse cultures, complex historical contexts, and social relationships, characterized by high environmental sensitivity and dynamic complexity. Social innovation, with its inclusiveness, flexibility, and ability to reshape systems, demonstrates greater theoretical explanatory power and practical guidance in addressing the diverse needs of rural communities, activating social capital, and promoting shifts in governance paradigms compared to other innovation approaches (Rogelja *et al.*,

2023). In the subsequent development of the conceptual framework for social innovation ecosystems, this study will further clarify the differences and applicability between technological innovation and social innovation, thereby laying the groundwork for subsequent empirical discussions on the introduction and deepening of the concept of social innovation ecosystems.

The city is the laboratory of Western sociology, while the countryside is the laboratory of Eastern sociology (Park, 1915). Precisely because rural development is deeply embedded within diverse local contexts, the academic community urgently needs to further enhance comparative studies on social innovation across different geographical settings, institutional and cultural backgrounds. This is necessary to continuously consolidate the theoretical foundation of social innovation and improve the accuracy of practical guidelines. The way out for China's sustainable development lies in rural revitalization, and the key to the success of this great transformation lies in enhancing rural innovation capabilities by establishing a strong rural innovation system, only in this way can China achieve its goals of rural revitalization, poverty alleviation, improving people's well-being, and achieving sustainable development (Yin, Chen and Li, 2019). Therefore, it is of decisive importance to further develop and explore the conceptual framework of social innovation ecosystems and its application in rural area, as well as to clarify the dynamic interactions and collaborative evolution mechanisms among multiple organizational participants in the innovation process, it play a pivotal role in guiding future rural governance practices and sustainable development.

#### 2.4.6 Social Innovation Ecosystems

The social innovation ecosystem has been described as a theoretical approach and heuristic model (Domanski, Howaldt and Kaletka, 2020; Gutiérrez *et al.*, 2024). But the research of social innovation ecosystems is extremely scarce and the mechanism of it in promoting innovative activities are still rather vague (Terstriep, Rehfeld and Kleverbeck, 2020; Parjanen and Pässilä, 2025), only few studies that explicitly focus on the discourse of 'social innovation ecosystems'.

Studies related to social innovation ecosystems usually mention the topic of value co-creation, social networking, and some of them using the insight of helical models of innovation from an organizational perspective (Rho, Wha-Joon, 2014; Bellandi, Donati and Cataneo, 2021; Morawska-Jancelewicz, 2021). Just like the attention on single sector perspectives, scholars also tend to understand the social innovation ecosystem from the perspective of social entrepreneurs, they usually pay attention to a conducive ecosystem in supporting social innovation capabilities or performance for social enterprises. Such as Audretsch *et al.* (2022) tries to understand social innovation ecosystems based on the important elements in entrepreneurship ecosystem model. Scholars developed a social innovation ecosystem at the perspective of social business model to guide future social entrepreneurs in social innovation business practise. It based on Quadruple and Quintuple Helix innovation systems incorporates the key

participants in Triple Helix model and core elements of civil society and environment, and emphasises targeted open innovation is a key element of business model innovation in society (Carayannis *et al.*, 2021). However, the focus on the discussion of social enterprises or social entrepreneurship, this kind of monolithic exclusive view ignoring other key attributes of comprehensive concept of social innovation (Domanski, 2018). Research on social innovation and its ecosystems shows that its conceptual complexity and salient features go far beyond one agent as determining factors (Domanski, Kaletka and Krüger, 2023).

Some scholars have proposed a framework of open social innovation based on the concept of open innovation, which is nominated social innovation is a complex system concept and provide the diverse potential participants of social innovation. Scholars emphasising that the functions of different participants play in innovation are more important than the departments or organizational identities to which they belong (Pacheco, Turro and Urbano, 2025). In a certain sense, this indirectly implies that in the complex context of the innovation ecosystem, any participant may become the subject of innovation promotion, and roles are flexibly allocated according to the functionality played in innovation. To a certain extent, it breaks the dominant setting of the functions and roles of authoritative institutions in technological innovation and reflects the true multi-role participation under social structure, rather than the limited participation of the public as a social discourse background. Other scholars have also highlighted the importance of participatory governance and the use of digital technologies by civil society and other non-profit organizations for the sustainability of social innovation, especially in rural areas (Bosworth, McAreavey and Kennedy, 2025; Jareh, 2025).

Scholars maintain that social innovation consists of multi-actors, they tend to use general approaches to clarify social innovation ecosystem. Like Pel *et al.* (2020) and Andion *et al.* (2022) through cross-border mapping and platform construction tracking approach tried to explore network configuration of social innovation ecosystem in transnational and public area. Domanski *et al.* (2020) claims that social innovation will trigger social change through social practice (Domanski, Howaldt and Kaletka, 2020; OECD, 2025), they focuses on the main role of the reconfiguration and combination of social innovation ecosystems in cross-sectoral cooperative practices in promoting social innovation governance structures and cooperative actions. It has the similarities with design thinking in building social innovation ecosystems, they all value the development of social innovation on existing configurations of practices and resources, stressing the significance of multi-actor collaboration and social innovation infrastructures (Bijl-Brouwer and Malcolm, 2020; Ding *et al.*, 2025).

Besides network perspectives, the ecosystem perspective also highlights governance patterns, potentially supportive infrastructure, and factors that hinder and support social innovation in the social innovation ecosystem, which indirectly emphasised the mutual penetration or influence of the

contextual sensitivities within a particular ecosystem (Moulaert, Maccallum and Hillier, 2013; Christoph Kaletka, Mona Markmann and Pelka, 2016; Domanski, Howaldt and Kaletka, 2020; Terstriep, Rehfeld and Kleverbeck, 2020; Burton, Pikkemaat and Dickinger, 2025). Scholars mentioned three core elements named actors, institutional and networks (Terstriep, Rehfeld and Kleverbeck, 2020; Pinto *et al.*, 2024). It suggests the need to identify the main players, while showing that innovation does not occur in isolation, but to analyse network actors in a specific sociocultural context. Due to the inadequate of social innovation institutional in most countries (Chatzichristos *et al.*, 2023), the relevant social innovation supports (policies and infrastructure) is relatively insufficient, social innovation often faces the problem of sustainability and diffusion (Howaldt, Domanski and Kaletka, 2016; Domanski, Howaldt and Kaletka, 2020). Scholars hold the perspective of regional development and regional innovation systems to further understand social innovation ecosystems (Terstriep, Rehfeld and Kleverbeck, 2020; Pinto *et al.*, 2024; Bosworth, McAreavey and Kennedy, 2025), especially stressed the significance of further understanding social innovation ecosystems through the perspectives of rural area (Millard and Fucci, 2023; Celik *et al.*, 2024).

Although the concept of ecosystem is widely used, there is still a lack of unified consensus in the discussion and research of social innovation ecosystem. These problems are mainly highlighted in the fragmentation of its conceptual definition and theoretical basis, and the failure to effectively dialectically integrate and build a collaborative mechanism for interdisciplinary innovation ecosystems and social innovation ecosystems. This directly affects the theoretical construction and understanding of the dynamic mechanism of the social innovation ecosystem and brings challenges to the further measurement and evaluation of social innovation and its sustainability in solving the sustainable development goals and further model replication and diffusion in the future (Parjanen and Pässilä, 2025). Due to the lack of attention and discussion on its systematic approach to social innovation, scholars have proposed the importance of integrating interdisciplinary wisdom to understand and develop social innovation ecosystem mechanisms. Even so, only few contributions have explored the connection between social innovation concepts and helical models of innovation (Bellandi, Donati and Cataneo, 2021b), and there is often a lack of in-depth and rigorous discussion of the two fields, the ecosystem of social innovation that promote their respective innovative activities are still rather vague (Terstriep, Rehfeld and Kleverbeck, 2020).

## 2.5 Research Gaps

Firstly, research on social innovation has predominantly focused on the micro level, with many empirical studies concentrating on individual or organisational perspectives, often with an emphasis on social entrepreneurship. Nevertheless, the essence of social innovation is inherently multi-faceted, extending well beyond the scope of individuals and organizations (Domanski, Kaletka and Krüger, 2023;

Phillips, Luo and Wendland-Liu, 2024). Consequently, while social entrepreneurship plays a crucial role, it should not be conflated with social innovation itself but rather viewed as one of several catalysts within a large system (A. C. M. Sottini, Zupic and Giudici, 2025).

Secondly, there is a noticeable shortfall in the exploration of multi-actors innovation dynamics of social innovation (Pel *et al.*, 2020; Bataglin, 2021), especially in empirical research on social innovation empowering regional rural development, more exploration of its dynamic mechanisms from a holistic systems perspective is required (Nordberg, Mariussen and Virkkala, 2020; Kasumaningrum *et al.*, 2024). Scholars mentioned that some of the most pioneering endeavours in social innovation are situated at the confluence of various sectors (Murray, Caulier-Grice and Mulgan, 2010). This perspective marks a shift away from narrow sector-specific viewpoints towards a broader appreciation of the interplay and collaboration between different organisational or sectoral entities, deeply rooted within specific socio-cultural contexts (Terstriep, Rehfeld and Kleverbeck, 2020; Cunha, Silva, *et al.*, 2025). The complexity of rural contexts provides an appropriate research field for in-depth analysis of their systematic operating mechanisms.

Finally, the study of social innovation ecosystems is still in its infancy, with the dynamic mechanism through which they foster innovation remaining somewhat unclear (Terstriep, Rehfeld and Kleverbeck, 2020; Perikangas, Kostilainen and Kainulainen, 2024). There is a growing recognition of the need to understand the intricate interplay and co-creation within social innovation ecosystems, as well as the need for appropriate governance frameworks (Domanski, Howaldt and Kaletka, 2020; Yoon and Ho, 2025). Since technological innovation has been relatively focused on the development of its systematic mechanism, taking insight through across interdisciplinary approaches is encouraged (Morawska-Jancelewicz, 2021; Muñoz-Morales, Taboada and Rueda Varón, 2024). Nevertheless, research adopts systematic approaches through the lens of helical models of innovation to developing and understanding social innovation ecosystems often lacks dialectical clarification and discussion of its applicability and compatibility in the social innovation ecosystem, result in fail to integrate two domains wisdom.

The recognition of these gaps suggest a paradigm shift in social innovation research from micro-level analyses to macro perspectives, highlighting the need for a more systematic perspective underlined by inter-disciplinary insights (Terstriep, Rehfeld and Kleverbeck, 2020; P. B. Appiah and H. M. Grimm, 2025b). Therefore, the most urgent issue for the social innovation ecosystem is based on the interdisciplinary system mechanism, that is the systematic approach of helical models of innovation, to develop a social innovation ecosystem framework that is comprehensive, compatible, flexible and adaptable to different social context, and dialectically integrates and retains the common theoretical depth of both. This framework needs to have the flexibility to adapt to a variety of complex social

contexts, while clarifying and covering the core innovation genes of social innovation, key components, and the coordination of dynamic mechanisms between them.

## 2.6 Theoretical and Conceptual Foundations

### 2.6.1 Methods of Integrating Interdisciplinary Theoretical Mechanisms

The research will follow the approach inspired by Jaakkola (2020) practical strategies for conceptual research to organize literature review for these two parts and reconceptualising social innovation ecosystem. Conceptual research differs from empirical studies in that it primarily relies on literature review, leveraging existing concepts and theories rather than experiential data. Although similar to literature reviews, conceptual research uses them as tools to achieve broader objectives, rather than as ends in themselves. Jaakkola (2020) identifies two main goals of conceptual papers: first, to investigate phenomena that existing research has not sufficiently explored, and second, to refine underdeveloped concepts, theories, or research domains. This research aligns with the latter objective, as seek to enhance the conceptualization of social innovation by adopting a systemic perspective. To achieve this, the researcher follows Jaakkola's (2020) recommendation of employing the theory adaptation method in our conceptual paper. Theory adaptation entails 'changing the scope or perspective of an existing theory by informing it with other theories or perspectives' (Jaakkola, 2020, p. 22). In the process of theory adaptation, Jaakkola emphasises the importance of distinguishing between two categories of theories: domain theory, which is concerned with a specific body of knowledge within a substantive field, and method theory, which acts as a higher-order framework for examining the relevant issues of the domain theory.

According to Jaakkola (2020), the theory adaptation includes several crucial steps. The rest of the paper will be organized around these four steps. First, the initial phase in a theory adaptation study involves selecting the theory or concept to be examined or adapted, which in our case is the concept of social innovation, designated as the domain theory. This step entails a thorough review of the concept, followed by a critical assessment to identify any existing gaps or issues related to the concept. Second, to address the identified gaps, we introduce a theoretical framework known as the method theory, which offers a new perspective to re-interpret the domain theory. It is crucial to thoroughly justify the selection of the method theory, particularly in terms of its capability to bridge the gaps in the domain theory. Specifically, the researcher adopts the Neo-Triple Helix model of innovation ecosystems (Cai, 2022) as our method theory. The researcher will demonstrate how the Neo-Triple Helix model enriches the concept of social innovation by broadening its scope from the micro and meso levels to include a macro perspective. Finally, applying the method theory as a new analytical lens allows us to discover and thoroughly articulate new facets of the domain theory. This involves conceptualization of social

innovation ecosystems by re-theorizing social innovation through the lens of the Neo-Triple Helix model of innovation ecosystems.

## 2.6.2 The Evolution of the Helical Models of Innovation

### 2.6.2.1 Triple Helix model

The emergence of the Triple Helix model provides a solution to the threat of regional deindustrialization brought about by globalization, and if the region is to maintain sustainable competitive advantage, it is necessary to continuously develop a knowledge-based economy and innovation system that brings the university, industry and government closer together (Etzkowitz and Leydesdorff, 2000; Rossoni, de Vasconcellos and de Castilho Rossoni, 2024), become a model based on knowledge structures (Leydesdorff and Etzkowitz, 1996, 1998; Leydesdorff and Meyer, 2006), the role of universities as knowledge production is emphasised (Leydesdorff, 2012a; Natário, Couto and Almeida, 2012; Forliano, De Bernardi and Yahiaoui, 2021; Flores *et al.*, 2024), and the achievement of results depends on the effective construction and transfer of knowledge (Park and Stek, 2022).

The most enlightening aspect of Triple Helix model is its understanding of the dynamics of innovation in a non-linear way, which emphasises the interaction process between (more diverse) actors in national, sectoral and regional information systems (Schot and Steinmueller, 2018; Zhou and Wang, 2023). Triple Helix model uses a DNA metaphor, Etzkowitz defines the linkage mechanism of the university-industry-government from neo-institutional theory, and further clarify its identity attributes with knowledge, consensus and innovation space (Etzkowitz, 2008), the separate academic, industrial, and governmental domains and the "flow of knowledge" between them are the foundation of institutional definitions of the Triple Helix (Leydesdorff and Etzkowitz, 1998; Chaudhary *et al.*, 2024). And Leydesdorff uses neo-evolutionary theory further clarified the specific functions of knowledge production, wealth creation and normative control (Leydesdorff, 2012a). These two viewpoints are shaped the innovation dynamics among universities-industries-governments, and the core mechanism of them is 'taking the role of the other', this overlap of each other's identities indirectly reflects the frequency of their interaction mechanisms (Cai and Etzkowitz, 2020; Cai, 2022; Austin and Jones, 2024). Therefore, the Triple Helix model is 'a synthesis of evolution on the vertical axis and circulation on the horizontal axis' (Etzkowitz, 2008), and it means that their functions are constantly evolving and choosing as the environment and system change.

Although Triple Helix model referred to both between top-down and bottom-up initiatives in functional mechanisms and civil society was encouraged to play an active role (Cai and Etzkowitz, 2020), it focuses more on technology to create the impossible (Leydesdorff, 2012b) and the transformation of technological innovation into business operations to promote national and regional economic

competitive advantage. So far, the Triple Helix model have provided an effective mechanism for national and regional competitiveness, but with the emergence of diverse social issues and challenges, some researchers claim that the existing framework of R&D and national innovation systems for science, technology and innovation policy is ignored to address environmental and social challenges (Schot and Steinmueller, 2018a; Park and Stek, 2022), under such open questions, the focus on Triple Helix began to progress towards more spirals.

#### 2.6.2.2 *The Quadruple Helix and Quintuple Helix innovation systems*

The Quadruple and Quintuple Helix explicitly refer to this socio-ecological transformation of the economy, society and democracy (Carayannis, Barth and J, 2012; Rabelo Neto *et al.*, 2024). The Quadruple Helix is ‘media-based and culture-based public’ emphasised of knowledge democracy and knowledge society, and the Quintuple Helix is referring nature environment of social ecology consideration (Carayannis and Campbell, 2009, 2010; Carayannis, Barth and J, 2012). Scholars emphasises the concern for the public and social ecology in the context of society, and integrates its model into the open innovation in the Industry 5.0 scenario to further practice to explore the knowledge transfer process of ‘human-centred industrial paradigm’ (Carayannis *et al.*, 2022; Sivarajah, 2023; Troisi, Visvizi and Grimaldi, 2024). Generally, the transition from the Triple Helix model to the Quadruple and Quintuple Helix innovation systems mainly reflects five conceptual shifts (Carayannis and Campbell, 2009, 2010, 2019a, 2019b; Carayannis, Barth and J, 2012; Carayannis, Draper and Bhaneja, 2021; Carayannis, Campbell and Grigoroudis, 2022) :

First, the first point is the concept of innovation, which has been transformed from the techno-economic category to the concept of social ecology, that is, innovation not only revolves around the category of technological innovation in order to improve the overall competitiveness of the economy, but places innovation in a broader social and ecological context. Second, the second point is the Mode of knowledge structures, that is, the evolution of innovation around the knowledge economy (Mode 1 and Mode 2) has changed into co-evolution of innovation with knowledge society and knowledge democracy (Mode 3). Third, the third point is the innovation actor/agent, which has developed from a science and technology-based knowledge institution around the university-industry-government to the impactation of broader knowledge organizations or group in public society such as the resonance of science universities and art universities in innovation participation. Firth, the fourth point is the concept of innovation systems, innovation systems gradually represent towards innovation ecosystems with co-evolve between innovation networks and knowledge clusters, and shows a ‘*multi-layered, multi-modal, multi-nodal and multi-lateral*’ system interaction of social ecology. Finally, the fifth point is the concept of industrial context, which translates from the technological innovation focus of Industry 4.0 to Industry 5.0, where people and technology complement each other and are oriented towards solving broader social problems.

### *2.6.2.3 The debates*

The development of helical models of innovation triggers some debates about the innovation trilogy. Behind the debates relate to helical models of innovation actually shows that on the one hand, the development of innovation model is inevitable evolve towards complex and multi-dimensional ecosystems' consideration; and on the other hand, the essence behind the debates is essentially about the problems of how to develop a synergistic and compatible innovation ecosystem which properly organized the key components and their innovation dynamics.

Scholars argue that the concept of Triple Helix model does not explicitly incorporate the two broader concepts of knowledge democracy and social ecology into the main dimensions of innovation (Carayannis and Campbell, 2010; Carayannis, Draper and Bhaneja, 2021) and triggers the discussion about whether to add higher-level spiral dimensions. Etzkowitz and Zhou have proposed the Triple Helix twin using the Chinese concept of 'yin and yang', that is, another triple-helix university-public-government parallel to the original one dedicated to achieving social considerations for economic and sustainable development (Etzkowitz and Zhou, 2006), the main idea is still not to break the balance of the main components between the original three spirals. Recently, Leydesdorff and Smith claimed that too many helices may cause unnecessary confusion, and the next level of a leap (e.g., to Quadruple, Quintuple or n-tuple helices) can be broken up and reconstituted into interacting triple helices. For example, in the case of four helices A, B, C and D, ABC, ABD, ACD and BCD can be distinguished, and each triplet can generate synergies (Leydesdorff and Smith, 2022). However, some scholars believe that democracy (Quadruple Helix) and ecology (Quintuple Helix) represent the essence and basic principles of Quadruple and Quintuple Helix innovation systems, without the consideration of these two dimensions, there will be Quadruple and Quintuple Helix innovation systems, and spiral reconstruction is not an abstract game (Carayannis, Campbell and Grigoroudis, 2022), and this seemingly efficient and convenient integration may reduce the dynamics involving the innovation of other participants in the formation and development of the multi helix model (Park and Stek, 2022). Among these complex discussions, Cai develops Neo-Triple Helix model of innovation ecosystem which gives a heuristic model to solve the problems of innovation dynamic mechanism between multi-spirals in an effective systematic framework while proper maintain their kernel innovation attributes.

### *2.6.2.4 Neo-Triple Helix model of innovation ecosystems*

Seeking to theorise the mechanisms underlying innovation ecosystems, Cai (2022) conceptualises the Neo-Triple Helix model of innovation ecosystems, highlighting the complexity of multilayered interactions that drive innovation in society. This model integrates the Triple Helix (Leydesdorff and Etzkowitz, 1998) Quadruple Helix (Carayannis and Campbell, 2009) and Quintuple Helix (Carayannis and Campbell, 2010) frameworks. In the Neo-Triple Helix model, Cai identifies two kinds of helices: 1) the local layer of university–industry–government that foster 'innovation genes' and 2) the global

layer of interactions between innovation genes, social structures and the natural environment. These helices generate innovation dynamics and sustainable development dynamics, respectively. According to Cai (2022), an innovation system is driven mainly by innovation dynamics, but an innovation ecosystem requires both innovation dynamics and sustainable development dynamics.

The model draws inspiration from Lewontin (2001) biological Triple Helix by focusing on the dialectical relationships among its elements, reminiscent of the interactions between genes, organisms, and the environment in Lewontin's theory (Cai, 2022). This influence manifests in two principal aspects:

Firstly, Cai draws parallels between the interactive triangular relationships among genes, organisms, and the environment in Lewontin's Triple Helix, and the innovation dynamics (the Triple Helix interactions among universities, industries, and governments), social structures, and natural environment in the Neo-Triple Helix model. Unlike previous models that treat the Triple Helix, social structures, and the natural environment as distinct entities, the Neo-Triple Helix model proposes a more integrated approach. It envisions a framework where multiple Triple Helix configurations, referred to as innovation genes, are embedded within social structures, which are themselves encompassed by the natural environment. This layered perspective sheds light on the intricate spatial and functional connections that characterize innovation ecosystems. Secondly, inspired by Lewontin (2001) who challenged genetic and environmental determinism, the Neo-Triple Helix model introduces the concept of mutual influence and co-evolution among its key components. It suggests that innovation dynamics, social structures, and the natural environment are interdependent, engaging in a complex web of interactions that shape and are shaped by each other. This model facilitates a more profound examination of the collaborative and conflicting forces within innovation ecosystems, underlining the entwined relationship between technological advancements, societal factors, and environmental considerations.

From the innovation Triple Helix model to Quadruple and Quintuple Helix innovation systems to Neo-Triple Helix innovation ecosystems, the core concept attributes of them have been pointed out above. Scholars used different disciplines' metaphors according to their concept dimension, and finally in Neo-Triple Helix innovation ecosystems reach the goal by different routes, not only maintaining the core conceptual norms respectively but realizing the possibility of dialectical integration. First, it adheres to the principle of 'no increase unless necessary' of Occam's razor theory, and maintains the basic stability of the structure between the necessary components; Second, it achieves overall compatibility similar to 'matryoshka dolls', using the conceptual framework of Lewontin's Triple Helix, retaining the Triple Helix model as the core innovation gene and forms a new triangular structure with Quadruple and Quintuple Helix, which in turn is in line with the theoretical basis of the original Triple Helix model namely Simmel's dyads and triads sociological theory. Finally, as with the evolution of 'innovation in

innovation’ triggered by the overlapping of innovation dynamics between the original Triple Helix model, the Neo-Triple Helix innovation ecosystems further achieve the evolution of ‘triads in triads’ in function and structure.

Figure 2.2 presents an approximate chronological synthesis to enhance understanding and illustrates the conceptual foundation of the social innovation ecosystem. The Neo-Triple Helix model offers significant potential for conceptualising social innovation ecosystems. In the next section, we will delve into its complementary contributions to understanding social innovation ecosystems.

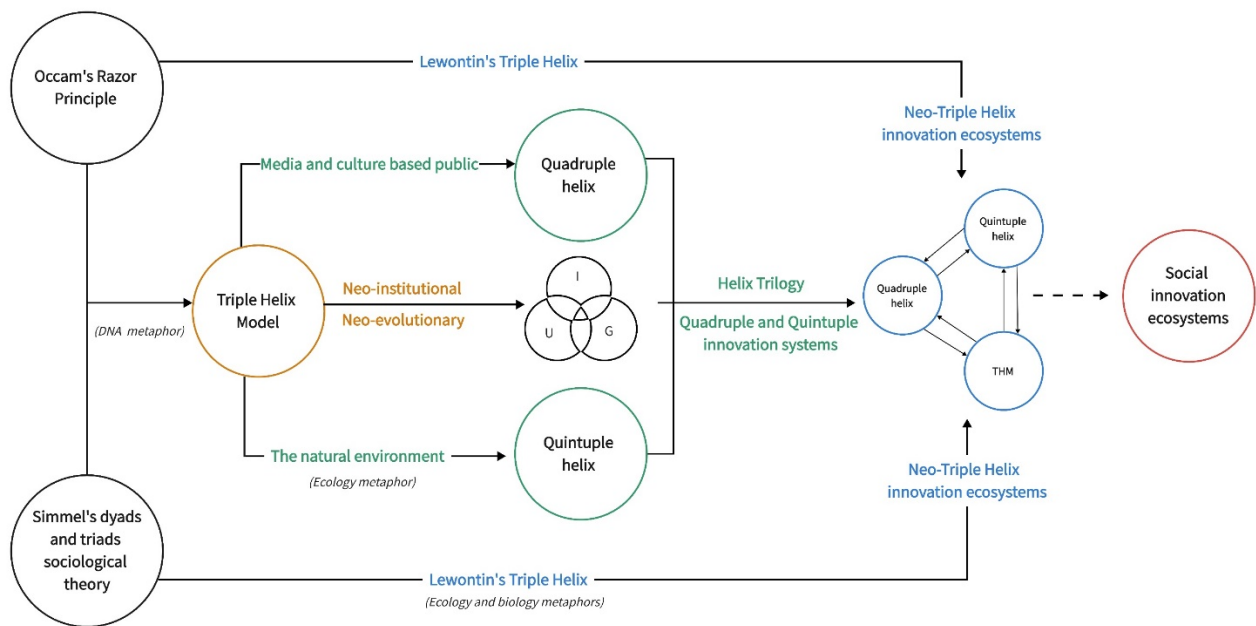


Figure 2.2 The Evolution from Triple Helix Model to Neo-Triple Helix Innovation Ecosystems

Source: the author

## 2.7 Integrating the Helical Models of Innovation with Social Innovation and Capacity-Building

As previously noted, the Neo-Triple Helix model of innovation ecosystems incorporates both technological and social dimensions of innovation, suggesting its potential applicability to the conceptualisation of social innovation ecosystems. However, because the model is primarily grounded in insights from technological innovation and entrepreneurship ecosystems, originating with the Triple Helix and extended through the Quadruple and Quintuple Helix models, its effective application to social innovation requires further development through integration with the specific insights and characteristics of the social innovation domain.

This integration can be achieved through theoretical adaptation, such as broadening the scope the social innovation concept (as the domain theory) to align with the perspectives of the Neo-Triple Helix model

(as the method theory). The objective is to bridge gaps in social innovation research by expanding beyond the predominant focus on micro-level analyses to encompass broader meso and macro perspectives, thereby advocating for a more systematic approach.

The potential of using the Neo-Triple Helix model to enhance the conceptualisation of social innovation through theory adaptation can be understood across three key dimensions. Firstly, the model emphasises the concept of triads as the fundamental unit of analysis, proposing that complex social innovation ecosystems are best examined through three-party interactions. Limiting the framework to three core elements aligns with Occam’s Razor—the principle that, among competing explanations, the one with the fewest assumptions should be preferred. In this context, it means maintaining analytical simplicity by avoiding unnecessary complexity, while still capturing the essential dynamics of innovation. Secondly, within the Neo-Triple Helix innovation ecosystems, the research focuses on two interconnected layers of helical interactions: innovation dynamics and sustainable development dynamics. These layers form the structural basis for understanding social innovation ecosystems, and we can identify counterparts in social innovation contexts for the specific components within each layer. Thirdly, the research utilizes the interactive relationship between innovation genes, social structures, and the natural environment in the Neo-Triple Helix model as a framework to conceptualize the mechanisms of social innovation ecosystems.

## 2.8 Conceptualising Social Innovation Ecosystem

When applying the Neo-Triple Helix model to broaden the concept of social innovation into the social innovation ecosystem, the researcher first establishes a correspondence between the core components of the Neo-Triple Helix model and those of the social innovation ecosystem. Subsequently, the researcher elucidates the relationships among these identified components.

### 2.8.1 Key Components in Social Innovation Ecosystems

Table 2.2 The Analogy between Neo-Triple Helix Model of Innovation Ecosystems and the Social Innovation Ecosystem

| Structures     | Innovation ecosystems | Neo-Triple helix model of innovation ecosystems                                                                                                                                                                           | Social innovation ecosystems                                                                                                                                                                                                                    |
|----------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| key components | Innovation genes      | <b>1) Core role:</b><br>universities-industries-governments, universities are major roles.<br><b>2) Innovation function:</b><br>--universities: technical knowledge for economic benefits (entrepreneurship universities) | <b>1) Core role:</b><br>The university-industry-government play important role in generation social innovation.<br><b>2) Innovation function:</b><br>--universities: knowledge for social value creation (social entrepreneurship universities) |

|                                          |                                              |                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                                              | --industries: wealth creation (entrepreneurship)<br>--governments: normative control (government control)<br><b>3) Value proposition:</b> mainly for economic purpose.                                        | --industries: economic and social value creation (social entrepreneurship; corporate social innovation)<br>--governments: normative control (government incentives and public sector social innovation).<br><b>3) Value proposition:</b> embracing both social and economic value, social is primary.                                                                            |
|                                          | Social structures                            | <b>Role of civil society for innovation:</b> discourse communication, knowledge democracy, innovation participants mainly emphasise user engagement.                                                          | <b>Role of civil society for innovation:</b> collaboration, participant, empowerment, governance, innovation initiator;                                                                                                                                                                                                                                                          |
|                                          | Environmental                                | <b>Innovation impact or issue of concern:</b> environment                                                                                                                                                     | <b>Innovation impact or issue of concern:</b> issue relates to sustainable development goals (includes environment)                                                                                                                                                                                                                                                              |
| <b>Relationship among key components</b> | Innovation genes and social structures       | both top-down and bottom up<br><b>1)</b> innovation genes display to social structures.<br><b>2)</b> social structures enable innovations.                                                                    | both top-down and bottom up<br><b>1)</b> innovation genes empowerment and interaction with social structures.<br><b>2)</b> social structures give insight or enable innovation genes.                                                                                                                                                                                            |
|                                          | Innovation genes and sustainable development | <b>1)</b> the human behaviour and new technologies produced through innovation genes change the environment.<br><b>2)</b> the ethos for sustainable development can be institutionalized in innovation genes; | <b>1)</b> innovation genes by providing relevant expertise, resources, and abilities, through new ideas, process, activities, products and models to stimulates sustainable development.<br><b>2)</b> the solution of sustainable development has been further promoting and enhance the consensus and evolution of innovation genes at the institutional and structural levels; |
|                                          | Social structure and sustainable development | <b>1)</b> social actions lead to environmental changes.<br><b>2)</b> environmental challenges affect the value systems and the discourse of communication.                                                    | <b>1)</b> civil society can promote sustainable development through collective intelligence and social actions.<br><b>2)</b> the solution of sustainable development                                                                                                                                                                                                             |

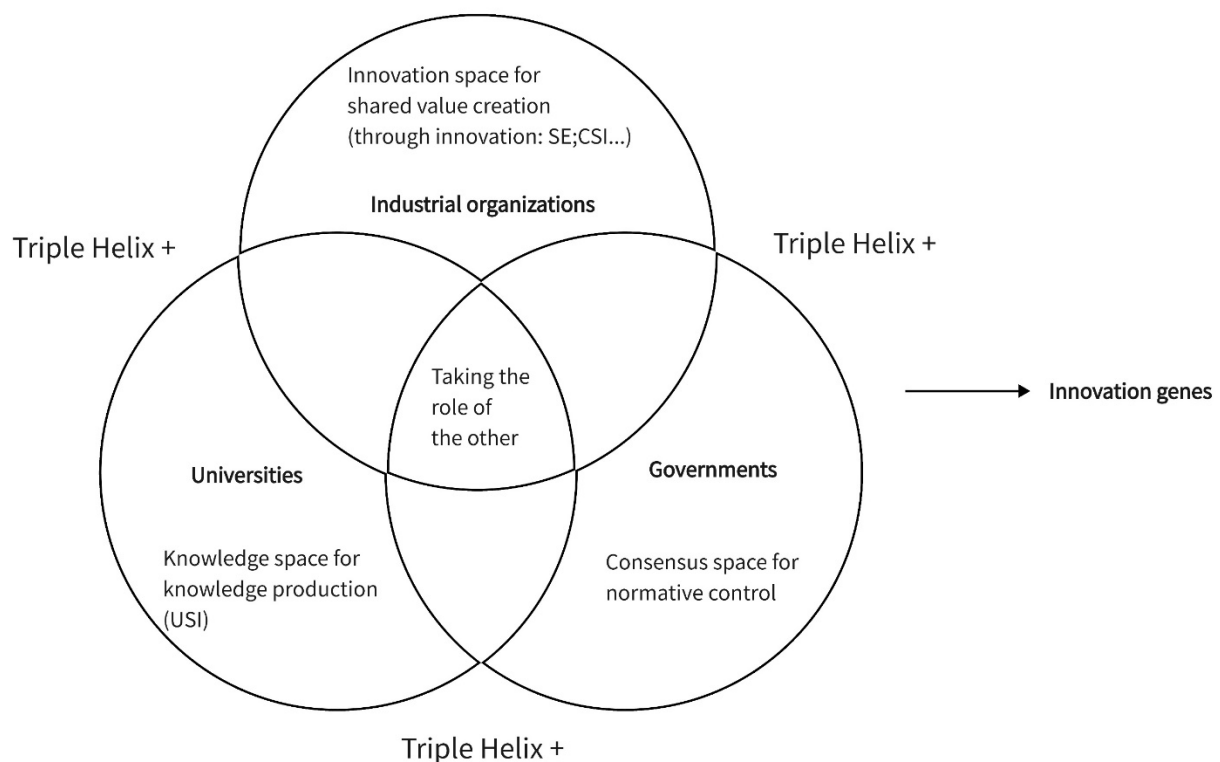
|                                                          |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                          |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                | further promotes the evolution at social structure system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Two interconnected layers of helical interactions</b> | Innovation dynamics              | <b>1) dynamics between innovation genes:</b><br>'Taking the role of the other'<br><b>2) dynamics between innovation genes and social structures:</b><br>highlight the impact of the social public's knowledge democracy on innovation genes.<br><b>3) knowledge flow:</b> key information and knowledge come primarily from universities; knowledge mainly as the representative of the university's identity. | <b>1) dynamics between innovation genes:</b><br>exists multi functions and forms but their interaction of how they 'taking the role of the other' need to be further clarified.<br><b>2) dynamics between innovation genes and social structures:</b><br>highlight 'innovation in social relations', multi-actors' interaction under social structures. Scholars emphasised the importance of helix model and cross-fertilization, but their dynamics need to be further explored.<br><b>3) knowledge flow:</b><br>universities as main knowledge provider is still unclear, civil society may provide usable local knowledge; knowledge as one of the resources rather than representative of the university's identity. |
|                                                          | Sustainable development dynamics | Innovation dynamics (innovation genes and social structures) regard towards environment.                                                                                                                                                                                                                                                                                                                       | Innovation dynamics (innovation genes and social structures) regard towards sustainable development goals includes environment and broader social issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Source: synthesized from (Cai, 2022) and the author

#### 2.8.1.1 Innovation genes

Cai (2022) employs a gene metaphor within the Triple Helix DNA framework to illustrate innovation dynamics, identifying three primary dimensions: spatial, functional, and actor-related interactions. Spatial interactions refer specifically to the domains of knowledge, consensus, and innovation. Functional interactions encompass knowledge production, normative control, and wealth creation. Lastly, the actors involved primarily include universities, industries, and governments (UIGs). Given that innovation traditionally prioritises technical knowledge aimed at economic growth, universities occupy a crucial role within this framework.

While innovation genes represent the functional attributes of their respective domains, social innovation broadens these attributes by emphasising the creation of social or shared value rather than solely economic value. Firstly, universities extend beyond their conventional focus on technological knowledge for economic development, employing their expertise to drive innovations that address social challenges. This shift marks the evolution from entrepreneurial universities toward social entrepreneurial universities, a concept encapsulated as University Social Innovation (USI) (Bayuo, Chaminade and Göransson, 2020; Málovics *et al.*, 2025). Secondly, industries expand their traditional wealth creation role by integrating social impact considerations. Entrepreneurship evolves into Social Entrepreneurship (SE), where enterprises strategically institutionalize Corporate Social Innovation (CSI) to simultaneously generate economic and social value through innovative business models (Dacin, Dacin and Tracey, 2011) (Porter and Kramer, 2011; Kramer and Pfitzer, 2016; Lorenzo-Afable, Lips-Wiersma and Singh, 2025). Thirdly, governments move beyond their conventional regulatory and control functions by actively facilitating social innovation through supportive policies, infrastructure development, and targeted incentives (Domanski, 2018; Xin, 2026). Nevertheless, given variations in social innovation mechanisms across different national contexts and the existing gaps in policies and ecosystem structures relative to technological innovation, the role of government can either foster or hinder social innovation, thus warranting further investigation.



### Figure 2.3 Innovation Genes/Innovation Dynamics

Source: synthesised from (Etzkowitz and Leydesdorff, 2000; Etzkowitz, 2008; Carayannis and Campbell, 2009; Cai, 2022; Carayannis and Morawska-Jancelewicz, 2022) and the author

#### 2.8.1.2 Social structure

Within the Neo-Triple Helix model, social structures are described through various helical models, Triple, Quadruple, and Quintuple Helix, each providing distinct perspectives. The Triple Helix primarily considers social structures as a contextual backdrop without detailed elaboration. In contrast, the Quadruple and Quintuple Helix models introduce the concept of knowledge democracy, emphasising the role of media-based and culturally-influenced public and civil society in shaping innovation systems through discourse and public dialogue (Carayannis and Campbell, 2009; Cai, 2022). This public discourse, influenced by regional and global variations in social values and cultures, indirectly impacts the nature and effectiveness of innovation practices. Additionally, social structures are recognised as dynamic configurations of organisations and institutions with multidimensional internal connections (Cai, 2022; Masyuk et al., 2019). However, despite this detailed description, the substantive interactions among multiple actors are not deeply explored within the Neo-Triple Helix model.

In the context of social innovation, social structures represent active, dynamic interactions among diverse actors rather than merely a passive background or discourse framework (van der Have and Rubalcaba, 2016; Sataalkina and Steiner, 2022). These interactions involve multiple actors, institutional frameworks, and social networks within various societal dimensions (Cajaiba-Santana, 2014; Ding *et al.*, 2025). Such interactions foster ‘innovation in social relations’ (Moulaert, Maccallum and Hillier, 2013; Moulaert, Simmons and Parra, 2024), highlighting participation, collaboration, empowerment, governance, capability building, and resource sharing among innovation genes and civil society. This differs significantly from open innovation models, which primarily aim to deliver economic or technological value to users. Social innovation participants from civil society actively engage in bottom-up processes, contributing local knowledge, resources, and institutional insights, thus creating a reciprocal relationship with traditional innovation actors at local and regional levels (Moulaert, Simmons and Parra, 2025; Pacheco, Turro and Urbano, 2025).

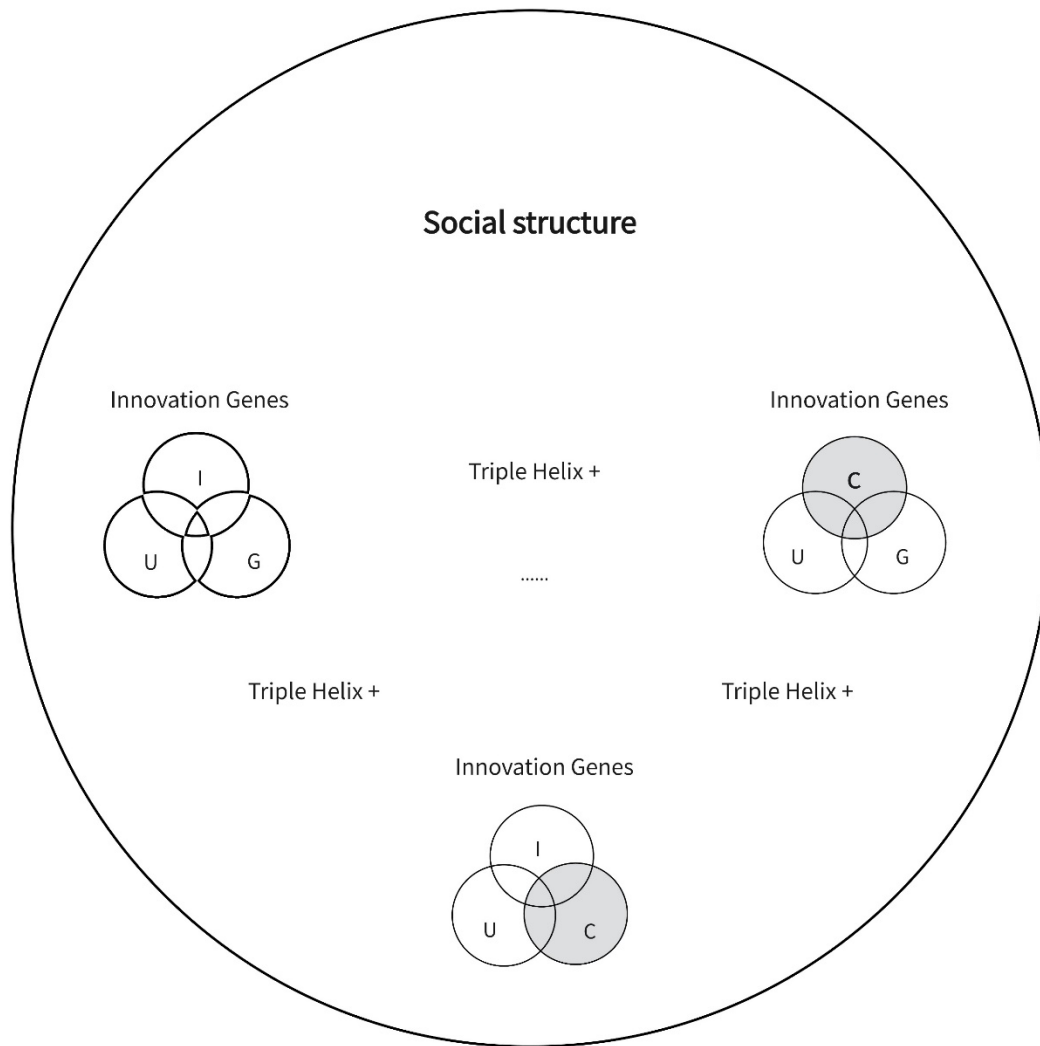


Figure 2.4 Innovation Genes in Social Structures

Source: synthesized from (Cai, 2022) and the author

Triple Helix+: This term denotes the inclusion of broader societal actors beyond traditional university-industry-government roles, recognizing potential actor substitutions or expansions involving civil society. Universities themselves may also be replaced or complemented by civil society as principal knowledge providers, reflecting a shift towards knowledge democracy.

### 2.8.1.3 Sustainable development

In the Neo-Triple Helix model of innovation ecosystems, sustainable development is primarily associated with addressing environmental challenges that emerge from technological innovation. This model underscores the interconnectedness between the natural environment, society, and the economy, emphasising how innovation should consider their mutual influences.

In contrast, social innovation is more comprehensively aligned with the United Nations Sustainable Development Goals (SDGs) (*Sustainable Development Goals*, 2015), encompassing a broader range of

societal needs and challenges (Humphreys and Imas, 2022; Littlewood *et al.*, 2026). While the Neo-Triple Helix model focuses on the environment as a driver of innovation dynamics, social innovation engages with diverse issues—including, but not limited to, environmental concerns. These issues span education, health and care, employment, housing, social capital and networks, political participation, and the environment, as outlined in the TEPSIE project’s integrated measurement model (Unceta, Castro-Spila and García Fronti, 2016).

As such, the economic, social, and environmental dimensions of sustainability are integrated within social innovation ecosystems, giving rise to an interconnected framework comprising socio-economic development, institutional social structures, and both social and environmental sustainability. In contemporary contexts, whether through technological or social innovation, the impact of innovation extends beyond isolated environmental concerns to the broader socio-ecological system. This reinforces the understanding that sustainable development challenges must be addressed in their full complexity and not be reduced solely to environmental issues.

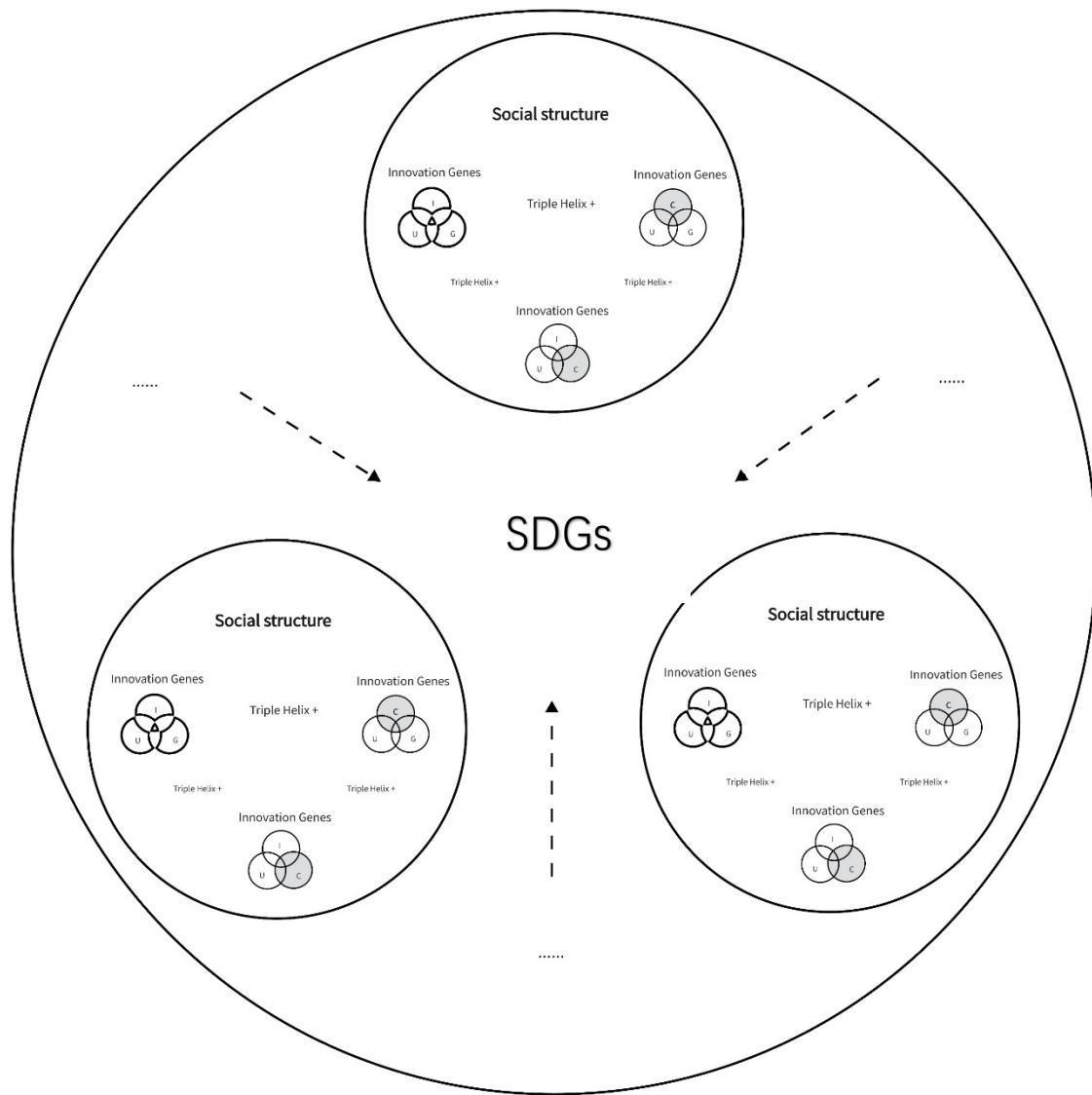


Figure 2.5 Innovation Genes and Social Structures relating to Sustainable development Goals

Source: synthesized from (Cai, 2022) and the author

## 2.8.2 Relations among Key Components

### 2.8.2.1 Innovation genes and social structures

In the Neo-Triple Helix model of innovation ecosystems, University–Industry–Government (UIG) relations are conceptualised not as a system, but as ‘innovation genes’. Social structures are seen as the contextual backdrop for these genes. Innovation genes are embedded in social structures, and these structures in turn influence and enable innovation (Cai, 2022). This interpretation emphasises the role of social structure as a contextual condition that shapes innovative actions. For example, in the context of knowledge democracy, social structure manifests as a respect for public engagement. Here,

innovation genes primarily serve economic purposes with limited participation, and innovation is chiefly aimed at securing economic benefits.

In contrast, within social innovation ecosystems, the interaction between innovation genes and social structures is more reciprocal and substantive. It centres on empowerment, participation, and the transformation of social relations (Moulaert *et al.*, 2005; Moulaert, Simmons and Parra, 2024). The aim of innovation shifts towards creating social values. Social structures are not mere background conditions but become co-creators of innovation alongside civil society actors. Innovation may emerge from both top-down and bottom-up processes.

Firstly, innovation genes support or empower civil society by providing the knowledge, skills, and competencies necessary for participation in socio-economic activities, particularly for vulnerable or marginalised groups. This occurs through education, training, employment, and community engagement (Terstriep, Rehfeld and Kleverbeck, 2022; Campos *et al.*, 2025). Secondly, social structures reciprocally contribute to innovation genes by offering unique knowledge sources, such as local cultural heritage (Nordberg, Mariussen and Virkkala, 2020) and intangible resources like social capital (Tran *et al.*, 2024). These dynamic interactions foster ‘innovation in social relations’ through new relational configurations and governance models, facilitating knowledge exchange and social learning, thereby enhancing inclusion and mutual capacity development (Terstriep, Rehfeld and Kleverbeck, 2020; Moulaert, Simmons and Parra, 2025).

#### *2.8.2.2 Innovation genes and sustainable development*

The Neo-Triple Helix model highlights the relationship between technological innovation and economic development, with environmental sustainability as a secondary consideration. Innovation genes, through human behaviour and technological advances, alter the environment, and over time, sustainability values may become institutionalised within innovation genes (Cai 2022). Here, sustainable development is largely framed in terms of environmental concerns.

In social innovation ecosystems, sustainable development encompasses a broader range of goals beyond the environment, including addressing pressing social issues. Rather than being guided by abstract ethical imperatives, social innovation aims to institutionalise practices that create shared economic and societal value. Innovation genes contribute by providing expertise, resources, and new ideas, such as novel business models, optimised processes, or new products, that support institutionalised responses to unmet social needs (Phills, Deiglmeier and Miller, 2008; Phillips, Luo and Wendland-Liu, 2024). These initiatives may stem from public or private organisations, including social enterprises (SE), corporate social innovation (CSI), or university social innovation (USI).

Conversely, successful social innovations can reshape innovation genes at institutional and structural levels. For example, universities may establish dedicated social innovation centres, courses, and think tanks; industries may integrate social innovation into their business strategies (Herrera, 2015; Tabares, Dionisio and Parida, 2025); and governments may formulate supportive policies, provide incentives, and embed social innovation within regional or national innovation systems.

#### *2.8.2.3 Social structure and sustainable development*

In the Neo-Triple Helix model, the mutual shaping of social structures and the environment is evident. Social actions drive environmental change, while environmental challenges, in turn, reshape social values and public discourse (Cai 2022). Economic-focused innovation that overlooks environmental concerns often face public scrutiny, which may prompt higher environmental awareness and expectations.

Social innovation ecosystems extend this interaction further by actively involving civil society in addressing a broad range of sustainability challenges. Here, social structures are not passive but engage in bottom-up innovation practices. Civil society addresses social problems through collective intelligence and action, reconfiguring existing practices or combining resources in new ways (Howaldt, Kaletka and Schröder, 2016; Liodaki and Stockdale, 2025). The diffusion of successful social innovations can catalyse broader social change, influencing societal structures, cultural norms, behaviours, and institutions (Nicholls, Simon and Gabriel, 2015). Such transformative social innovations are vital for tackling systemic issues overlooked by markets or conventional innovation actors, including economic crises, pandemics, climate change, inequality, unemployment, and healthcare shortages (Banda, 2025; OECD, 2025). Social innovation thus serves as a key driver of social transformation in pursuit of sustainable development.

### **2.8.3 Two Interconnected Layers of Helical Interactions**

#### *2.8.3.1 Innovation dynamics*

The innovation dynamics in the Neo-Triple Helix model of innovation ecosystems involve both interactions among innovation genes and their relationships with social structures. The dynamics among innovation genes refer to the capacity of actors to ‘take the role of the other’ (Etzkowitz, 2008). In this context, actor identities, particularly universities, industries, and governments, are defined through their engagement in technological knowledge production and economic value creation. The aim of these dynamics is primarily to enhance economic competitiveness, as seen in concepts such as the entrepreneurial university or academic enterprise. In contrast, social innovation prioritises social value creation, although the idea of shared value, which stressed both economic and social value, is also recognised (Porter and Kramer, 2011; Camilleri *et al.*, 2023). Actor identities in social innovation are more multifaceted, yet the mechanisms of ‘taking the role of the other’ among these actors remain underexplored.

In the Neo-Triple Helix model, innovation genes are not exclusive actors—they are seen as secondary players (Cai and Etzkowitz, 2020). With the inclusion of the broader public, the mission of innovation extends beyond economic value to include considerations of the ecological environment. However, this often reflects a normative advocacy of ‘knowledge democracy’ rather than tangible participatory processes. By contrast, social innovation entails transformation in social relations. Scholars emphasise cross-sectoral fertilisation among universities, enterprises, governments, and civil society (Phills, Deiglmeier and Miller, 2008; Montanari, 2011). As innovation becomes more socially embedded, actor diversity increases and dynamics become more complex and unpredictable. This complexity can disrupt the balance of traditional innovation gene interactions. For example, when governmental responsiveness lags (Cai and Etzkowitz, 2020), leadership may shift to universities and industries. In some cases, civil society actors may assume central roles, forming new configurations such as University–Industry–Civil Society (U–I–C), even if the formal participants include governments. This shift suggests a transition from a system-based to a *super-system* logic (Mair and Marti, 2009; Chatzichristos *et al.*, 2023).

These shifts in innovation dynamics have direct implications for the flow of knowledge. In the Neo-Triple Helix model, universities are the primary source of knowledge as producers of technological expertise. In social innovation ecosystems, however, knowledge becomes a broader resource for value creation. Owing to the context-sensitive nature of social innovation, effective knowledge may originate from civil society. Moreover, overcoming the limitations of local knowledge is essential for inclusive innovation (P. B. Appiah and H. Grimm, 2025). In this sense, universities are only one among several contributors. The scope of knowledge also expands beyond technological domains to include experiential, cultural, and social knowledge aimed at meeting human needs.

#### 2.8.3.2 Sustainable development dynamics

The second layer of dynamics involves sustainable development. In the Neo-Triple Helix model, this refers to interactions between innovation genes and social structures in relation to the natural environment. However, the model treats social structures narrowly focusing on how knowledge democracy shapes innovation through cultural and value contexts. When the environment is conceptualised as embedded within multiple social structures, innovation becomes a potential enabler of environmental stewardship (Carayannis and Campbell, 2009; Zakaria *et al.*, 2025). Yet two limitations remain: (1) the model underestimates the diversity of public discourse on social concerns linked to innovation, and (2) it narrowly equates sustainable development with environmental issues, whereas environmental sustainability is only one among many sustainable development goals (SDGs).

A broader understanding of sustainable development dynamics is thus required, particularly within social innovation ecosystems. These ecosystems engage with a wide range of social and environmental issues aligned with the SDGs (Littlewood *et al.*, 2026). Public actors and core innovators alike are

driven by a shared mission to address sustainability challenges. Both bottom-up and top-down initiatives are essential. Disruptive and incremental innovations, technological or social, can foster sustainable development and help resolve specific challenges such as climate change, poverty, or employment. Addressing sustainability issues also contributes to the evolution of social systems and institutions, potentially leading to broader social transformations. These include movements and structures such as fair trade, global climate action, and international public health collaborations (Busacca and Coscarello, 2025).

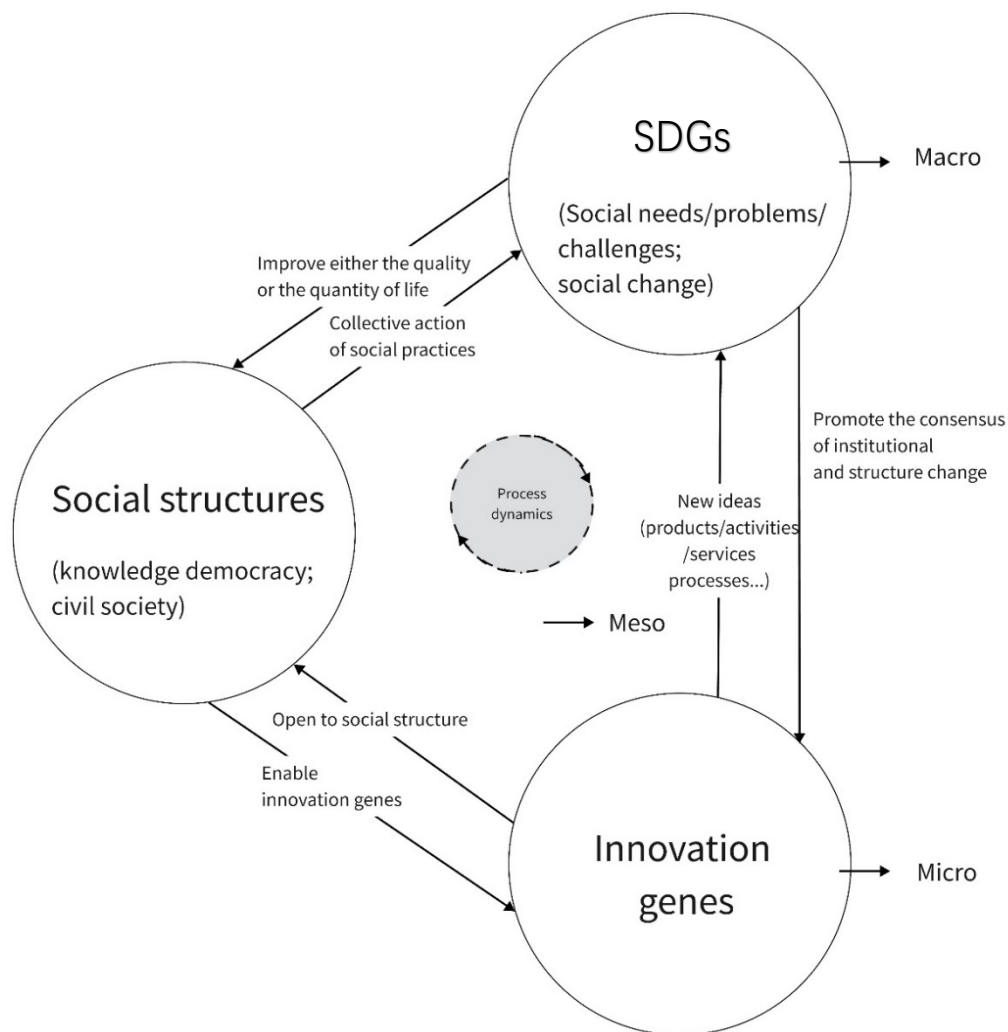


Figure 2.6 The Social Innovation Ecosystem

Source: synthesized from (Cai, 2022) and the author

### 2.8.3.3 Framework conditions

There is one dimension that is not mentioned in Neo-Triple Helix model of innovation ecosystems but needs to be highlighted in social innovation ecosystems. The social innovation ecosystem is jointly defined by extremely diverse framework conditions, which have an impact on the traits, the design,

actors allocation, diffusion, and sustainability opportunities of social innovation (Terstriep *et al.*, 2015; Parjanen and Pässilä, 2025). Social innovation involves broader political, social and economic discourse and context embeddedness (Rösing Agostini *et al.*, 2017), social innovation is contextually heterogeneous (Nicholls, Simon and Gabriel, 2015; Domanski, Howaldt and Kaletka, 2020), it is difficult for social innovation to be effectively and completely replicated in another social environment even if dual with the same social problems. Scholars call for engaging in context-sensitive consideration in social innovation ecosystem (Christoph Kaletka, Mona Markmann and Pelka, 2016; P. B. Appiah and H. M. Grimm, 2025b). This implies that the development of the social innovation ecosystem needs to incorporate certain framework conditions to ensure the applicability, differentiation and flexibility of social innovation actions in different social context.

European Project TEPSIE (Theoretical, Empirical and Policy Foundations for Building Social Innovation in Europe) has developed an integrated model to measure social innovation at the national/regional macro level, the framework conditions as are one of the composite models, which are based on the model developed by Miles *et al.* (2009) in NESTA, seen as an important factor in measuring social innovation in different contexts. It is mainly composed of four framework conditions, which are political framework, institutional framework, societal climate framework and resource framework. Among them, the political framework mainly refers to the relevant institutions, policies, incentives, or interventions that promote social innovation. The institutional framework mainly refers to the behaviour that conforms to social values, rules, norms, and laws. The socio-climate framework mainly refers to the attitudes or awareness, acceptance, and general trust of innovative behaviours from society. The resource framework mainly refers to the relevant resources for the promotion of innovation and development, such as technology, financial knowledge, etc.

Framework conditions can be understood as the pulling factors of the innovation process, which have a moderating effect, and they are not completely separate from each other but are interrelated, providing an environment for social innovation (Unceta *et al.*, 2019; Parjanen and Pässilä, 2025). Due to the environmental sensitivity of social innovation, framing factors may promote or hinder the process and outcome of social innovation in different contexts and according to specific social needs and have different degrees of influence on different processes of social innovation (Han, 2025). It shows the framework conditions may evolve at the same time as the iterative process of social innovation, enabling and empowering the implementation of new social innovations. Therefore, the macro contextual background and the first two dynamic layers may jointly determine the emergence and development of social innovation in a specific environment, the impact of innovation on society, and sustainability and other factors. Researchers define it as the third potential dynamic layer, that is, contextual dynamics.

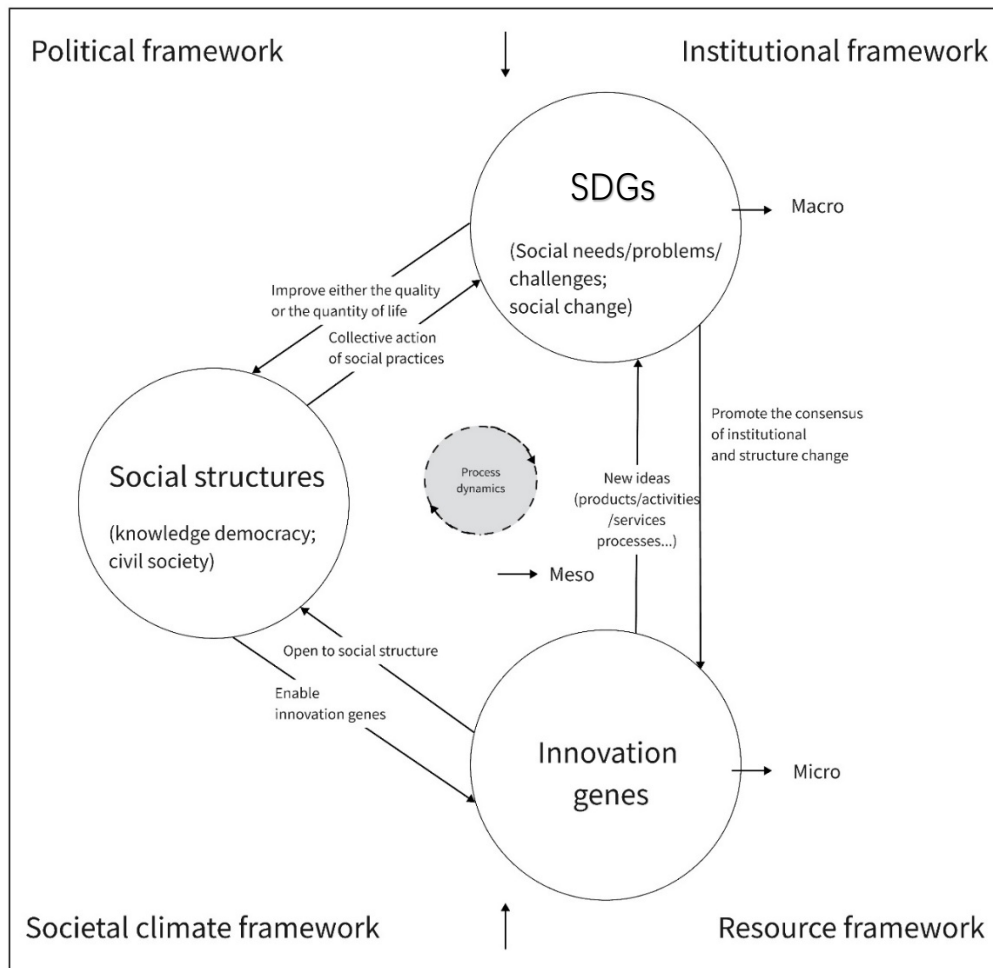


Figure 2.7 The Social Innovation Ecosystems with Conditional Frameworks

Source: synthesized from (Cai, 2022) and the author

## 2.9 Conclusion

The growing academic discourse on social innovation reflects a paradigm shift in innovation thinking, responding to the long-standing dominance of technology-centric approaches. However, compared to technological innovation, research on social innovation remains relatively fragmented and lacks a systematic theoretical foundation. Given the complex and multi-dimensional nature of social innovation, single sector perspectives are insufficient for explaining its innovation dynamics. This study therefore adopts an interdisciplinary approach to construct a theoretical framework for the social innovation ecosystem, integrating insights from both the social innovation literature and the Neo-Triple Helix model. This integration enriches the theoretical understanding of both fields. Through a theory adaptation approach, this study offers novel perspectives on social innovation ecosystems, contributing to the conceptual development of this emerging field (Jaakkola, 2020). First, it consolidates the core elements and characteristics of social innovation, addressing definitional ambiguity across disciplines. Second, it bridges two previously disconnected strands of research, innovation ecosystem models and

social innovation scholarship, through the Neo-Triple Helix model. Third, by identifying distinct components and proposing testable propositions, it provides a clear analytical structure that can support empirical investigations into actor roles, knowledge flows, and systemic interactions.

Importantly, this study advances the existing models of the Triple, Quadruple, and Quintuple Helix by repositioning civil society and environmental considerations not as contextual elements, but as integral to the innovation and sustainable development dynamics. The Neo-Triple Helix model, when adapted to the context of social innovation, provides a more inclusive and systemic framework for understanding innovation processes, particularly in addressing complex societal challenges. This reconceptualization extends the boundaries of traditional innovation ecosystem theory by capturing the multidirectional, co-evolutionary relationships between innovation actors, social structures, and sustainability imperatives. In addition to its theoretical contribution, the proposed framework also offers strong potential to guide empirical research. It provides a structured lens for examining actor roles, knowledge flows, institutional arrangements, and value creation mechanisms within social innovation ecosystems. Researchers can apply this framework to study how innovation is shaped by contextual conditions, how cross-sector interactions are configured, and how sustainable development goals are integrated into innovation practice. Nonetheless, this research remains theoretical in nature, with potential limitations related to conceptual completeness and interdisciplinary applicability. Thus, further theoretical refinement and empirical validation are necessary to advance the study of social innovation ecosystems.

## 3 RESEARCH METHODOLOGY

### 3.1 Introduction

This chapter systematically and carefully clarified the methodological approach adopted by this research as the core guide principle for conducting empirical enquiry. Before the description of concrete methodological approach, the ontological and epistemological as the fundamental philosophy orientation to underpinning research are introduced. Since the philosophical orientation plays a pivotal role in determining the execution of research methods, through epistemological descriptions and comparisons of different ontological worldviews, this study mainly follows a qualitative strategy, with philosophical ontology and epistemology anchored in the constructivism interpretive social sciences. According to this, and relate the research questions and purpose of interests, which have fully stated in previous content, therefor the research will conduct the case study research. Case study research are seen as ‘a bridge across paradigms’ (Luck, Jackson and Usher, 2006), and is suitable for interpreting complicated phenomenon of social world, which is helpful for research to have a deep and comprehensive understanding of social phenomenon, it usually refers to the intersection of diverse interests and variables (Bryman, 2012).

## 3.2 Research Paradigm

When we investigate the real world, we need to first think about and clarify the basis for understanding this real world, which is ontological, epistemological and methodology. Ontology is concerned with the philosophy of reality, epistemology is concerned with how we know it, and methodology is the way of concrete practice, they are interconnected and consistent (Krauss, 2015). Social ontological questions are closely related to the conduct of social research, and the formulation and conduct of research questions need to take into account the impact of ontological assumptions and commitments (Bryman, 2012). They constitute the philosophical paradigm of research and as 'basic belief system or world view that guides the investigation' (Guba and Lincoln, 1994). A 'paradigm' is often a basic set of scientists' shared beliefs, following a research paradigm is beneficial in defining effective research (Krauss, 2015; Rahi, 2017). Scholars claim that 'the objectives, scope, and nature of inquiry are consistent across methods and across paradigms' (Johnson and Onwuegbuzie, 2004). No matter what point the paradigm is based on, social sciences illustrate a well-founded view of human beings (or specific groups of human beings) and the environment in which they live and evolve (Biesta and Burbules, 2003).

### 3.2.1 Ontology

Ontology comes from the Greek word 'being' and relate to the philosophy of reality, which is about the fundamental nature of reality, i.e., the existence of 'being' (Djamba and Neuman, 2002). In general, when comes about to understudying the knowledge of the social world, there mainly exists two different ontological perspectives, one is the realist and some scholars also categorized it as objectivism, and the other is the nominalist and some scholars categorized it as constructivism (Djamba and Neuman, 2002; Bryman, 2012). The central direction referred to this two different stance is the question of whether social entities can and should be seen as objective entities with the external reality of social actors, or whether they can and should be seen as social constructs established by the perceptions and actions of social actors (Bryman, 2012).

Realist believe that the world is exists in 'outside' or extrinsic, and social phenomena face us as external facts that we cannot touch or influence, which means the social entities pre-existent and independent of human and other interpretations, it is attainable and waiting to be discovered and captured to produce objective knowledge (Guba and Lincoln, 1982; Djamba and Neuman, 2002; Bryman, 2012). Realist as well as be divided into two different directions with understanding, which includes absolute or naive realist and critical realist. Absolute realist believes that the natural and social sciences can and should employ the same methods for data collection and interpretation, they indicate the infallible scientific method can lead to universal laws and advocates for scientists to pay attention to external reality, this stance leaving little room for critical scrutiny or error (*ibid*). Critical realist acknowledges the reality of the natural order and the events and discourses of the social world and acknowledges and accepts that the categories they use to understand reality may be temporary (Bryman, 2012). Critical realists

recognize that the object of study is different from the reality that the researcher understands and interprets and describes, and therefore they do not believe that the nature of reality can be understood through observation (*ibid*). Therefore, although critical realist believe that reality exists objectively, all the measurements are imperfect, it is not easy to capture directly, and it is hard to exclude biased and that theoretical explanations need to be incorporated (Djamba and Neuman, 2002; Bryman, 2012). In addition, they identify that the form of reasoning involved in generating causal mechanisms is neither inductive nor deductive, but rather a retrospective reasoning (Bryman, 2012). Human pre-existing ideas, i.e., subjectivity and/or cultural interpretations affect our contact with reality, therefore it is necessary to constantly and critically examined theories and so-called universal laws (Guba and Lincoln, 1982; Djamba and Neuman, 2002).

In contrary, the nominalists or constructivism agree with the position that human beings have never directly experienced the 'outside' world, the reality world is 'intrinsic', and reality or physical representations cannot be separated from human interpretation and internal subjectivity. Constructivism asserts that versions of social reality are changing rather than already determined, it believes that social reality is a continuous achievement of social actors and asserts that social phenomena and their meanings are constantly being done by social actors, and that social interactions can generate and construct meaning, and that they are in a state of constant revision (Bryman, 2012). The constructivist position is not extreme, and the existence of culture can precede the persistence of a particular group and at the same time can constantly shape each other with the participants (Bryman, 2012). In addition, the subjective factors of culture, history, and social environment shape the experience of the material and social worlds, and that there is no absolute objective knowledge of any kind (Guba and Lincoln, 1982; Djamba and Neuman, 2002).

### 3.2.2 Epistemology

Correspondingly, the word epistemology comes from the Greek 'epistêmê', which imply the term for knowledge (Djamba and Neuman, 2002). Epistemology deals with our ontological-based philosophy of reality and the ways in which knowledge, or this reality is produced or known (Krauss, 2015). In terms of epistemology, realists hold a realism or positivism position, critical realists hold the post-positivism position, and nominalists hold an interpretivism or constructivism position (Guba and Lincoln, 1994; Crossan, 2003; Krauss, 2015). As for these belief systems, the essential distinction is that positivism and post-positivism emphasises the production of objective knowledge (*ibid*). They claim that reality is externalized, the empirical world is independent of our inner thoughts and perceptions, and ideas usually are quantitatively verified and aggregated to produce a wide range of principles and laws (*ibid*). The latter one tends to believe the explanation, subjection, and meaning-constructing of knowledge, Knowledge is context and time-dependent (*ibid*). The interpretation and subjective views of the observer and the observed influence and shape their words and actions, so that the reality experienced

by the researcher with others is co-constructed in a continuous process of interaction and interpretation at a particular place and time (*ibid*).

The positivism paradigm often referred to as quantitative research, positivism advocates the application of the methods of the natural sciences to the study of social reality and beyond. Science must (and probably can) be conducted in a valueless (i.e., objective) way (Bryman, 2012). Positivism holds that the world and the universe are a single concrete reality that is deterministic and objective. With this paradigm, the object of study is independent of the researcher's attitude or concept, and knowledge is discovered and verified through science experiments that phenomena are directly observed or measured, and the construction of facts comes from dismantling phenomena to examine their components (Crossan, 2003; Krauss, 2015). Scholars have criticized although this method producing useful data, the data are inadequate and superficial for explicating the phenomena investigated (Krauss, 2015).

The post-positivism paradigm represents a critical realist ontological view that can be both qualitative and quantitative. Post-positivism assert that value is cognizable, rather than being at the two levels of total uselessness (positivist social science) and value-filled (interpretivist social science) (Guba and Lincoln, 1994). It acknowledges the shaping of social context, personal creation and multiple perceptions of people who are involved in the research and indicates that the reality independent of the mind is not rigid and does not exist in a vacuum (Crossan, 2003; Krauss, 2015). The post-positivism paradigm argues that researchers determine causality based on beliefs and interests, that concepts cannot be manipulated solely by quantitatively measuring facts, that the researcher and the researched are interactive rather than independent of each other in the research process, and the research question cannot be reduced to the simplest elements (*ibid*).

The interpretivism paradigm is often referred to as qualitative research, used to describe epistemology that contrasts with positivism. The understanding of the social world based on social science-based interpretivism has a different research procedural logic from that of positivism based on natural science (Bryman, 2012). Interpretivism is based on the idea that a strategy that respects the differences between humans and natural scientific objects is needed, and therefore requires social scientists to grasp the subjective meaning of social action (Bryman, 2012). In this cognitive paradigm, scholars argued that reality is not given, but is constructed in the world being interpreted, and reality is not singular but constitutes of multiple realities from multiple perspectives (Krauss, 2015). Researchers are often seen as one of the tools for acquiring real-world knowledge (Guba and Lincoln, 1994), while affirming the importance of the participant's life and work and the context of the study to the research. During the investigation, it is necessary to be as close as possible to the person being studied, and the researcher and the person being studied are interconnected and interactive. Generally, constructivism epistemologists often understand the world in terms of historical and social perspectives (Crotty, 1998), and that the world is created and enhanced by human beings through action and interaction (Creswell,

2009; Goldkuhl, 2012).

The most used methodological distinction centres on the differences between quantitative and qualitative research, with qualitative and quantitative operating under different ontologies and epistemologies. Although there are many differences between quantitative and qualitative epistemologies, after all it said and done, the core debate between quantitative and qualitative is philosophical rather than methodological (Krauss, 2015). Different modes of study allow us to understand different phenomena and different causes (Deetz, 1996), the method chosen depends on what one is trying to do, rather than a commitment to a particular paradigm (Cavaye, 1996; Luck, Jackson and Usher, 2006). Therefore, the approach employed must match the specific phenomenon of interest (Krauss, 2015) .

### 3.2.3 The Paradigm in this Research

The fundamental belief of researchers to a large extent decides the selection of research methodology, this is centred in the theories perspectives of researchers (Krauss, 2015). The philosophical assumptions embraced by this study are nominalist interpretivism or constructivism and referred as qualitative research, clarification from the following points respectively.

For the researcher herself, she claims that there is flexibility in the conception and perception of knowledge so that there does not exist a single objective reality but a multiple reality. therefore, the researcher acknowledges the reality is constructed and interpreted; reality is influenced by specific social conditions and contextual circumstances. Besides, the researcher recognized the logical interpretations based on existing knowledge of researchers and the different life and work background and social context of respondents makes them hold some subjective interpretations intrinsically, this interpretive nature constitutes a diverse perspective on real-world knowledge and social experience in different context. So, attempting to ‘establish validity’ in any external or objective sense is pointless (Nanda *et al.*, 2004). What’s more, the researcher acknowledging the existential value of human systems and herself in exploring the social world and understanding the social world is shaped by the interaction between investigator and respondent rather than being isolated from objective reality. Despite the risk of bias, but actively report the value biased and ‘position yourself’ is helpful to present meaningful and heuristic explanations (Creswell, 2009) .

For this research, it is appropriate to the research problem, purpose and questions of interest. First, qualitative research strategies confer the ability to gain deeper knowledge of organizational dynamics, which is relevant to understanding the nature of organizational experience, especially the process of organization and organizational unfolding (Gioia, Corley and Hamilton, 2013). The research problem of this study is closely related to social phenomena, and the research question and purpose of interest are mainly to discover the specific innovation dynamics of multi-actor interaction in the social

innovation ecosystem, which not only involves the intersection and overlap of many points of interest and variables (Yin, 2009), but also requires the interaction between the researcher and the respondents in the research process, rather than being isolated from the respondents.

In addition, as an emerging research field, social innovation has just received a lot of attention in recent years, and it's centred on the status of necessary to further explore, discover, strengthen and improve the construction of theoretical foundations in empirical research. Constructivism advocates the interaction of the researcher with the respondents rather than imposing established indicators, which give chance to create abundant opportunities for discovering new concepts rather than affirming existing ones, and the discovery of new concepts not only promotes the formation of meaning, but also has important implications for further strengthening, developing, and structuring existing theoretical fields (Gioia, Corley and Hamilton, 2013; Krauss, 2015). Finally, based on the core innovation characteristics of social innovation, social innovation emphasises and highlights different social contextual conditions, the practice of social innovation in different social contexts may have a certain degree of heterogeneity. Therefore, it is necessary for the researcher to focus on the way in which members of the organization construct and understand their experiences, and their actions and events of various organizations related to social problems in the context of the specific social world cross (Crossan, 2003), rather than on the number or frequency of measurable events (Gioia, Corley and Hamilton, 2013).

### 3.3 Research Design: Case Study Research

#### 3.3.1 Research Questions and Conceptual Framework

The main purpose of study design is to avoid situations where the evidence is irrelevant to the question to be studied. Even though qualitative research does not have a specific set of design methods, scholars have mentioned the importance of the research purpose, questions, and methods being interrelated and connected (Creswell, 2013). So, clarifying the question is one of the important steps in developing a research design. The main purpose of this study is to develop an integrated social innovation ecosystem and further explore the dynamic mechanism of multiple participants in the social innovation ecosystem through empirical research, in order to further enhance the conceptual understanding of the social innovation ecosystem and improve its theoretical and practical foundation. In Chapter 2, the researcher developed a conceptual framework of social innovation ecosystem based on theoretical foundations, but the research specifically focused on the innovation dynamic mechanism mentioned in the conceptual framework, as well as the dynamics of innovation genes and the dynamics of innovation genes and sustainable development. More specifically, it focused on multi-organizational participants and the interactions and connections between them in promoting social innovation.

After clarifying the purpose and questions of the study, the researcher chose to use case study research in qualitative research as the primary research method to plan and conduct the study. Case study research

is generally described as a versatile qualitative inquiry that serves different research topics and purposes. It is adopted by many disciplines as a common method for in-depth investigation and understanding of complex real-world issues (phenomena, events, situations, organizations, plans, individuals, or groups) (Stake, 1995; Merriam, 1998; Luck, Jackson and Usher, 2006; Creswell, 2009, 2013; Yin, 2009; Harrison *et al.*, 2017). Choose case study research is in line with the research questions of this study. Case study research is frequently tailored to some constructivist or interpretivist principles since the entire research process involves both subjective and interpretive elements (Creswell, 2013). It is primarily exploratory and explanatory, which mainly used to answer real life questions about ‘why’ and ‘how’, and it often contains a variety of variables, and the lines between context and question are often blurred (*ibid*). Besides, it in line with the research scenarios and methods of this study. Case study research aims to provide a comprehensive, meaningful, and in-depth analysis of the problem or phenomenon of interest relate to the context. Researchers can understand and present their perspectives by approaching the respondent and trying to further explore through their point of view (*ibid*).

Scholars mentioned the necessity of constructing a certain conceptual foundation and framework as well as relevant assumptions before conducting qualitative research for targeted data collection and analysis (Yin, 2011; Creswell, 2013). Yin (2014) mentioned theoretical construction or theoretical hypothesis based on the knowledge of existing subject domain before collecting data. And it is advisable to formulate research questions and/or propositions to select cases, determine focus, and refine boundaries to effectively establish these elements in the study design (Stake, 1995; Merriam, 1998; Yin, 2009). In Chapter 2, the researcher constructed a framework of the social innovation ecosystem based on interdisciplinary dialectical integration to guide the development of the research. In this conceptual framework, it mainly consists of three components: innovation gene, social structure and sustainable development goals. The research mainly focuses on two mechanisms: 1) The main participants (innovation gene) include the government, university, enterprises and social structures (civil society organizations); 2) The research mainly focuses on exploring the two layers innovation dynamic mechanism, first, innovation dynamics, involving the interaction mechanism between universities, enterprises, government and civil society, and second, sustainable development dynamics, where participants jointly promote social innovation, that is, a mechanism to solve sustainable development problems. This study puts forward some preliminary hypotheses based on this conceptual framework, which can effectively help research analysis and valuable research findings.

### 3.3.2 The Enquiry Phases and Objects

After further confirming and clarifying the specific research purpose, questions and methods, and the conceptual framework to guide the research, the research cases and units are further defined to enable the research to be carried out in an orderly and clear manner. It is necessary to define and scope cases. Defining a case is critical to focusing, structuring, and managing data collection and analysis. This

includes selectively and concretely identifying the parameters of the case, including the participants, location, and/or process to be explored (MERRIAM, 2009; Stake, 2006; Yin, 2014). The researchers mainly used a multiple-case embedded survey method. This study focuses on two cases, the object or unit of analysis of a case study research may be an individual, an organization, an event or an entity, etc.(Yin, 2011), the definition of the unit of analysis is related to the research question mentioned previously, and the research question of interest indirectly shapes the specific unit of analysis. The embedded units of analysis in this study therefore mainly involve the university, enterprise, government and civil society. Specifically, the main case background of this study is China's rural revitalization strategy, and the case study is selected as a representative rural revitalization village that meets the research question and interest, and the embedded analysis unit is different types of organizations related to the rural revitalization construction of the selected village. Table 3.1 simply shown the main focused cases selected and analysis units. The details of reasons that how and why to choose these cases and access to research objects will be elaborated in following sections.

Table 3.1 Qualitative Enquiry Phases of Multiple-Case

| Qualitative           | Background                                  | Location                              | Cases                        | Embedded units                                          |
|-----------------------|---------------------------------------------|---------------------------------------|------------------------------|---------------------------------------------------------|
| Phases 1<br>(cases 1) | China's rural<br>revitalization<br>strategy | Zhejiang Province<br>Hangzhou<br>City | Dashigai<br>Village          | The government, university<br>enterprise, civil society |
| Phases 2<br>(cases 2) |                                             | Zhejiang Province<br>Hangzhou<br>City | Guyan<br>Painting<br>Village | The government, university<br>enterprise, civil society |

Source: the author

### 3.3.3 Data Collection and Analysis

In this research, the researcher mainly uses the semi-structured interview method. Semi-structured interview is a form of interview that is in the middle of unstructured and fully structured interview. In this research, the main reason for choosing semi-structured interviews is because first, it guarantees investigation with a fairly clear focus to solve the specific problems relates to research questions (Yin, 2011; Creswell, 2013). Therefore, the researcher followed the constructed conceptual framework to set research questions related to the research purpose and problem, and constructed the interview guide accordingly, and the researcher has a series of questions or specific topics, which can effectively keep the interview from the research topic of interest and control the interview process within a reasonable range. Second, a certain degree of flexibility and openness is ensured. Semi-structured interviews are very flexible; the interview situation can be flexibly adjusted according to the actual situation (*ibid*). The researcher did not strictly require the interviewees to answer the questions according to the questionnaire guidelines, includes the sequence of answering questions and some reply beyond the questionnaire guidelines. This was to allow the interviewees to answer as freely as possible when they have special thoughts from different angle and potentially shows some other key points. So, the

researcher gives interviewee enough leeway to answer the questions, to let them feel like a provider of information than just a question answerer. It is worth noting that this study has strictly implemented the academic Ethics Review procedures before conducting the actual visit, and the participant information sheet and the consent signature was provided to all respondents. This is aimed at ensuring that respondents' right to know is fully protected and that their identity privacy and data security are strictly protected (Creswell, 2009; Yin, 2011). In addition, the study clearly promises that the use of the information obtained from the interviews will be strictly limited to the academic research scope of this paper, ensuring compliance and ethics in data processing.

Here is necessary to mention that this study is based on interpretivist and constructivist epistemologies. The core of qualitative case studies lies in the depth of context, and the generative construction of meaning rather than hypothesis testing or statistical validation using standardized measurement tools (Creswell and Poth, 2016). Under this paradigm, the standardized pilot studies that are based on positivism and intended for the use of closed scales or to assess measurement reliability do not align with the naturalistic approach to studying the dynamics of complex rural societies (Lincoln and Guba, 1985; Denzin and Lincoln, 2011). The preparatory phase in qualitative research focuses more on exploratory, reflective processes that are adapted to specific contexts (Kim, 2010). Therefore, this study adopted an exploratory pre-field work as pilot phase engagement before the official data collection, prior to the actual data collection, the researchers conducted informal visits and observations at the rural sites. On the one hand, it help researchers to fully understand the local context of rural areas, cultivate contextual reflection and adaptation of respondents' communication language patterns, and build trust with the participants, which laid a solid foundation for the subsequent case study data collection (Blumer, 1986). On the other hand, these effectively improve the relevance of the semi-structured interview questions, like the researcher made certain adjustments to the questionnaire's questioning mode and structure (Kim, 2010), which ensuring that the core issues are accurately addressed in relation to local practices, while also preserving the essential openness and exploration possibilities that are necessary for qualitative research (Stake, 1995; Tisdell, Merriam and Stuckey-Peyrot, 2025).

### 3.4 Research Context

Specific village-related information, news, and images can be easily accessed in Google Search, the following information is a general introduction to the basic context.

#### 3.4.1 Dashigai Village

Dashigai village is in the east of Daicun Town, Xiaoshan District, Hangzhou City, bordering Shimatou Village to the east, Daicun Village to the south, Shangdong Village to the west, and Fuxing Village of Yiqiao Town to the north. As the location of Daicun Industrial Park, the village's industries are mainly agricultural and sideline product processing and building component production. Agricultural cash crops include courgettes, edamame, peppers, etc. In 2023, it passed the acceptance of the Xiaoshan

District Digital Village Model Village and built a digital governance platform that combines the blockchain credit system with the Internet of Things. The village retains the ancestral complex of the Qing Dynasty and the remains of lime kilns of the Ming Dynasty. The Yongxing River passes through the village. In 2023, it was selected into the second batch of mutually prosperous villages in Hangzhou and became a typical case of rural revitalization.

The most prominent industrial representative supporting the core development of the village's rural revitalization is the Yingshanhong Agricultural Science and Technology Development Co., Ltd. In 2019, it piloted the 'Yingshanhong Village Governance Plan' in Dashigai village, exploring the autonomy model through 'portraits' of villagers, and promoting the improvement of village appearance and the development of the ancient breeding industry. In 2020, took the lead in developing the 'Ying Season' to expand sales channels for agricultural products. In 2022, he was selected as a candidate for the 'Golden Bull Award' for the leader of rural revitalization and mutual wealth in Zhejiang and has distributed free seedlings to Daicun Town and surrounding villages for three consecutive years starting from 2020, forming an industrial chain of 'seedling supply-technical guidance-product recycling'. Its company united 23 villages (communities) to establish the 'Yingshanhong' rural wealth party-building coalition and cooperated with more than 30 bases in 26 counties in mountainous areas. It has led more than a thousand villagers to participate in planting, increasing villagers' income by more than 3 million yuan.

### 3.4.2 Guyan Painting Village

Liandu Guyan painting village is in Liandu District, Lishui City, Zhejiang Province, the first ecological city in China. It is 23 kilometres away from the central city. The block control area has a total area of 13.18 square kilometres and a core area of 3.91 square kilometres, including Dagantou Town, Pingdi Peninsula, Yantou and Baoding of Bihu Town. The town integrates landscape, history and culture. It is a national AAAA tourist attraction, a national water conservancy scenic spot, the site of the world's first batch of irrigation engineering heritage and a UNESCO heritage. It has successively won the honorary titles of the first batch of rural tourism maker demonstration bases in the country, the most beautiful nostalgia art town in the country, and the first batch of Zhejiang Province characteristic town cultural construction demonstration sites. It has been awarded the Zhejiang Province Outstanding Characteristic Town Creation Unit for three consecutive years. On September 26, 2019, it officially passed the Zhejiang Province 'provincial characteristic town' acceptance and is the only one in Lishui City.

Guyan Painting Village is the birthplace of 'Lishui Barbizon Oil Painting', an art sketching base listed by the Chinese Artists Association, and the main creative base of the 'Hometown of Photography in China'. It receives more than 150,000 sketching artists every year. The town is lined with galleries, homestays and other types of business shops. Nearly 500 makers have settled here for development. Special homestays with a strong sense of nostalgia, such as 'Hermitage in Painting Village', 'Painting

Residence with Craftsmanship’, etc., are often popular to book among artists, digital nomads etc.

## 3.5 Sampling and Participant Selection

### 3.5.1 Logic and Criteria for Case Selection

In the case study research process, scholars have mentioned the law of ‘replication’, and the number of item-by-item reproductions is not determined by a specific formula, but by the researcher. Yin suggests that even if the case study is conducted by a single scholar, it is best to conduct multiple case studies of even two cases whenever possible (Yin, 2011), and choosing different sites or participants in order to increase the possibility that the research results reflect differences or different perspectives (Creswell, 2013). Out of this consideration, although the research resources and time required may be beyond the capacity of the individual researcher, and as a single researcher needs to process more data, the researcher still selected two cases to maximize the diversity and validity of the study. The conclusions derived from multiple cases are usually more convincing, making the whole study more worthy of scrutiny.

However, it is important to note that it is a mistake to think of a case in a multi-case study as multiple interviewees in a statistical survey or as multiple test subjects in one experiment. The main reason is that these two are based on different theoretical foundations, the former being the ‘replicate’ law and the latter being the ‘sampling’ law (Yin, 2009). It is completely wrong to apply the sampling rules of statistical surveys in case studies. Because the case study research does not investigate the frequency of occurrence of a particular phenomenon, and it involves the study of the phenomenon itself and its contextual relations, which will generate a large number of variables, the application of the sampling method to the case study will make it impossible to conduct empirical investigation on many important issues (*ibid*). Therefore, scholars refer to purposeful sampling strategy, that is, selecting cases with a purpose (Creswell, 2013) about the topic of interest. There are three factors that need to be considered in the purposive sampling method, they are about who is selected as the research participants (or location), the specific type of sampling strategy, and the sample size to be studied. Below the researcher will introduce in detail the specific reasons and details of case selection and sampling based on these points.

### 3.5.2 Typology of Sampling Strategies

Due to the vast territory of China, researchers mainly focus on the rural revitalization practice in Zhejiang Province. Zhejiang has always been in the country's leading position in existing revitalization practices. It is the first place in China to create beautiful countryside. It took the lead in implementing the ‘Thousand Village Demonstration and Ten Thousand Villages Improvement’ project in 2003. Over the past 20 years, Zhejiang has insisted on drawing a blueprint to the end and continued to polish the golden business card in rural revitalization practice. Nowadays, thousands of villages in Zhejiang ‘each

have their own beauty, and the beauty is shared', give full play to the leading role of rural revitalization, accelerate the construction of a new pattern of rural revitalization of 'a future for thousands of villages, common prosperity for thousands of villages, and harmonious beauty across the region', create a high quality rural revitalization demonstration province, comprehensively promote the revitalization of rural industries, talents, culture, ecology, and organizations, and accelerate the development of a new provincial practice path for comprehensively promoting rural revitalization and realizing agricultural and rural modernization. Even so, Zhejiang Province is equivalent to a European country, and it is difficult for a single researcher to cover and obtain all the towns and their practices. Therefore, the researchers further anchored Hangzhou, the provincial capital of Zhejiang. However, Hangzhou still contains countless villages and towns. When considering case selection, researchers must not only think about its typicality and prominence, and its relationship with the research problem, but most importantly, how to enter the case purposefully and selectively. The researchers mainly used the comprehensive consideration of three strategies to conduct purposive sampling, namely snowball chain, convenience, criterion.

Because this study explores the innovative dynamic mechanism of multiple organizations in the social innovation ecosystem, mainly involving the government, enterprise, university and civil society. For this reason, it is relatively easier to start with the organization and then use a snowballing method to further discover other interactive organizations related to the organization that are committed to rural revitalization related to the case. Scholars mentioned that using snowball and chain can more effectively identify cases of interest from people you know, using the researcher's social relationships and social capital, because these people know which cases are rich in information (Creswell, 2013). At the same time, as a single researcher, there is another strategic consideration when using strategies, which is for the accessibility and convenience of research, convenience can save time, money and energy as much as possible for individual researchers, but it may have a certain impact on information and credibility.

Therefore, the researchers conducted sampling by anchoring the most authoritative organization rather than any random organization. The projects carried out by authoritative organizations have certain social credibility and government compliance. At the same time, they have rich resources, experience and information. The projects they carry out are important projects with influence at the municipal level and even the country. Therefore, case selection based on experience recommendations from authoritative organizations can not only meet research standards, but also greatly improve the quality and credibility of case selection. Most importantly, the cooperation and interactive organizations related to the research goals recommended by authoritative organizations are also the most representative, further improving the level of participants. Scholars mentioned the sampling levels of qualitative research, that is, researchers can sample at the site level, event or process level, and participant level (Creswell, 2009, 2013). Based on this, the researcher mainly starts from the university. In China, relevant units and

personnel at the government level are difficult to easily access, and the office environment is relatively serious, formal and closed, making it difficult for independent researchers to directly connect. As public organizations, the university not only have a certain degree of authority and social representation, but the researcher can establish relationships with relevant professionals more flexibly and easily. At the same time, the university have close ties with the government. The entry of sample selection through the university can more effectively directly understand and contact key government personnel related to the case, so as to improve the accuracy, effectiveness and authority of sample selection.

In Hangzhou, there are two top main influenced universities that are famous at home and abroad. One is Zhejiang University and the other is China Academy of Art. The researcher has focused primarily on the China Academy of Art as the starting point for snowballing samples. Due to questions of interest in the research, this study focuses on social innovation ecosystem rather than technological innovation. Comparably, Zhejiang University's mainly focus on technological and economic aspects. In an ecosystem where the helical models of innovation is constantly opening and evolving towards the social dimension, scholars have mentioned that compared to technical universities, the existence of art universities in promoting innovation and solving social problems has always been ignored (Carayannis and Campbell, 2019a). Social innovation is innovation dedicated to solving social problems and meeting social needs rather than meeting the market and technical economic benefits related to limited beneficiaries. Therefore, it is more constructive and research meaningful to explore the role of artistic university in social innovation dedicated to rural revitalization. In addition, for establishing authority and accessibility for qualitative research, and building of rapport (Creswell, 2013), the researcher were introduced in my research journey in Chapter 1.

### 3.5.3 Research Participants and Sample Size

This study mainly involves 12 participants, who are key organizational representatives of the government, university, enterprise, and civil society organizations involved in the rural revitalization of the two villages. To balance the principle of privacy protection in academic ethics with the authority and authenticity of qualitative research, the specific personal names and precise titles of the respondents have been anonymized in this text, and they are presented based on primary organizational affiliations. However, it should be emphasised that the 12 core respondents selected are all authoritative experts, industry leaders, and key actors who have actively participated in local rural revitalization and spatial development initiatives. The groups interviewed included key individuals from the China Academy of Art, local leading agricultural technology enterprises, such as Hangzhou Yingshanhong Agricultural Technology Development Co., Ltd., as well as those from private enterprises involved in tourism and culture industries, and from local government like rural agricultural departments and resort management committees, and key participants from semi-civil society and semi-governmental organizations such as women's federations, village Party branches, and oil painting associations. It is necessary to mention

that several respondents possess cross-sectoral roles, however, these roles are all related to rural and regional development. In promoting rural revitalization, their extensive professional expertise and practical experience in local contexts provide robust empirical support for this study from a credible and multi-dimensional perspective. Table 3.2 presents the information about the participants' organizational type.

Table 3.2 Participants Information

| <b>Representative Code</b> | <b>Organizational Type</b>            |
|----------------------------|---------------------------------------|
| I1                         | Higher education and enterprise       |
| I2                         | Private enterprise and civil society  |
| I3                         | Private enterprise                    |
| I4                         | Civil society and local government    |
| I5                         | Civil society and local government    |
| I6                         | Local government                      |
| I7                         | Local government                      |
| I8                         | Private enterprise                    |
| I9                         | Private enterprise and civil society  |
| I10                        | Higher education and local government |
| I11                        | Civil society                         |
| I12                        | Civil society                         |

### 3.5.4 Discussion about Saturation, Purposive Sampling, and Positionality

In the methodological framework of qualitative case studies, the assessment of sample size and data adequacy should not follow the statistical representativeness principles used in quantitative research. Instead, it should be based on the depth of interpretation and the amount of information that the data provide for the exploration of key research questions (Yin, 2009). Many qualitative methodology scholars point out that, in deep case studies of specific complex social phenomena, the pursuit of an absolute comprehensive saturation often leads to conceptual limitations (Braun and Clarke, 2013, 2021). Scholars introduced the concept of theoretical sufficiency, a more operational and interpretive methodological approach. He argued that the goal of qualitative research should be to gather sufficient depth of information to support and clarify the core concepts and causal mechanisms, rather than simply focusing on the quantity of samples (Dey, 1999; Malterud, Siersma and Guassora, 2016). This view is accord with information power as proposed by scholars, they points out that the size of the sample size is inversely related to the amount of information required for the research (Malterud, Siersma and Guassora, 2016; Braun and Clarke, 2021). When the data from a study can reflect and match the research aims and in-depth interviews, even a smaller sample size can still produce a high level of information power, thereby reflecting and ensuring sufficient methodological rigor. Besides, the choices made by respondents in case study research should be strictly aimed at achieving a thorough understanding of the case context, organizational collaboration processes, and underlying dynamics, and the

contextualized knowledge obtained through in-depth interviews is far more valuable than superficial, generalized sampling methods (Creswell and Poth, 2016; Braun and Clarke, 2021).

In terms of the selection criteria for respondents and the definition of the sample boundaries, this study follows the purposive sampling approach along with strategies such as key case sampling and snowballing methods that commonly used in qualitative case studies (Yin, 2009; Creswell and Poth, 2016). The focus of this study is on exploring the dynamic interaction mechanisms between organizations within the multi-helix collaborative network for rural revitalization. Therefore, the respondents must be key actors who are directly involved in this cross-organizational network and responsible for making critical decisions and carrying out specific actions. These 12 representatives from the practice networks in two villages cover all the aspects necessary for driving rural transformation at public governance, intellectual support, market operations, and social capital organization systems, who serve as the core decisionmakers and actors that enable the two villages to achieve significant development. Therefore, this research do not include a wider range of stakeholders, such as ordinary villagers, non-key faculty members or temporary workers, are due to while the general population indirectly involved as participants or beneficiaries, they do not directly engage in the strategic planning processes nor play a role in making decisions related to cross-border collaboration. Nevertheless, the researcher also addressed issues related to the actual responses and impacts of grassroots during interviews with organizations, this effectively supplemented the perspective on grassroots feedback. For example, interviews with the party members who lead the village committees responsible for organizing, coordinating, and mobilizing villagers to carry out agricultural and collective activities.

Meanwhile, this study follows and reflects the strategy of in-depth analysis of key individuals (Malterud, Siersma and Guassora, 2016). For example, special attention is given to leader I1. I1 is an expert in rural development and played a unique role in the implementation of rural revitalization initiatives in two villages based on his abundant experience and special social identity, he provided both organization resources and continuously involved. In this context, the in-depth interviews conducted with I1 provide a high level of information content and authenticity. Therefore, the boundaries of the sample group accurately capture the key factors that drive the development mechanisms in these two villages. This approach ensures that the focus of the study is maintained, while also presenting a comprehensive view of the core organizational networks involved in the rural revitalization process. Similarly, Yingshanhong Agricultural Development Co., Ltd. serves as the sole leading enterprise responsible for promoting the modernization of agriculture and rural areas, as well as rural revitalization in this village, it has extremely high popularity and represents a model within its region. In accordance with the principle of thoroughly exploring the information provided by key stakeholders, targeted interviews were conducted with the key participants to analyse both the top strategic planning and the operational aspects of the

business.

In addition, in order to address the potential conflicts of interest and research biases that may arise regarding the composite identities represented by the researcher and respondents, this study takes into account the issue of the reflexivity and information cross-checking in qualitative research (Lincoln and Guba, 1985; Yin, 2009; Berger, 2015). To facilitate access to the field and build mutual trust, the researcher conducted internships at the China Academy of Art. With the introduction of a key informant (I1) from this institution, the researcher was able to obtain research permissions and access to the snowball referral entry point from authoritative cross-organizational participants. Considering the potential subjectivity and institutional bias arising from both the researcher's role and the cross-organizational identities of participants, to effectively mitigate and manage potential information bias and conflict of interest issues, first, the researcher strictly maintain reflexivity and focus on specific research questions during interview design and data analysis (*ibid*). The interview and coding are tailored to serve the research questions and aims of the study, rather than defending the interests of the individual's own organization alone; and second, since this study considers various perspectives from the government, enterprise, university, and civil organizations, it provides a basis for conducting cross-checking of multiple statements related to the interaction process (*ibid*). This enables the verification of key facts to be done effectively, while avoiding one-sided subjective interpretations. At the same time, the overlapping agreements and differences in understanding among various parties are used as evidence to illustrate the multi-organizational interactions, which to a certain extent reduces the biases that may arise from individual respondents, thereby ensuring the objectivity and reliability of the research findings.

## 3.6 Data Collection Method and Tool

### 3.6.1 Interview

This study conducted face-to-face interviews. The interviewees are willing to communicate and discuss face-to-face with the researcher and are very interested in the researcher's background and research topics. This kind of interview form allow researchers to indirectly gain insight into respondents' true attitudes toward some research issues by observing their emotional changes. This lively interaction brings the researcher and respondents closer and establishes a certain amount of trust. Because the establishment of good relationships helps the researcher obtain more potentially valuable information, and at the same time, the interviewees recommend relevant key interview figures, which helps the researcher improve the efficiency of the interview. Up to now, the researcher and the interviewees have maintained good contact. They are very concerned about the researcher's research progress. At the same time, the researcher has also been paying attention to the further development of the villages which are investigated.

A total of 12 interviewees were interviewed in the two cases of this study. The interview duration for each interviewee was about 40 minutes to an hour. Among them, the interview time for particularly important organizational figures, such as authoritative figures from the university and government, who play a major role in coordinating and promoting bridge-building in rural development, will be relatively longer. In some interview scenarios, because they are the key figures introduced by them, other relevant interviewees hope to have their presence during the interview. When the researcher interviews the interviewees, they sometimes exchange each other's ideas. This adds a certain richness to the interview data collection and obtains the difference in perspectives on the issues under the two organizational identities. The researcher did not isolate them to conduct isolated interviews when this happened, but they did not influence each other's speeches and opinions, because they had also established relationships other than work in previous interactions. Although they were in different organizational fields, they respected each other's organizational positions and were very concerned about local development.

In addition, interviewee who as key organizational figures and involved in rural construction for both villages were interviewed to shared insights into the two cases, and the interview time last from one to two hours because of special identity. What needs to be further clarified about the organizational identities of the interviewees is that although the interviews involved four organizations in the research design, the researcher intended to interview one or two main key figures who can represent each organization. However, based on the background, functional abilities, and social identities of some figures, they often also have other identity functions at the same time. For example, the person in charge of a business organization also performs part of the functions of the government or part of the functions of a civil society organization. The reason for having these functions, in addition to the formal appointment, also includes their own initiative for rural construction and obligations beyond their own functions, which stems from their passionate for the countryside and their sense of responsibility for rural construction. So, interviewing them represents part of a multi-organizational interview at the same time.

### 3.6.2 Interview Questions

The questionnaire for this study was designed based on the conceptual framework established in Chapter 2. All questions revolve around the research purpose and questions of the study. The content of the questionnaire mainly followed the relevant content of the theoretical framework mentioned above. The researcher designed 4 questionnaires for interviewees (the university, government, enterprise and civil society). Except for differences in organizational perspectives, the overall questionnaire used the same questions, with only very few nuances. The purpose of this is to verify the consistency of the answers to the same question or phenomenon between these organizations, so that they can form multi-angle evidence to corroborate each other, so as to discover the main commonalities and differences from

different angles. This also embodies the characteristics of the evidence triangle in a certain sense.

Besides, the questionnaire is divided into three parts, with a total of about 16 questions and 3 open-ended questions. The three open-ended questions are flexible. The researcher will selectively ask questions according to the situation and the identity of the interviewee during the specific interview. Finally, at the beginning of the questionnaire, the researcher gave a definition of social innovation and introduced it to the respondents. The reason for this is that the concept of social innovation is relatively unfamiliar in China. It lacks an overall clear theoretical introduction and in-depth research and has not been incorporated into a clear national or regional governance innovation system. Therefore, most organizations have a vague concept of social innovation, even though the practical affairs they are engaged in are already practicing the substantive core of social innovation, they lack a higher-level theoretical refinement, understanding and generalization behind the practice. Therefore, the researcher introduced this concept at the beginning of the questionnaire to give them a certain understanding of the innovation paradigm of social innovation.

Interestingly, in the cases interviewed, the interviewees were very interested in the consistency between the concept of social innovation and the practices they engaged in. They believed that the researchers provided theoretical guidance for their practice content and hoped that the researchers would further use this theoretical framework to inspire, elaborate and define their rural development and innovation practices in the future. When completing the design of the questionnaire, in order to ensure the feasibility of the questionnaire, the researcher communicated with a well-known professor in the field of innovation in academia. He believed that the scholar's questionnaire was feasible in guiding the qualitative research of this study.

Table 3.3 provides the content of the questionnaire from the perspective of the university. This is used as a reference to further explain the questionnaire and conceptual framework and the core research questions related to it below.

Table 3.3 Case Interview Questionnaire (University)

|                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1)</b> For what reasons or vision does your organization participate in the rural revitalization of XX village?                                                                                                                                                               |
| <b>2)</b> Is your organization mainly an initiator, promoter, supporter or participant in promoting (the rural revitalization construction of XX village)?                                                                                                                       |
| <b>3)</b> What organizational functions does your organization mainly undertake and perform in promoting (the rural revitalization construction of XX village)?<br><br>In addition to creating main organization function, does it also create value or perform other functions? |
| <b>4)</b> How does your organization interact with business?                                                                                                                                                                                                                     |

|                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>5)</b> How does your organization interact with government?</p> <p>Is collaboration usually formal or informal? What is the main promoting and hindering factors?</p>                                                                                                                                             |
| <p><b>6)</b> In what ways has your organization's interactions or collaborations with business and government contributed to changes?</p>                                                                                                                                                                               |
| <p><b>7)</b> Among your organizations, enterprises and governments, which organization has played the most critical role in (rural revitalization of XX village) and why?</p>                                                                                                                                           |
| <p><b>8)</b> How does your organization interact with groups or organizations from civil society? In what ways have they empowered you?</p>                                                                                                                                                                             |
| <p><b>9)</b> How does your organization join forces with enterprises and the government to empower rural governance in XX village?</p>                                                                                                                                                                                  |
| <p><b>10)</b> In promoting (the rural revitalization of XX village), is your organization the main knowledge provider? What knowledge does it mainly provide? To which organizations is this knowledge mainly provided, and in what ways is it shared and transferred?</p>                                              |
| <p><b>11)</b> In your cooperation or interaction with other organizations, what level of innovations, such as good ideas, products, services, activities, models, etc., have been brought to (the rural revitalization construction of XX village)?</p>                                                                 |
| <p><b>12)</b> What social and sustainable development issues have you jointly solved in XX Village? For example, industrial development, ecological civilization, employment poverty, social inclusion, etc.</p> <p>Did these results result from joint action or collaboration with other organizations or groups?</p> |
| <p><b>13)</b> (Rural Revitalization of XX village) What changes in awareness, structure or system have the development of XX village brought to your organization? For example, changing the service model, increasing project activities, building a rural construction platform, etc.</p>                             |
| <p><b>14)</b> What factors facilitate or hinder your organization's drive for rural revitalization? For example: infrastructure construction, knowledge, funds, talents, etc.</p>                                                                                                                                       |
| <p><b>15)</b> What systems or policies support or limit your organization's efforts to promote rural revitalization?</p>                                                                                                                                                                                                |
| <p><b>16)</b> What kind of response has your organization received from local and surrounding people or organizations about the rural revitalization of XX village?</p>                                                                                                                                                 |

### Open questions

- 1) How do you understand China's social innovation?
- 2) Do you think the rural revitalization development model of this village is sustainable?
- 3) Do you think the development model of this village will be further imitated and spread in the future?

It is necessary to mention that because every interviewee have different mindset or thinking way to answer questions, and sometimes the topic may easily to extend to the other aspects, therefore although the questionnaire shown above has a certain sequential, in the actual interview situation, the researcher did not strictly follow the order of the questions but flexibly adjusted the order of the questions based on the respondents' answers. The reason to do so is the researcher respects the respondent's freedom to

answer questions of interest and to interpret or understand the phenomenon.

### 3.6.3 The Link between Interview Questions and Conceptual Framework

The above questions are consistent with the conceptual framework and main research questions in this study, which is also reflected in the detailed introduction of the specific connections between them in Chapter 2. To enhance the validity and coherence of the research tools, this study further clarified the relationships between each question in the interview questionnaire and the literature basis and conceptual framework outlined in Chapter 2. By presenting the design criteria and logical connections between the questions, the research boundaries were defined, and it was ensured that data collection focused strictly on the research objectives and key issues, which is helpful to ensure the rigor and standardization of the research design from a methodological perspective.

In the conceptual framework, it mainly consists of three components: innovation gene, social structure, sustainable development goals. According to the research question, the research focuses on two interconnected layers of helical interactions: innovation dynamics and sustainable development dynamics. These layers form the structural basis for understanding social innovation ecosystems, and we can identify counterparts in social innovation contexts for the specific components within each layer.

Therefore, reflecting in questionnaire, in part 1, for innovation dynamics, involving the interaction mechanism between innovation genes, namely the government, university and enterprise (Triple Helix); in part 2, for sustainable development dynamics, where multi-actors, namely innovation genes and civil society (Quadruple Helix) jointly committed to innovative ecosystems, which facilitate the resolution of social problems or the creation of shared values (Quintuple Helix). In part 3, the author mainly raised several questions about the framework conditions, that is, what resources or constraints promote or hinder the development of rural revitalization, and ideas about related systems and policies. In the open-ended questions, since China's social innovation and rural revitalization are both in the exploratory stage, the researchers still asked the interviewees about the sustainability of the current rural model and the possibility of further spread in the future and wanted to understand more potential contextual factors.

Table 3.4 Connections between Questions, Sources and Considerations

| Questions                          | Sources                                                        | Considerations                                                                                                                                                                   |
|------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>For all organizations</b>       |                                                                |                                                                                                                                                                                  |
| 1                                  | (Mirvis and Googins, 2017; Banda, 2025)                        | Based on the value orientation of social innovation, this study examines the intrinsic motivations and core value aspirations of organizations involved in rural revitalization. |
| <b>Part 1: Innovation dynamics</b> |                                                                |                                                                                                                                                                                  |
| 2                                  | (Terstriep <i>et al.</i> , 2015; Richter and Christmann, 2023) | Identify the role and functional boundaries of the innovation gene (Triple Helix) within the social innovation ecosystem.                                                        |

|                                                 |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3                                               | (Phills, Deiglmeier and Miller, 2008; Cai and Etzkowitz, 2020; Leydesdorff and Smith, 2022)                                     | In the key mechanisms of innovation dynamics of ‘taking the role of the other’ within the Triple Helix of technological innovation, pointing at a single entity not only performs its own function but show cross functions (like academic enterprises). It aims at identifying the core and multi functions of organizations within social innovation networks. |
| 4/5                                             | (Neumeier, 2012; Howaldt, Domanski and Kaletka, 2016; Domanski, Howaldt and Kaletka, 2020; Chatzichristos <i>et al.</i> , 2023) | Identify the Triple Helix cross-border cooperation pathways of social innovation (formal/informal) and the mechanisms that drive collaboration.                                                                                                                                                                                                                  |
| 6                                               | (Cai and Etzkowitz, 2020; Cai, 2022)                                                                                            | Based on the evolutionary mechanism of the Triple Helix systematic approach driven by technological innovation, it aimed at exploring whether the innovative elements can break through existing boundaries and trigger changes in internal strategies, institutions, and governance structures.                                                                 |
| 7                                               | (Cai and Etzkowitz, 2020; Cai, 2022)                                                                                            | The aim is to identify the core dominant entities within the network of innovative genes, analyse power structures, resource allocation, and leadership mechanisms, and evaluate the effectiveness of system coordination.                                                                                                                                       |
| <b>Part 2: Sustainable Development dynamics</b> |                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                  |
| 8                                               | (Moulaert <i>et al.</i> , 2005; Terstriep <i>et al.</i> , 2015; Park and Stek, 2022; Moulaert, Simmons and Parra, 2025)         | Based on the Quadruple Helix model, it aims at exploring the interaction mechanisms between innovative genes and civil society and reveals the social empowerment mechanisms and resource feedback processes between them.                                                                                                                                       |
| 9                                               | (Moulaert <i>et al.</i> , 2005; Neumeier, 2012; Terstriep <i>et al.</i> , 2015; Carayannis and Campbell, 2019b)                 | From the perspective of Quadruple Helix, it aims at exploring the power structures, governance and interactions among innovative genes and civil society.                                                                                                                                                                                                        |
| 10                                              | (Bock, 2016; Bosworth <i>et al.</i> , 2016; Terstriep, Rehfeld and Kleverbeck, 2020; Kluvánková <i>et al.</i> , 2021)           | Relate to the knowledge flow among multi-helix of technological innovation, it aims at to identify the primary sources of knowledge and reveals how cross-sectoral knowledge sharing and transformation.                                                                                                                                                         |
| 11                                              | (Phills, Deiglmeier and Miller, 2008; Nicholls, Simon and Gabriel, 2015; Howaldt, Hölsgens and Kaletka, 2024)                   | Based on social innovation attributes of new ideas/activities/products/models/processes to explore the cross-border interactions and their practical effectiveness in social innovation practice.                                                                                                                                                                |
| 12                                              | (Porter and Kramer, 2011; Melece, 2015; Kramer and Pfitzer, 2016; Humphreys and Imas, 2022)                                     | Based on the attribute of social innovation in relating to SDGs (Quintuple Helix), it aims at exploring how innovation genes and civil society across boundaries collectively address complex issues related to rural society and creating shared value.                                                                                                         |
| 13                                              | (Cai and Etzkowitz,                                                                                                             | Relate to Quintuple Helix model, it explores how solutions                                                                                                                                                                                                                                                                                                       |

|                                     |                                                                                                           |                                                                                                                                                                                                                                                |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | 2020; Cai, 2022; OECD, 2025)                                                                              | to rural problems can act in reverse and drive dynamic changes for organizations.                                                                                                                                                              |
| <b>Part 3: Framework conditions</b> |                                                                                                           |                                                                                                                                                                                                                                                |
| 14                                  | (Terstriep <i>et al.</i> , 2015; Howaldt, Domanski and Kaletka, 2016; Domanski, Kaletka and Krüger, 2023) | Considering the context sensitivity of social innovation, on the dimension of resources, it aims at exploring the enabling and restrictive effects of key resources such as infrastructure, funding, and talent on the implementation process. |
| 15                                  | (Rover, De Gennaro and Roselli, 2017; Unceta <i>et al.</i> , 2019; Chatzichristos <i>et al.</i> , 2023)   | Considering the context sensitivity of social innovation, on institutional and policy aspects, it aims at exploring how external institutional environments empower, guide, and constrain organizational practices.                            |
| 16                                  | (Unceta <i>et al.</i> , 2019; Domanski, Howaldt and Kaletka, 2020; Parjanen and Pässilä, 2025)            | Considering the context sensitivity of social innovation, on the cultural atmosphere aspect, it aims at exploring the role that local social identity, public acceptance, and responses play in shaping the practice.                          |

### 3.7 Data Analysis Method

In this study, the researcher built a conceptual framework based on the integration of interdisciplinary theories and concepts. However, the research on the social innovation ecosystem involved in this study is still in the emerging stage, so this study is more of an exploratory study. In qualitative research and case study, theoretical foundations and conceptual frameworks are of great significance in guiding research. Even if researchers build a conceptual framework based on their understanding of the field involved, researchers prefer to combine limited known knowledge in actual empirical research to construct and interpret more in-depth and meaningful research results. Therefore, this study mainly adopts the data analysis method of thematic analysis.

As one of the basic methods of qualitative analysis, the study uses a certain conceptual framework as a guide to collect and analyse data, this is to prevent the study from completely deviating from the research purpose and questions, this helps to interpret research questions more meaningfully and richly and avoids superficial understanding (Braun and Clarke, 2006, 2013, 2023). Thematic analysis not only satisfies the researcher's flexibility in analysing data but also provides depth. It allows researchers to identify, analyse, and present data themes to provide rich and detailed data explanations for complex data. In reflexive thematic analysis, the importance of the researcher himself in constructing and interpreting the meaning of the research is emphasised. The researcher is not regarded as a threat to the validity of the research. The researcher's understanding and sublimation of the data are instead an important factor in constructing the meaning of the research, giving the researcher the freedom to generate, create and construct themes (*ibid*). Thematic analysis satisfies the possibility that theoretical development in an emerging field provides practice-based in-depth insights into relevant elements and findings, rather than being satisfied with the pursuit of limited data saturation in empirical research to prove the exclusivity of a single fact that exists objectively.

There are six main steps when conducting thematic analysis, and researchers mainly conduct data analysis within the guidelines of these six steps. First, familiarisation with the data. In this step, the researcher transcribed the recording into text, read the text and took relevant notes, and initially explored the meaning of the text. Second, coding the data. In this step, the researcher used manual coding systematically organizes the data to generate initial meaningful labels. Third, generation initial themes. In this step, the researcher begins to identify groupings of data, understand underlying meaning-driven stories, and develop underlying themes. Forth, reviewing and developing themes. This step aims to check the validity of the themes, such as their coherence and distinction. Fifth, refining, defining and naming themes. In this step, the researcher can basically refine and confirm the scope of the theme and the focus and significance of the narrative behind it, as well as the interpretive stories and analysis related to each theme. Finally, producing the report. It mainly integrates the findings in the analysis, relevant arguments and data excerpts to ensure that the report can smoothly create and construct meaningful expressions.

The reason for using manual coding is because it is seen as a legitimate and inspiring scientific research method. The scholar clearly pointed out that coding is essentially an ‘interpretive act’ and its core value lies in the researcher’s analytical reflection and in-depth thinking rather than simply relying on tools (David, 2017). For some research projects, manual coding is not only completely feasible, but also no different in validity from software coding, because both ultimately point to capturing the attributes of the meaning of the data (Rogers, 2018). Although manual methods may face efficiency and management challenges when processing large data sets, it can eliminate the false technical sense of ‘computer automatically coding’ and allow researchers to more directly generate equally effective and profound qualitative insights through various paths such as descriptive, original or procedural coding (Wertz, 2014). This approach emphasises that the cornerstone of good qualitative research is human thinking rather than mechanical programmed operations. Besides, to preserve the authenticity of the Chinese interviews and their local cultural nuances to the greatest extent possible, both the manual coding and category refinement processes were carried out directly based on the original Chinese transcripts. The translation work was performed independently by researchers, which effectively avoids the risk that third-party translations might not accurately reflect the context in which they were created (Temple and Young, 2004).

### 3.8 Conclusion

This chapter mainly introduces the philosophical stance and choice of the study, the research design based on the philosophical stance, and the background scenario on which the research is based. It describes the sampling logic and relevant participant information in detail and explains the researcher’s considerations and collective situation in data collection and use methods, the relevant information of the questionnaire guide and its connection with the established research framework, research purpose

and questions, and the analysis strategies and comprehensive considerations that the researcher will use in data analysis in the next chapter.

## 4 DATA ANALYSIS

### 4.1 Introduction

This chapter mainly presents the relevant information and main findings of rural revitalization based on the case studies of Dashigai village and Guyan Painting village. Dashigai village is a suburban village, which takes advantage of the location advantage of the neighbouring city, under the guidance of the grassroots government, by incubating the main local agricultural industry, and at the same time introducing collaborative capacity of the university and mutual empowerment with civil society, innovatively implementing digital governance tools and integrating flexible governance methods, it has realized the revitalization of traditional agricultural industrial resources and an effective rural civilization governance mode. Guyan Painting village is a remote village, and its development mainly relies on cultural and artistic intervention and social network activation. Its development began with the spontaneous sketching of early painters, as the university explore their cultural potential combined with government macro level planning and entrepreneur support, a composite ecology combining art, tourism and cultural communities has been formed. One of these two villages is in the provincial capital city, and the other is in a fourth-tier city, one has an agricultural industry base as the core and the other lacks a strong industrial foundation, but both have effectively realized rural revitalization. Behind this effectiveness is the dynamic interaction between the government, university, enterprise and civil society in driving the transformation of rural resources into economic and social benefits and promotes the innovative development of rural areas and the solution of various sustainable social problems.

Through the analysis, the study mainly identified 5 themes and related sub-themes. The research analysis mainly covers two layers of innovation dynamics in the conceptual framework, the dynamics of innovation gene and the dynamics of sustainable development and includes the analysis of key components and the relationship between them. The researcher unfolds the topic logically according to the conceptual framework and the main research question, which are interrelated and progressive. Through in-depth empirical research on typical cases of these two villages, this chapter aims to describe, analyse and interpret the leadership resonance, multi-actor dynamic interaction, role and function inter-embedding, cross-border knowledge transfer, top-down and bottom-up two-way empowerment and social context factors, and based on this to present their symbiotic co-creation and co-evolution drive of social problem solving and sustainable development goals and final stimulates the effective of rural revitalization and rural innovation and development.

## 4.2 Data Processing

In this study, the thematic analysis method was used to systematically process the in-depth interview corpus. Thematic analysis explains the deep logic behind the text by identifying and analysing patterns in the data. This method not only focuses on the explicit expression of the respondents but also strives to extract common meaning patterns from the rich interview corpus, which is suitable for analysing the complex dynamic interaction mechanism of multiple subjects in the social innovation ecosystem, which allows researchers to dig deeper into the motivations, strategies, and behavioural shapes of actors (Terry *et al.*, 2017). In order to ensure the standardization of the research process and the reliability of the results, this study strictly follows the six-step model of thematic analysis proposed by Braun and Clarke (Braun and Clarke, 2006, 2023), and systematically processes the interview data, so as to accurately extract the core themes that explain the research phenomenon. The data analysis of this study is closely focused on the two cases of Dashigai village and Guyan Painting village; the data source is mainly based on semi-structured in-depth interviews. In the systematic combing and coding of nearly 200,000 words of interview texts from 12 interviewers, this study follows the standardized process of thematic analysis, and in line with the core principle of not deviating from the conceptual framework and the main research question. Through the systematic manual coding of interview corpora, and after pattern recognition and concept clustering, researchers can integrate fragmented experience fragments into logical and self-consistent themes. This study involves multiple subjects such as the government, enterprise, university, and civil society, and the interactive relationship network between these subjects is complex, covering multiple dimensions such as role evolution, collaborative mechanism, knowledge flow, and value co-creation. Through the analysis of these themes and sub-themes, a total of 5 themes and 12 sub-themes were sorted out. The research findings are not limited to the simple text translation and interpretation of the interviewee' answers, but on this basis, the research implying rich, vivid and in-depth interpretation and refinement are carried out to discover the deep connotation and substantive meaning behind the text information.

## 4.3 Themes and Sub-themes

### 4.3.1 Theme 1: Innovation Genes

The theme mainly reflects and corresponds to one of the core components of the conceptual framework, the innovation gene (Cai, 2022), which is mainly composed of three parts in space, forming a triad as a promotion of social innovation ecosystems, mainly including the government, industry and university. This theme represents the findings of the main functions that make up the core innovation gene, some key practitioners personal and social background, and the main roles they play in promoting the social innovation ecosystem.

#### 4.3.1.1 Sub-theme 1: Government dominant leadership

In the practice of promoting rural revitalization, the government mainly plays the function of

standardized control, and at the same time plays the role of the main initiator and promoter of action. First, the government implements macro-level planning and guidance functions for the specific development and practice of rural areas. When implementing an action, the government will unify a standard according to the policy and proactively select the appropriate institution or person responsible for implementing the plan. Of course, this is not mandatory, instead of the policy guidelines, the government will also use a more consistent way when implementing the policy, they will communicate with the relevant responsible persons of each village to see if they have a vision and whether they can follow up and complete the task well. Once the actions carried out by the executors are in line with the policy requirements and directions of the upper level, and at the same time are reasonable and satisfactory actions that the government considers within the scope of the policy, it will proceed more smoothly and will receive effective support. On the contrary, if the action does not meet the government's policy scope standards and main will, you impose it forcibly may play a negative role, but it is basically do not have the ability to impose it forcibly, because the government is the main authority to formulate the policy, and if it does not conform to the government's macro orientation, it is useless to initiate it, because the government team will deny the plan after discussion, and if they think it is not in line with their overall development arrangement, they will not agree at the beginning. And if the government does not agree, it will not mobilize the people to implement it, and the mass base will be correspondingly weak, and the efficiency will be relatively inefficient. Because the government has its own office rhythm and process, it needs to issue instructions layer by layer, and cadres at all levels will implement it in accordance with the requirements of the upper level. In addition, only infrastructure and incentives related to actions agreed by the government can be followed accordingly. Therefore, policy elements and the government's willingness to promote relevant actions based on policies play a very important determinant role. Because if the government does not carry out macro control and supervision, it will cause chaos, which is a terrible consequence for the ruling staff. Therefore, even if the government delegates relevant enforcement powers to relevant enforcement agencies or personnel, it will not completely ignore it while supporting the action, or it will still supervise whether the behaviour is within a reasonable scope as a whole and will not give full authority to the relevant executors to freely implement the project.

Table 4.1 Samples of quotes about government dominant leadership

| Government dominant leadership     | Quotes of interviewee                                                                                                                                                                                                                        |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Macro-level planning and guideline | <i>'The most important thing is the government, especially in China, which is a powerful regime, and if the Chinese government does not agree to you, no matter how big the good things are, they will not be able to implement it' (I1)</i> |
|                                    | <i>'...and of course, the guidance of the government is more important. If the government says that the place that leads...is not called Guyan Painting village,</i>                                                                         |

|                |                                                                                                                                                                                                                                                                                                                                                     |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <i>it means that you still develop your other things, which may not be like this' (I9)</i>                                                                                                                                                                                                                                                          |
| Initiator      | <i>'The town also found a lot of five or six villages to chat with their villages to see if they were willing to do it' (I3)</i>                                                                                                                                                                                                                    |
|                | <i>'The mayor is now a director of the Zhejiang Provincial Department of Science and Technology, he was temporarily posted here, and he worked here for three years, and he realized that because he also talked to the town mayor talked to the village chief.....he found that B1 had an idea and had the momentum to push something...' (I1)</i> |
| Promoter       | <i>'Of course, it is particularly important to have the support of the government, if the support of the government is not important, if there is no government support, I think we may not develop like this...and its direction is different' (I9)</i>                                                                                            |
|                | <i>'.....the government is indeed the promoter, and the way the government promotes is often promoted in the form of policies' (I7)</i>                                                                                                                                                                                                             |
|                | <i>'If that your government does not support it, even if you do it, it would play a negative role... The cadres in that village only want to mobilize the people and the people to do their support work' (I4)</i>                                                                                                                                  |
| Normal control | <i>'Supervisor, if you don't supervise, the people will be messy. The village and town levels are still the rule-makers, the rules of the game...' (I5)</i>                                                                                                                                                                                         |
|                | <i>'.....you said that after I handed it over to you, I really didn't care? It won't be like this. I still have to supervise your action.....' (I7)</i>                                                                                                                                                                                             |

In addition, the government's normal control also contains legitimacy granted, because the policy represents a certain degree of legitimacy and rationality of actions based on it. In this case, the relevant executors appointed and implemented project practices or innovative behaviours are verification of the rationality of government policies rather than violating or exceeding the scope of the policy. Under this authoritative recognition, company's operation behaviour and the deployment and scheduling of relevant personnel are within the normative control of the government and then play the corresponding functions to cooperate with the government's dominance in relevant practices. However, the overall scheduling of the government has its own systematic considerations, because within the scope of compliance, the government needs to screen and match talents for implementation, such as the need to weigh their political identity, party members will be prioritized, social experience, the authority and recognition of the industry and unit in which they are located, generally the relevant enterprises and institutions under the state organs will be more credible. Even other non-governmental organizations like civil society must be appointed under the recognition of the government's legitimacy.

The government will take the lead in matters that only government functions can promote. In general, in this case, the whole is more beneficial to the civil society. In terms of macro resource allocation, the government will plan the overall housing renovation and deployment, because if it is not for the government personnel to come forward, the people will cause disputes over allocation, such as building houses in violation of regulations by personal private will, after all, enterprises and other organizations do not have the authority to conduct private transactions or deploy infrastructure. At the same time, the relevant actions of the villagers are carried out within the framework of the government's normative guidance, and there are relevant inspection standards, and only villagers who meet the conditions can

receive further financial support and labour continuity, and those who do not meet the standards will be rectified or eliminated. However, civil society groups and organizations that meet the standards and are willing to cooperate will receive incentive subsidies such as rent reduction, financial subsidies, and employment guidance.

Table 4.2 Samples of quotes about government dominant leadership

| Government dominant leadership                  | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The talent legitimacy granted by the government | <i>'So, for this reason, our province's No. 1 document this year is a talent document, not an economic document.....I am in Xiaoshan, but I don't know that I will be in the only provincial development park in Xiaoshan, I originally applied for Lishui, because I made a movie there' (I10)</i>                                                                                                                      |
|                                                 | <i>'For this reason, the Propaganda Department of the Provincial Party Committee felt that we were recommended by his subordinates...the Provincial Federation of Literary and Art Circles recommended me, and the reason why he thought of me first was because I had experience in local service, the second I belonged to the party member, and the third was public institutions...' (I10)</i>                       |
| The policy legitimacy granted by the government | <i>'Some houses, for example, may not be easy to build for his personal business, or the property rights cannot be done by him, then our government or village will come forward to build them, and we have subsidies to help them apply for national policy subsidies' (I6)</i>                                                                                                                                         |
|                                                 | <i>'What you said has a side, including mass mobilization, policy support, and then some infrastructure construction, we all have this consideration' (I6)</i>                                                                                                                                                                                                                                                           |
|                                                 | <i>'... that is, 4 months of rent is free, the village collective pays expenses, and the village collective does not charge the land fee' (I2)</i>                                                                                                                                                                                                                                                                       |
| The action legitimacy granted by the government | <i>'You can get work points, you have points, and you could participate in the planting of the 'initial passion vegetable garden'. Second, each villager has a piece of private land, and if the private land is planted well, you can meet these two conditions...and it is the last elimination system, and only those who plant well can come to the top 100 to farm, and this land is money-making and paid (I5)</i> |
|                                                 | <i>'It is to say that because of this policy, I can attract everyone to participate, and then test the rationality of the policy, to test its benefits, its transformation, its conversion rate, and so on' (I7)</i>                                                                                                                                                                                                     |
|                                                 | <i>'It's just to complete what my government should do, right...it is not political culture, it is a political achievement, and then there are enterprises to implement, and there is university in the middle' (I7)</i>                                                                                                                                                                                                 |

Based on the above policy macro level orientation, the government takes the lead in planning and leading and empower the actions of relevant organizations and personnel based on the legitimacy granted, the government will deploy resources and standardize the implementation of the action. If the government believes that the place has the possibility of continued development and is in line with the government's policy direction, it will continue to build and give corresponding subsidies and awards. However, this incentive is not easy to obtain, because the government's funding review process is very strict and cannot be issued casually, and enterprises and other organizations need to fight for it

themselves, and only those who meet the requirements can get allowances, such as rent reduction and free incentive office space. In addition, it also provides potential platform resources, such as social platforms related to introduction and referral, entrepreneurs and other social capital relations, etc.

The government's unified allocation of resources has legitimacy on the one hand and reduces unnecessary civil disputes. At the same time, administrative efficiency is improved, resources such as funds or talents can be used in the most effective places, the utilization rate of funds and resources is improved, and unnecessary waste and abuse are avoided. In addition, even if government-supported projects cause certain losses, the government will also help solve the problem and provide protection and coverage. However, the problem of macro allocation of resources is that projects that are not supported by the government will be quickly cooled down and cannot be carried out, because there are no continuous government infrastructure resource support and policy incentives and subsidies. At the same time, it indirectly reduces the initiative of enterprises and other organizations, because enterprises sometimes have good innovative ideas, but they cannot get the government's recognition or support and can only be forced to put projects on hold, which in a certain sense reduces the local innovation initiative.

Table 4.3 Samples of quotes about government dominant leadership

| Government dominant leadership                    | Quotes of interviewee                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Policy incentives standards and resources support | <i>'Because the government's funding is very strict in many aspects...and some activities you can use if you don't match them, you can't use this fund...In fact, we really want to combine many things with this art, and in the end, the government will take you away... in the end it became such an investment promotion' (I8)</i>    |
|                                                   | <i>'The secretary of the party committee in the town...he will recommend you know more entrepreneurs, friends, and social capital, and will push enterprises to more enterprises and institutions, such as state-owned assets cooperation...' (I2)</i>                                                                                     |
|                                                   | <i>'We have subsidies to help them apply for national policy subsidies, and then this house is built, so it will be used by entrepreneurs like them' (I6)</i>                                                                                                                                                                              |
|                                                   | <i>'It turns out that the government has primarily focused on developing the cultural and tourism industries. In our case, in the area of Guyan Painting village, the current leadership has shifted its focus to other commercial endeavours and has directed more resources towards Bihu. As a result, Guyan has been neglected (I8)</i> |
|                                                   | <i>'After activating this place, the government felt that this place could have a new development model ...so it was in line with the entire direction of the government's promotion. The second is also in line with a direction of the development of this place, it is like this' (I9)</i>                                              |

When the government's macro supervision and management functions are relatively large, the personal leadership of government personnel becomes extremely important, because the vision, experience, cognition, sense of social responsibility and work initiative of local government personnel play a pivotal

role in determining local planning, transformation and development. The success of these two villages in the forefront of rural revitalization is inseparable from the presence of government officials with excellent leadership. Some of their common characteristics are, first of all, they can keenly discover and recruit talents, have good judgment and taste for professionalism, are very sensitive to emerging knowledge and innovation, and often have cross-industry discipline or practical experience, and most importantly, have a strong sense of responsibility and work initiative, and have a spontaneous desire to benefit the local area and promote local development. Such as I7, as the main government official who promotes Guyan Painting village, he is also an artist in addition to this identity, with an aesthetic sense and professionalism that surpasses the public and ordinary government officials, and at the same time, he has a strong sense of work mission and social responsibility. This gives him advanced consciousness and aesthetics, which is reflected in his respect and trust in the professional forces of the university.

Similarly like I10, as a government commissioner, he is also a director and university teacher, and before carrying out rural revitalization, he conducted many interviews and field research on I2 and his village, as well as went to the United States to conduct field trips at his own expense, just in the hope that under his influence, the countryside dominated by agricultural bases can be integrated into local construction through good projects and operations, so as to improve the spiritual well-being of the people. They all realized the essential leap from mediocre transformation to artistic and cultural infiltration by placing professional understanding in the position of ‘top-level design’. In addition, they often have a sense of spontaneous responsibility and social responsibility. Outstanding grassroots cadres (such as I2) have shown a strong sense of social responsibility, and even in the face of identity changes (from village party secretaries to entrepreneurs), he still regards rural governance as their own responsibility. They are not only members of the bureaucratic system, but also social practitioners who are deeply involved in the local area, and this feeling of putting the public before private has won the emotional recognition of the people and resolved the natural gap between the administration and the people. Finally, they could collaborate with leadership and discover and build flexible social capital. They do not stand high in their interactions with other organizations, but act as bridges. By establishing long-term informal collaborative relationships with university professionals, sharing market risks with enterprises, and even daring to be the first to open a trend for start-up projects through personal reputation, which make the communication and collaboration costs of all parties are greatly reduced.

Table 4.4 Samples of quotes about government dominant leadership

| Government dominant leadership | Quotes of interviewee                                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sense of mission, vision       | <i>‘Of course, it is also necessary to be like I7, and they are also village sages like I2, right? ...there is a more rational and more wanted local government who is a little older than them...are jointly promoted’ (I1)</i> |

|                                                            |                                                                                                                                                                                                                                                                |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| and social<br>responsibility of<br>government<br>personnel | <i>'Our cognition, including practical action, is now starting to empower others, because I think this is what we must have' (I7)</i>                                                                                                                          |
|                                                            | <i>'Seeing good things, he will remember what you once gave him good things, I believe he will change the art of a group of people or township enterprises, and their ability to innovate may also change' (I10)</i>                                           |
|                                                            | <i>'Then he called me over and chatted for a long time, so he pulled me here. At that time, I felt that this place was good, and then I began to understand, I said what policies you have here, and he said that I can give you any policy you want' (I8)</i> |

#### 4.3.1.2 Sub-theme 2: Enterprises responsible initiative

In this research, I2 was born as a farmer, had experience in starting a business and working in other places, served as a village secretary after returning to the countryside, and later left the government official to choose to start a business in the countryside to promote rural development. He was first a member of the countryside, belonging to the return of the villagers, and when he was young, he went out to work and earn money like others, but now there are very few people like him who are willing to return to the countryside from big cities and choose to build own villages. His rich field experience has given him a broader vision and the courage to accept and develop new things rather than staying in traditional thinking. At the same time, during his tenure as village secretary, he accumulated rich political work experience in serving the masses, and he had a good understanding of the government work system, and the villagers were also very satisfied with his work attitude and style, and accumulated a good mass base, so the people trusted him very much, which is why the mayor of the town later wanted him to be the main promoter of the village. He subsequently resigned as village secretary, chose to be an entrepreneur, and was stationed in his own village instead of going elsewhere for the market and profit. Because he found that as a government worker, there were many status restrictions that could not bring greater service and help to the people, so he chose to change his identity and embark on a new path.

He has not received a systematic cultural education, but he has a deep personality charm. He is a very daring person and is not afraid of difficulties. Although he has a low level of education, he has a lot of social experience, which is based on his past work experience in various big cities. Therefore, he can flexibly deal with people from all walks of life, without the bureaucracy of government officials and the mercenary values of entrepreneurs. He always thinks that he is a farmer, standing with the masses, hoping to contribute to his hometown to the best of his ability. At that time, the government and several villages talked about the use of digital network platforms to promote rural governance, but only I2 dared to really practice and try, and of course, the successful implementation was inseparable from the support of government personnel. Subsequently, I2 also drove other surrounding villages, and he collected his own enterprises to help them sell farm products, and helped them develop agricultural and sideline products, such as snacks, to help them deliver the characteristic products of the countryside. To provide more agricultural products and services more widely, he also actively promoted the construction of non-

governmental organizations, such as rural alliances, to unite everyone's resources to promote the development of agriculture and rural areas. Whether it is I2's daring to resign and start a business in the countryside or daring to promote projects that other villages dare not try when he is the village secretary, it reflects his courage to initiate change and accept innovation as a leader.

Table 4.5 Samples of quotes about enterprises responsible initiative

| Enterprises responsible initiative   | Quotes of interviewee                                                                                                                                                                                                                                                   |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Entrepreneur I2's vision and mission | <i>'In fact, Yingshanhong company is also a practitioner, a leader, and a communicator. We are also participants, leaders, and reformers' (I2)</i>                                                                                                                      |
|                                      | <i>'You see that he didn't see greenhouses in the local area, they are all planted in the open air, so simply talk about traditional planting...then in this process, he also went to buy and collect, no matter how much your people sell, he will accept it' (I1)</i> |
|                                      | <i>'Use its own integrated platform to help some large farmers, such as vegetable basket bases, including some units with good products in hand, to solve marketization' (I3)</i>                                                                                       |

This leadership is also reflected in the other two entrepreneurs. I8 is a veteran collector who has lived in Italy in the past and has good relationships with many local galleries and artists and is a person with an international vision and cultural level. According to secular standards, as an overseas Chinese, he has already lived the happiest and most successful life in the eyes of the public. But he chose to return to a village or town in his remote hometown to contribute to the rural revitalization of his hometown, which is something few people would do. It was almost incredible to open an international contemporary art museum in a fourth-tier village area away from the provincial capital, but he did it. He himself could open an art museum in a first-tier metropolis like Beijing and Shanghai, but after communicating with the local government official, that is, the government officials with leadership mentioned above, he was moved by I7's vision and sincerity in building hometown, and he believed that his hometown lacked art education and hoped to spread the culture of art and beauty, so he finally chose to come to Guyan Painting village to build the international art museum.

There are many well-known first-line paintings in this art museum that he bought with his own hands, such as the works of international famous painters such as Picasso and Dali, and many works that cannot be seen in international galleries, which can be said to be a great nourishment for the artistic aesthetics and spiritual civilization of the local people. After returning, he also continued to travel to major first-tier cities, with the aim of continuously expanding domestic resources to enhance the development of rural art museums. At the most difficult time of the epidemic, he not only did not choose to give up, but took out the paintings of his favourite painters to solve economic problems and carry the most difficult

period, with the purpose of continuing to contribute to his hometown. He also funded himself and spent millions of dollars to use his connections in Italy to hold exhibitions of world-famous artists in Guyan Painting village to enhance local popularity and contribute to his hometown. In addition, he also helps local painters find ways to connect with resources in big cities to help them promote their paintings. Even though I7, a government official, gave him financial support when he came back, such as rent reduction, in fact, his subsequent contribution to Guyan Painting village has far exceeded the scope of his functions as an entrepreneur himself.

Table 4.6 Samples of quotes about enterprises responsible initiative

| Enterprises responsible initiative   | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Entrepreneur I8's vision and mission | <i>'So, when we came back at that time, we thought of one thing: since I understood that such a thing didn't exist yet, I would be the one to start creating it – I would be the first to develop it' (I8)</i>                                                                                                                                                |
|                                      | <i>'But in my place, I did an exhibition for two years in Guyan Painting village, I took 100 prints of Modigliani, all in high definition, too powerful, I spent millions in Italy at that time to cooperate with the Modigliani Art Research Centre, cooperation... so I spent this money to buy the copyright of his entire China exhibition tour' (I8)</i> |

There is also the proprietress of a well-known local homestay, she is different from the other two entrepreneurs, she has always taken root in Guyan Painting village, providing comfortable and convenient life services for artists who come to the local sketching group and artists and students from other universities, so that they can focus on creation. In the early days, when there was no concept of homestay in China, that is, the Western concept of Airbnb, she can be said to be the first person to practice and innovate in this area. Nowadays, many artists come to the local area, in addition to the natural landscape scenery of Guyan Painting village, mainly because she is here, so that the group of painters can feel the warmth of home even if they come here to sketch. She constantly communicates with painters, understands their needs and wishes, constantly upgrades her service processes, infrastructure, and purchases advanced technology products to provide them with a good sketching experience. In addition, she also sincerely communicates with painters to understand their creations and enhance the painter's intrinsic value.

But she didn't stop there, to contribute to the local area to a greater extent, she built a local art museum and built a communication platform for local and foreign painters. He opened relevant aesthetic education training lectures and invited experts to come to the class to enhance the local people's understanding of beauty. She also actively wish to build and innovates new development plans, finds ways to obtain funds, and invests a lot of money also herself, hoping to further expand service

capabilities and create a larger local cultural and art block construction project, so as to create a comprehensive international art community and build a platform for more painters from all over the country to provide them with an ideal creative environment. At the same time, she hopes to provide painters with a better creative space, and more painters come here, which can bring well-being to the artistic aesthetics and spiritual happiness of the local people.

Table 4.7 Samples of quotes about enterprises responsible initiative

| Enterprises responsible initiative    | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Entrepreneur I9' s vision and mission | <i>'In fact, sometimes because I identify with our artist group, I feel that this artist group needs something. On the one hand, I will do something towards his needs, I will design these thoughts and the like, they will also give me some suggestions, of course, their suggestions will not be so specific, but I will make it concrete, I will implement it little by little' (I9)</i> |
|                                       | <i>'So, when I come to me, there are artists from all over the country, and I am not only a window to introduce local artists to the outside world, but also a window for foreign artists to come to us to do some exchanges with the local community' (I9)</i>                                                                                                                               |

In addition to their own leadership and their own organizational functions in promoting rural development, their functional scope has long gone beyond the entrepreneurs themselves. The main driving force and vision behind allowing them to take so many spontaneous actions for rural revitalization is due to their strong sense of social responsibility and feelings for building their hometown. I2 has always believed that he is a farmer, he came out of the people, his ancestors have been in this village for generations, he has always had a very simple original intention to improve the quality of life of the villagers and rural development, that is, he hopes that the hometown environment and the people's lives are getting better and better. And he believes that only by enhancing social value can we better empower the development of enterprises, he not only regulates himself, but also requires his employees to do things with this value when leading company development. Even if most people start a business in pursuit of personal wealth, for him this is secondary, and the development of the happiness of the people in his hometown is his first driving force. Therefore, after he resigned as village secretary and turned into an entrepreneur, he did not change his original intention but strengthened his sense of mission to serve the society, so whether the economic benefits were good or bad, he was thinking of various ways to give priority to solving the economic problems of the people.

I8 also wants to contribute to her hometown that here does not have, enhance the cultural heritage of his hometown and enhance local cultural dissemination. He knows that it is very difficult to open an art museum in such a place for cultural dissemination, although his art museum is top-level if it is opened in a first-tier city, he chooses to open it in his hometown, even if his hometown is a relatively remote

fourth-tier city, but he believes that there must always be the first person to practice, and he is willing to be the first person to open the trend, rather than thinking about how much economic return he can get first. So even if he sells his paintings in the later epidemic, he will continue to do it, because he knows that the local education level cannot access these scarce and precious resources, and it is difficult to go to big cities to see exhibitions, so he thinks that he must do his best and work hard no matter what, just to increase the well-being of the local people and young people. Including I9, she serves artists and provides meticulous services to the artists around the world who come here, more out of her own love, wanting to make Guyan Painting village develop better because of her own existence, and even if the government encounters problems, she chooses to persist and continue to use her energy to help govern the countryside.

Table 4.8 Samples of quotes about enterprises responsible initiative

| Enterprises responsible initiative            | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Entrepreneur's motivation, vision and mission | <i>'The vision is because I am a native farmer, I grew up in the countryside, my ancestors have been in this village for generations, and then after returning from work, I was a village cadre, and the responsibility of village cadres is to establish their hometown, that is, to establish a place where their ancestors have survived and grew up here' (I3)</i>                                                                                                                                                      |
|                                               | <i>'Yes, because our own starting point ...it comes from rural governance, he comes from the village, but also from the people, so our original intention he will never forget, we are from the village, the people and the village and our company are mutually empowered, so subtly, whether we are doing distribution or supply chain, we still haven't forgotten the field in our hometown, we haven't forgotten the land rectification at the beginning, The original intention that changes people's hearts' (I3)</i> |
|                                               | <i>'In fact, the reason why Yingshanhong company has been able to survive to this day is precisely because of its strong will. This will stem from the pressure exerted upon it, from the concerns and worries of thousands of ordinary people. After all, that was your original intention from the very beginning' (I2)</i>                                                                                                                                                                                               |
|                                               | <i>'Then I came back here, my purpose was to think that I wanted to be the first person to eat crabs in Lishui, even if the crab eater may be very hard, just dedicated, has no income...but why do I still have to do it, I said that even if I hit my head and bleed, I will come back for a local culture in Lishui...' (I8)</i>                                                                                                                                                                                         |
|                                               | <i>'For me, the purpose of spreading art was precisely this..... In that sense, my participation in this community was purely about contributing and helping to spread art' (I8)</i>                                                                                                                                                                                                                                                                                                                                        |
|                                               | <i>'Even now, even today, the policy incentives have passed, and I rent this exhibition hall with my own money...I hope to give some local people, whether it is a learning opportunity for young people, or a cognitive improvement as a local person, I hope I can provide them with some help' (I8)</i>                                                                                                                                                                                                                  |
|                                               | <i>'The economic benefits are actually almost non-existent, and you can pay employees' salaries, but we just insist on doing this, which is a kind of love for this group and a recognition of this matter' (I9)</i>                                                                                                                                                                                                                                                                                                        |
|                                               | <i>'The point is that we have been insisting on doing it... and we have always followed this goal...I sometimes think that if the government has nothing to say,</i>                                                                                                                                                                                                                                                                                                                                                        |

|  |                                                                    |
|--|--------------------------------------------------------------------|
|  | <i>it can still be said on our own, and I am the backing' (I9)</i> |
|--|--------------------------------------------------------------------|

#### 4.3.1.3 Sub-theme 3: University collaboration capacity

In rural revitalization, the intervention of professional forces in the university is not only the output of technology, but also a profound knowledge to the countryside and cultural reconstruction. The university mainly play the professional function of top-level design and concept guidance in rural revitalization and use their keen aesthetic foresight of local resources and the output of professional knowledge to establish a visual and functional order for rural development. Taking Guyan Painting village as an example, Xu Jiang, president of the China Academy of Art, just went there to sketch, and immediately discovered the local resource endowment, opened up the potential cultural resources of the Guyan Painting village, indirectly attracted more artists to sketch in the local area, and drove the local art and economic development. The significance of this empowerment is not the renovation of one or two buildings, but the successful transformation of rural ecological resources into cultural capital through professional operation. The same rural aesthetic transformation also plays a good role in Dashigai village, and I1's professional team has created a design for Dashigai village that is in line with the local ecological scene, cultural connotation, people's liveability and local customs, which eliminates the gap in urban and rural information, and allows professional technology to be transformed into sensible, accessible and sustainable productivity in the field.

Table 4.9 Samples of quotes about university collaboration capacity

| University collaboration capacity     | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| University's professional empowerment | <i>'It is this village that wants to design, so we went to help them design, and the design process is also very particular...It has become a saying that the garbage field in front of and behind the house has become a green ecological vegetable' (I1)</i>                                                                                                                                                                       |
|                                       | <i>'I think the first and most important thing, I just talked about the leading role of universities, so that they know what is right, what is beautiful, what is sustainable and hopeful, and they also slowly learn because we are constantly entangled with each other' (I1)</i>                                                                                                                                                  |
|                                       | <i>'Guyan Painting village was originally not famous, because Dean Xu Jiang and his group of artists went there to paint oil paintings, and suddenly found that why did we go so far, of course we in Zhejiang Lishui will also drive for three or four hours, in such a place there is such a beautiful place similar to a paradise...then from then on greatly enlarged the local reputation, all people like this place' (I1)</i> |
|                                       | <i>'In the early stage, it is like planning and design at the top level to the overall positioning layout, including the village positioning of beautiful villages, and some cultural excavations in history must be dominated by universities, such as the China Academy of Arts... because they are a combination of theory and practice from academics...' (I1)</i>                                                               |

What supports the lasting effect of this empowerment is the sense of social responsibility of college personnel beyond their duties. I1 has a deep sympathy and sense of mission for the fate of the countryside. He also runs the school's enterprise, but despite this, in addition to completing the commissioned design tasks, he spontaneously travelled back and forth between the two villages several times to provide free professional advice to I2 and I7. Because I2's education and culture level is low, but he is very wise, I1 himself appreciates his vision of building a countryside and his local feelings for his hometown, and feels that he is a rare person who really does pragmatic things in the current society, so he often spontaneously gives I2 some development opinions at the strategic level of enterprises, and also helps him introduce people from different industries, help build relationships and promote corporate culture to help him expand his agricultural product brand sales channels. In the indirect empowerment of I1, I2 not only had more good inspiration for the development of village but also built a good informal connection.

I7 is different from I2, he is a painter and a government worker and has a good level of education. I1 believes that I7 is different from other government officials who do not commitment enough and appreciates his vision and sense of social responsibility very much, so he often communicates with him and provides creative ideas for the better development of Guyan Painting village, some of which have indeed achieved good results in practice. Despite the unsatisfactory economic environment after the epidemic, I1 still held forums on rural revitalization and invited and other relevant people who are interested in rural development to participate, providing and building a platform for them to exchange experience in rural development and expand potential resources, although this does not bring him actual income, and they do not need to promote the brand too much because they have a university background. He is completely out of love for his countryside and his own sense of social responsibility. Generally, many teachers with qualifications like him choose to just finish the work at hand and have a good relationship with the leader to make the leader happy, but he is the most active and special one, he spends most of his time outside the school to expand and practice, always thinking about over completing the affairs within his own scope of responsibility, and rarely wastes practice on building leadership relationships in the school, but is more willing to do practical things. Therefore, he is not satisfied with the company's design business but always takes the initiative to create opportunities and activities, or hands-on to promote the development of the countryside.

From the spontaneous sketching of Guyan Painting village in the early days and the self-sale of vegetables in Dashigai village, I1 has transformed the identity of the university from an external observer to an endogenous promoter through several years of in-depth counselling and continuous follow-up. This sense of responsibility is not only reflected in the excellence of the project, but also in the care of people, society and the local community, by improving the quality of the space, they ultimately point to the growth of local people's income and the innovation of their spiritual outlook.

This empowerment truly reflects the combination of academic ideals and social values, and the school no longer only focuses on cold subject research but practices a warm social practice. It deeply connects the function of a think tank as a college professional with the needs of the countryside, so that professionals are no longer lonely in the ivory tower but have turned into a powerful engine to reshape rural self-confidence and drive common prosperity.

Table 4.10 Samples of quotes about university collaboration capacity

| University collaboration capacity                                             | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The sense of social mission, personal leadership and driving force of leaders | <i>'In our opinion, we suddenly found such a zealous, the image of such a village party secretary and entrepreneur of today's rural reform, then I think we should especially support such a person, the reason why we also see that he has feelings, we also have feelings, why don't we help him, so we have also become a promoter and participant' (I1)</i> |
|                                                                               | <i>'So this matter did give him a lot of advice...I went to him at least dozens of times...and I also invited other teachers, which is this field to help him build a better modern management method and brand awareness, and at the same time allow him to establish a so-called business model' (I1)</i>                                                     |
|                                                                               | <i>'In the middle of this, I am very positive to see such a person, seeing people like I7, we must want to think of different ways to help...as work in university we cherish talents, and we can do a little like this within our ability, which is such a role' (I1)</i>                                                                                      |
|                                                                               | <i>'The role of university participants and promoters lies in the fact that at the beginning, the point that may be the local government invite us to design, but in fact, we involuntarily do the role of promoting the government, promoting the people, and promoting its practitioners to move forward' (I1)</i>                                            |

### 4.3.2 Theme 2: Dynamics of Innovation Genes

This theme mainly reflects and presents the dynamic interaction between innovative genes, which corresponds to the first dynamic layer mechanism in conceptual framework. It explains their interaction methods and role functions, and presents how ideas, services, products and activities to promote rural revitalization are generated in their interaction process. In addition, it has found a multifunctional identity that transcends their own organizational functions, and this special multifunctional identity plays a deep role in indirectly promoting effective interaction between them and driving successful rural innovation development practices. Finally, the ways in which knowledge is exchanged and flowed between them and which organization is the primary knowledge provider are analysed.

#### 4.3.2.1 Sub-theme 1: Interactive actions (ideas/products/activities/services...)

In the rural revitalization and development of Dashigai village, enterprises and the government have jointly promoted the deep connection between digital empowerment and people's livelihood in rural

governance and development and reshaped the value bond of rural life. For example, the use of 'Yingshanhong' APP and 'Work Points System' in the sales of agricultural products and rural digital governance has enabled the entire village to promote a series of virtuous circles in industrial development, revitalization of local resources, mobilization of people's participation and the construction of civilized rural governance. I2, as the former village secretary and current entrepreneur of the rural industry are taking responsibility to implement and land, and he joined forces with the village committee to guide the people to discover the environmental and safety problems in the village through mobile phones, and to earn points by spontaneously reporting problems, which can be exchanged for products in the village supermarket as action rewards. There is a QR code in front of each house, and tourists or outsiders who come to the village can scan the code to see the contribution of each household to the development of rural civilization. This 'Work Points System' governance method can allow the people to easily participate in rural self-governance, stimulate the sense of ownership of maintaining and building rural areas, and the positive reward mechanism of points greatly mobilizes the enthusiasm of the people.

In addition, when I2 turned from a village secretary to an entrepreneur, he hoped to use more market behaviour to help the people solve the problem of unsalable agricultural products, in addition, he encouraged the people to plant spontaneously in front of and behind the house, and he would focus on purchasing these vegetables, chickens, ducks and geese and other agricultural products, so that the people could use the spare land and obtain certain economic benefits. He also recruited idle labourers in the village to work at his vegetable processing centre to help the elderly who were older but had nothing to do, who still had the ability to work and wanted to enrich their lives, re-employed. Their children often work in big cities, in fact, many times the elderly are very lonely, he activates these labour forces, not only brings them the well-being of life, but also increases their disposable economic benefits, rather than relying only on their children to provide subsidies, so that they can live with more dignity and value. The development of 'Yingshanhong' APP puts agricultural products on an open centralized platform for sale, and lands them as an operable tool, which not only helps the people sell vegetables, but also drives the surrounding villages to encourage them to develop characteristic agricultural products according to the characteristics of their own villages. Because the government advocates and encourages the revitalization of idle rural resources and drives the development of rural industries, which is in line with the policy requirements and direction, it provides I2 with free idle factory space in the village for him to use as enterprise supply chain transformation and office space and gives certain financial support to his enterprise.

The arrangement of land resources in front of and behind the house and the macro design arrangement of the countryside are jointly promoted by the government and university. The university and the government have joined forces to transform the design concept into practical land that can help people

increase their income. In the rural planning and design of Dashigai village, they abandoned the unrealistic design idea of spending funds on excessive beautification and packaging, and college professionals investigated Dashigai village as a rural concept with agricultural products as the main development, and gave them a design plan that meets the needs of local ecology, history and culture and people living habits, which not only solves the problem of rural planning beauty to a certain extent, but also retains the ecological sustainability. This proves that the core of rural revitalization is not beautification, but revitalization, through professional intervention, to reconnect fragmented smallholder production to the modern market value chain, and to avoid the abuse and waste of government funds. As mentioned in Theme 1, experts with a sense of social responsibility in the university not only complete design tasks or project purchases but continue to help I2 out of social responsibility and common vision, provide him with platform resources, suggestions on development strategies, and continue to help the development of rural revitalization in an informal way of participation.

Table 4.11 Samples of quotes about interactive actions of Dashigai village

| Interactive actions of Dashigai village | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government and university               | <i>'In addition, our Academy of Fine Arts has such an organization, which appropriately intervened at this time, helped them make such a design, and helped them do such a conceptual guidance, then everyone thinks this thing is very good, so they will continue to do it' (I1)</i>                                                                                                                                |
|                                         | <i>'It can only be said that they use their good idea to do this. There are references...' (I5)</i>                                                                                                                                                                                                                                                                                                                   |
|                                         | <i>'Then some of the designs we invite from universities ...because they have some aesthetics, this kind of architectural design and landscape design still have advantages...then we will also invite some experts in this architectural landscape to help us make suggestions' (I6)</i>                                                                                                                             |
| Government and enterprise               | <i>'Then our government or village will come forward to build it, and we have subsidies to help them apply for national policy subsidies, and then this house will be built, then it will be used by entrepreneurs like them' (I6)</i>                                                                                                                                                                                |
|                                         | <i>'The mayor is now a director of the Zhejiang Provincial Department of Science and Technology, he was temporarily posted here, and he worked here for three years, and he realized that because he also talked to the town mayor talked to the village chief.....he found that I2 had an idea and had the momentum to push something...' (I1)</i>                                                                   |
|                                         | <i>'I think the team of I6 is very professional first, and secondly, the communication cost between us is very low, because what we want to do, the values are similar, and the aesthetics are also similar' (I10)</i>                                                                                                                                                                                                |
|                                         | <i>'It can be traced back to I2, our old secretary he started at that time, and that opportunity was just right, because to make a beautiful countryside, after your environment was upgraded and transformed, it was a lot of land after the whole house...what should we do with these lands? ...what the people are best at? Farming, raising chickens, and then starting from that time...you don't take care</i> |

|                            |                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | <i>of them and don't manage them, and then they are deserted, and then they are made into 'initial passion vegetable gardens' (15)</i>                                                                                                                                                                                                                          |
| Enterprises and university | <i>'In our opinion, we suddenly found such a zealous, the image of such a village party secretary and entrepreneur of today's rural reform, then I think we should especially support such a person, the reason why we also see that he has feelings, we also have feelings, why don't we help him, so we have also become a promoter and participant' (11)</i> |
|                            | <i>'So this matter did give him a lot of advice...I went to him at least dozens of times...and I also invited other teachers, which is this field to help him build a better modern management method and brand awareness, and at the same time allow him to establish a so-called business model' (11)</i>                                                     |

In the rural revitalization and development of Guyan Painting village, unlike agriculture, Guyan Painting village has truly developed from only natural landscape to a unique and nationally renowned painting township. At that time, it was not famous, and after the famous president of the China Academy of Art came here, he discovered its potential cultural value attributes, and under his influence, Guyan Painting village began to become a well-known sketching town, and painters in this period were the medium for the development of Guyan Painting village. At that time, a group of painters imitated the Barbizon School of Fontainebleau in France, calling themselves the 'Lishui Barbizon' School. After seeing the potential cultural value attributes of Guyan Painting village, the government began to introduce painters from outside to live here, especially painters in their hometowns, and gave them policy allowances and subsidies such as rent reduction and exemption from the policy. The government takes the lead and promotes the transformation of the originally simple natural ecological countryside into content and creative scenes, and art is the main medium for constructing this scene. However, the government only leads the project, and how to integrate art into the construction and design of rural development requires the empowerment of professional knowledge.

When the government faces rural governance, beautiful rural construction and cultural improvement, there are natural design blind spots or the limitation of simply pursuing engineering, such as focusing more on the hardening of infrastructure. The intervention of the university such as the China Academy of Arts appropriately fills this gap, transforming villages that may have been mediocre to the height of artistic empowerment. The two sides jointly completed the transformation of Guyan Painting village. This transformation is not only limited to simple project design, such as street renovation, but also transforms the countryside into a highly recognizable art brand through specific activities and products such as sketching conferences and art exhibitions. The university have not only brought design, but also brought national attention, turning the countryside from a point on the map into a cultural landmark. More importantly, the intervention of aesthetic expertise in the university has made the government realize that the countryside not only relies on natural scenery to exist, but also the carrier of spiritual civilization and cultural dissemination. The government borrowed the professional vision of the

university to complete a re-upgrade of rural assets, which allowed the government to accurately invest valuable administrative resources in projects with aesthetic premiums.

Table 4.12 Samples of quotes about interactive actions of Guyan Painting village

| Interactive actions of Guyan Painting village | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government and university                     | <i>'...It involves the renovation of Guyan Painting village...several streets were renovated, and there are detailed renderings of the construction work, there are even formal contracts in place' (I1)</i>                                                                                                                                                                                                                                                                  |
|                                               | <i>'It was we who came up with a China sketching conference...they hit it off immediately and were very excited. They also spent money to hire us to handle the planning...we organized a forum, an exhibition, and an opening ceremony. We managed to invite leaders from the provincial government, as well as officials from the China Academy of Art and famous artists...we successfully held the first edition of the large-scale 'China Sketching Conference' (I1)</i> |
|                                               | <i>'Therefore, it means that the relationship between the government and universities is equivalent to only talking about content and not about the economy. Therefore, he actually belongs to the social value orientation is greater than the economic value orientation' (I7)</i>                                                                                                                                                                                          |

This vitality transforms the originally lonely village of Guyan Painting village into an art, culture and spiritual civilization field that can attract young people to return and inspire the self-confidence of the local people, which is one of the embodiments of the professional empowerment of the university, that is, to achieve a win-win situation of social benefits and people's livelihood and well-being through top-level design. This constitutes the unique business card of Guyan Painting village, which has become the hometown and sketching base of Chinese sketching, and through the professional empowerment of the university, the originally cheap rural landscape has been redefined as an 'artistic asset'. This asset has a strong sustainable effect and subsequently attracts many trainees, tourists and artists. To provide these groups with a good transmission environment and experience, the intervention of enterprises has successfully solved this problem and driven the local economic development. I9's homestay, as analysed in the first theme, has become the second home of the group that came here. I9 closely follows the government's guidance and call to provide multi-functional services that ordinary homestays cannot provide for sketching groups who come here, forming a green economic cycle that does not depend on traditional industries. Because of I9's homestay, many sketching teams come here because she is here, so they can create with peace of mind without worrying about any problems other than creation, even if it is a weather problem, I9 can provide corresponding space and equipment for painters to still complete their sketching as usual. In addition, the free course training programs she provides give locals

the opportunity to improve their aesthetic perception and artistic aesthetics, which has brought the design and beautification of many other stores to a new level.

As an overseas Chinese entrepreneur, I8 chose to return to his hometown from Italy to open an international contemporary art museum under the recommendation of government officials, which is an incredible thing in rural China. He could have opened an art museum in a super-first-tier city with more people, funds and resources guided by personal interests, but because he was moved by the vision of the local government personnel I7, and his own local feelings and sense of social responsibility for the development of the countryside, he returned here to carry out the art communication work in his hometown, even if he posted money and encountered the impact of the epidemic, he insisted on doing it, because he knew that if he didn't do it, no one would have the resources, courage and original intention to do the same thing, and it is difficult for the Guyan painting town to become a painting town in the true sense. Because of I9 and I8, more and more artist groups, tour groups, and schools have come here to visit and stay, which has driven the cultural and tourism industry of Guyan Painting village, and cultural tourism has become the new medium of rural development at this time, which is injecting new productivity and new lifestyles into Guyan Painting village through cultural tourism, driving the cultural and educational level, aesthetic ability, spiritual happiness and economic income of the local people. This is ostensibly an operational activity of enterprises, but in the long-term interaction between government and enterprises, they indirectly assume public functions such as exhibitions, education, and even community governance.

Table 4.13 Samples of quotes about interactive actions of Guyan Painting village

| Interactive actions of Guyan Painting village | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government and enterprise                     | <i>'Then when I8 came in, he actually belonged to us who were still developing cultural tourism, then I knew that the format of art should be rich enough, it turned out that there were only painters...but I8 is different, he is still an entrepreneur first...so the sociological concepts you use are very accurate, in fact, he is involved in social innovation' (I8)</i> |
|                                               | <i>'...the rhythm of the government was highly consistent with his individual rhythm, and it also supported our cultural tourism ...we urgently needed some international top works of art, so he used his personal ability to build a bridge for the government and introduce some works' (I7)</i>                                                                              |
|                                               | <i>'When I was doing a sketching base, it was just food, accommodation and transportation, but then there was a concept of Guyan Painting village...It shows that the government pays attention to this point... then we will be honoured to become a cultural industry' (I9)</i>                                                                                                |
| Enterprise and                                | <i>'So now when many people come here, the Guyan Painting village they find are not only such a sketching team...and then he can also come to the Museum of</i>                                                                                                                                                                                                                  |

|            |                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| university | <i>Contemporary Art to see very contemporary artworks, and even the works of the world's top masters in Europe...I have all kinds of works by Dali, Picasso... which is very critical. They may not see things in big cities, but they can see them in Guyan Painting village and they are genuine' (I8)</i>                                                                                  |
|            | <i>'We will mention the changes in the people, townships, customs, how to improve the income of the local people...local intangible cultural heritage, to the shaping of the local cultural, tourism... even sometimes they don't talk about them just entrusting other things, but we can't help but talk about these so-called soft things...these things are just the most vital' (I1)</i> |

#### 4.3.2.2 Sub-theme 2: Multi-function performance

In the practice of Guyan Painting village and Dashigai village, the tripartite functions are no longer isolated administrative, teaching or profit-making units, but present a complex ecology of cross-border identities and complementary responsibilities. Overall, the functions of the government reflect more of the role of standardized supervision and leadership, such as providing administrative guarantees, giving legitimacy to a series of policy endorsements, supporting strategies for basic governance, and providing financial incentives that meet policy standards. However, in the rural revitalization and development of these two villages, some different characteristics are reflected, which mainly stem from the multiple identity attributes involved in promoting the government personnel in these two villages.

When he first began to implement rural revitalization and development, I2 was a member of the government, and later he wanted to do more for the people of the village due to various factors of spontaneity, so he embarked on the road of entrepreneurship from the role of village party secretary. This indirectly means that in government positions, many things cannot be completely let go, because the government has its own scope of office permits, and it is difficult to really have the energy to implement more innovative actions due to too many official duties. This is why when the government and several other villages talked about digital governance of villages, only I2 really initiated and implemented this matter in Dashigai village and achieved effective results, while other villages did not really implement it. Because I2 was the initiator of the original single government position, he later became the resource integration and partner of village construction. Besides, because he accumulated a good foundation of the people when he was a government official, he was still a social service provider when he turned to entrepreneurship and took root in village construction, but it was far beyond the scope of social services that he could provide as a government official. He paid attention to the people's life problems and mobilized the participation of multiple parties to promote the harmonious governance of the village.

I7 was responsible for promoting a series of implementation measures for the rural revitalization of Guyan Painting village at that time, and if he had just completed the work step by step, Guyan Painting village would not be today's development. In addition to his government status, he is an artist himself,

and he has a very good professional academic vision. Therefore, when he promoted rural development, he had extremely high aesthetic ability and forward-looking, and this broad vision led to in-depth cooperation with the China Academy of Art. In addition, he later introduced I8, an outstanding overseas Chinese entrepreneur, into the countryside and constantly interacted with the homestay owner I9, as well as spontaneously communicated with I1 to obtain more creative and innovative ideas to promote the development of the village, which made him contribute a lot to the overall aesthetics and high-quality industrial development of Guyan Painting village. On the one hand, more actions come from his excellent leadership, sense of responsibility and initiative to do things actively as a government worker, which is rare among grassroots government workers, and on the other hand, it is more from his extremely high standards and pursuit of beauty, quality, and more importantly, a strong sense of social mission in his hometown.

Table 4.14 Samples of quotes about multi-function performance

| Multi-function performance                   | Quotes of interviewee                                                                                                                                                                                                                                                    |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government<br>'taking the role of the other' | <i>'As a result, he was forced to take another path and began selling vegetables. Originally, he was the village secretary, but now he was forced to do this because if the vegetables couldn't be sold, it would dampen the enthusiasm of the local people...' (I1)</i> |
|                                              | <i>'Yes, but I feel that as an artist, I have eased his relationship with the government to some extent. Because I am an artist, I am a cadre of an artist in the administrative system' (I7)</i>                                                                        |
|                                              | <i>'A common goal, yes...because the government does want to build the Guyan Painting village well, and I7 does want to build it well' (I8)</i>                                                                                                                          |

I1 from the China Academy of Art is quite different. He embodies multiple roles simultaneously. Not only does he act as a professional mentor, fulfilling academic responsibilities, but he also runs a design firm affiliated with the university. In addition to this, he undertakes many functions traditionally should be taken by civil society or non-governmental organizations. His team was invited to participate in the strategic planning of villages, which was a paid collaboration based on his professional expertise. But that wasn't all; he went on to make voluntary trips to these two villages on multiple occasions, engaging in numerous discussions with entrepreneurs and government officials who were actively working on development issues, and providing them with strategic advice beyond what was required of him. I2, who had limited educational opportunities, received valuable suggestions from I1 that helped his business develop sustainably. I1 also assisted I2 in leveraging his social connections to expand his sales channels and networks. Moreover, I1 came up with innovative ideas such as organizing sketching events to promote rural innovation and sustainable development, and hosting forums to create platforms for like-minded individuals dedicated to revitalizing rural areas, thus facilitating their exchange of ideas and resources. What he has done goes far beyond the responsibilities that a university professor, in his

role as an expert that should fulfil. He hopes to use his professional knowledge and social influence to help them provide better services to their rural areas. Similarly, I10 himself is a teacher and famous movie director, but when appointed as a government commissioner to work on rural development at the grassroots level, his first concern was not personal fame or gain, but how to help promote his community through cultural and professional means, and how to enhance the cultural and artistic atmosphere of the entire agricultural village. His goal was to integrate aesthetics into the daily lives of the local people and thereby enrich their spiritual well-being.

Table 4.15 Samples of quotes about multi-function performance

| Multi-function performance                   | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| University<br>'taking the role of the other' | <i>'So first of all, our position improvement is also different from other villages, we invited the China Academy of Art to help us form a top-level design of a village...we are designing a beautiful village at the same time, we have taken into account the beautiful economy' (I2)</i>                                                                                |
|                                              | <i>'The role of university participants and promoters lies in the fact that at the beginning, the point that may be invited to say is that the local government invites us to pay or explain to invite us to design, but in fact, we involuntarily do the role of promoting the government, promoting the people, and promoting its practitioners to move forward' (I1)</i> |
|                                              | <i>'Because when I do something, I always put the public interest ahead of my personal interests. I never consider things from a selfish perspective. If I had such a narrow mindset, I would never have been able to become a special commissioner' (I10)</i>                                                                                                              |

As entrepreneurs, I2, I8 and I9, their existence is the core catalyst for promoting the dynamic operation and development of the two villages. They are both villagers and entrepreneurs, and at the same time perform many functions that governments and civil society organizations should undertake. They have a commonality, that is, although they are business owners, they have never set their sights on personal interests, but have a larger pattern and sense of mission, which is related to the innovative development of local villages and the vital well-being of the people. In addition to paying employees' salaries, they always insist on their original intentions even if they pay out of pocket by themselves and still unswervingly take root in rural revitalization and construction. Each of them could develop outside to obtain greater personal economic returns, but they still want to help the development of the countryside and help solve the problems of the people who lives here. I2 actively led the people to devote themselves to rural governance and solved their employment problems to help the elderly increase their personal income and purchased the vegetables and agricultural products that could not be sold by the local people and surrounding villages. As a successful overseas Chinese, I8 gave up his luxurious overseas life to choose to give back to his hometown's community, and during the epidemic, he would rather sold his famous piece work of art to insist on maintain the art museum exists in the local village, because he

knew that the meaning behind the village far exceeded the economic return. I9 has always taken root in the countryside, providing artists with services beyond ordinary homestays, because her existence has allowed sketching groups from all over the country to come to Guyan Painting village, driving the development of local cultural tourism, and actively opening free aesthetic courses and training to improve the cultural literacy of local people and enrich their spiritual life, she has always believed that she is a very important existence in village governance.

Table 4.16 Samples of quotes about multi-function performance

| Multi-function performance                   | Quotes of interviewee                                                                                                                                                                                                                                                                        |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enterprise<br>'taking the role of the other' | <i>'In fact, Yingshanhong company has been able to get to this day, it is actually relying on a strong will, this will be because of the pressure behind you, that is, the thousands of local people you care about, because your original intention was like this at that time...' (I2)</i> |
|                                              | <i>'You see why I sold all of Chu Teh-Chun's artwork when I finally had no choice, and I still have to do this... although we don't know what I get in the end, but I have indeed worked hard...' (I8)</i>                                                                                   |
|                                              | <i>'So it can only be said that it is a slow and cultural one for the local people. Infiltration... Slowly infiltrate, including I will also do some things, such as doing exhibitions, people who know will come to see it' (I9)</i>                                                        |
|                                              | <i>'For example, among these people in our aesthetic education training, like the proprietress of Lan She, who is now working as a homestay by the river, she came to study for 8 sessions' (I9)</i>                                                                                         |

#### 4.3.2.3 Sub-theme 3: Mechanism of knowledge flow

In the rural practice of these two villages, the university are the core professional knowledge providers. The top-level design of the university, the precision of professional vision and the guidance of aesthetics provide an irreplaceable role in the overall planning and design of the countryside. The government is more of a policy guidance and governance framework, but professional and high-quality implementation requires the professional knowledge of the university to fill it. In addition to formal professional guidance, such as formal project agreements and design proposals, the study found that the informal interaction and emotional connection between university personnel and other organizations provided consulting and advisory services brought effective inspiration and ideas for local development. The experiential intervention of university personnel spontaneously and repeatedly goes to the countryside and discusses with local enterprises and government staff in a comfortable and easy going way, breaking the institutional boundaries and allowing knowledge to play a role in the construction of trusting relationships and common visions. This allows the originally blunt administrative decisions and cold academic views to run in innovative products and ideas that are most in line with local characteristics in the cross-border exchange after dinner. At the same time, the resource background and social capital of university personnel are also invisibly built in this exchange, providing more social channels and operational potential for government development strategies and enterprise operations.

This moderate knowledge penetration model out of responsibility and mission is more vital than blunt official document issuance or economic cooperation, which further broadens the strategic vision of entrepreneurs and gives grassroots officials a higher artistic vision and development pattern. This flow invisibly shapes not only the implementation and application of knowledge, but also the unity of the value system, which indirectly builds rural development towards a common goal.

Table 4.17 Samples of quotes about mechanism of knowledge flow

| Mechanism of knowledge flow   | Quotes of interviewee                                                                                                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| University formal knowledge   | <i>'So first of all, our position improvement is also different from other villages, we invited the China Academy of Art, Wangjing Design Institute to help us form a top-level design of a village...' (I2)</i>                                                                                              |
|                               | <i>'Because I still use the word expert in universities, you can easily understand, what expert means strict means that it is authoritative, it is a standard setter, so when the government introduces policies, we will always find some experts or judges to review, or experts to do symposiums' (I7)</i> |
|                               | <i>'In terms of concepts, we need their idea, we have less contact with the outside world...so maybe their vision and vision are slightly wider' (I6)</i>                                                                                                                                                     |
| University informal knowledge | <i>'In most cases, these discussions are informal. Either people express that they share the same ideas in private, or they discover some common ground that leads them to establish a common goal and begin formal efforts towards it' (I3)</i>                                                              |
|                               | <i>'We proposed that the China Sketching Conference ...but I said that you have been sketching and writing for so many years, it can be said that I have played a more important role, I said why don't you do a sketching conference' (I1)</i>                                                               |
|                               | <i>'So I just said that I met the right person, we thought it was reasonable, and he also listened to our suggestions, so it formed today's big event' (I1)</i>                                                                                                                                               |

### 4.3.3 Theme 3: Social Structures Mutual Empowerment with Innovation Genes

This theme mainly analyses the relationship between innovation genes and civil society organizations in the conceptual framework structure, it mainly analyses how social structure, that is, civil society organizations and groups, and innovative genes empower each other in jointly promoting the development of rural revitalization. The results are mainly analysed through two sub-themes, namely the top-down model, that is, the specific way of enabling innovation genes to civil society, and the bottom-up model, that is, the way civil society in turn empowers innovation genes.

#### 4.3.3.1 Sub-theme 1: Top-down (innovation genes to civil society)

The top-down empowerment first stimulates their subjective initiative, and the demonstration effect of the leader here provides a good exemplary leading role. Through the improvement of the position of the government and enterprises, village cadres and private leaders take the lead in practice, for example, party members and villager representatives take the initiative to adopt land for cultivation, and the people see that the party members are personally implementing, which will be enough persuasion to enhance the trust of people to make them realize that this matter is valuable and beneficial to themselves,

and then the village committee will organize and mobilize the people to participate as much as possible. This participatory model is carried out in a way that is based on meeting the main needs of the people and mutual benefit. For example, imparting skills training, monetary incentives and providing employment, and transforming external resources into villagers' consciousness of action. For example, the governance mechanism of the 'Work Points Systems' digital platform implemented by Dashigai village, as long as the villagers do good deeds and use their mobile phones to report to the 'Work Points Systems' platform, such as caring for the lonely and widowed elderly, garbage classification, sanitary planting and other positive actions, they can get points, and the points can be used to exchange for daily necessities. This makes it possible to link environmental improvement with the income of villagers with the assistance of the enterprise's digital platform. At the very beginning, everyone may do it to receive things, but over time they will form a sense of responsibility to care for the village and begin to hope to do more good deeds to get points instead of receiving things. There is a QR code in front of each house, through which they can see how many points have been done and how many good deeds have been done, which is a sense of pride for them. And it is also incentives for farming land. If the land in front of and behind the house is clean, the land is planted well, and points will also be earned, and the points is a qualification to measure whether have the chance to plant the 'initial passion vegetable garden' to obtain more economic benefits, so this improves the autonomy and labour initiative of the villagers, and the whole village will naturally become neat and beautiful.

In addition, the people are encouraged to make good use of the land in front of and behind the house to grow vegetables, and spend money to buy and help them sell, which greatly improves the enthusiasm for labour. Those who do not have land can go to the factory to choose vegetables, many left-behind elderly people and children's families are not around, and there are men who go out to work to leave women alone at home, I2 summoned them to do some simple agricultural product processing tasks, which is also what they are good at and love, working together can also communicate with each other, which not only exercises brain power, but also enriches life, and can also get labour remuneration. This empowerment is not only to provide a job, but also to allow villagers to participate in rural governance and enhance their sense of ownership. Besides, this also indirectly introduces the management model of some modern enterprises into the private sector, and when villagers gain benefits by participating in the work assessment of digital platforms, it also indirectly makes them feel the benefits of the spirit of contract. This reciprocal mechanism leads the people's survival to the development of the people and transforms the scattered and surplus labour force into participants and productive forces with modern skills through employment relations, to establish a system of reconstruction of the life order based on contribution and reward in civil society. Clean streets and orderly planting are not only the improvement of the physical environment, but also the transformation of spatial governance into people's heart governance, which not only improves the civilization of rural customs, increases the income and well-being of the people, but also strengthens the rural autonomy system.

Table 4.18 Samples of quotes about top-down empowerment of Dashigai village

| Top-down<br>Empowerment<br>(innovation<br>genes to civil<br>society) of<br>Dashigai village | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reciprocal<br>mechanisms                                                                    | <i>'...for the improvement of rural civilization, for good people and good deeds... then when you get 100 points...go to the village to change bottled water, or there is rice, oil and salt at home...to guide everyone to move, at the beginning everyone was indeed to receive things, sitting for a long time, they felt that I loved the behaviour of my hometown...I should have found a way to fix it' (I1)</i> |
|                                                                                             | <i>'Anyway, there is data in the background that can give him points, assign to him, he can also get a certain amount of credit points and remuneration, he consumes in the store, for example, to do anything has priority, then this is to mobilize his enthusiasm to do something.' (I6)</i>                                                                                                                        |
|                                                                                             | <i>'...if we sort (vegetables)...we will summon these women in our village to let them sign up, and after screening, we will use them to work in Yingshanhong, so that we can help local villagers re-employ' (I4)</i>                                                                                                                                                                                                 |
|                                                                                             | <i>'... we mainly use some examples such as the recycling of vegetables, and when we are busy, we will call some people nearby...some agricultural and sideline products they grow, we can help them do consignment, and help them do some relatively standardized guidance' (I3)</i>                                                                                                                                  |
|                                                                                             | <i>'I was thinking, I let the best artists with international vision who hold exhibitions in first-tier cities put them in the art museum in this village, so that others can enjoy international exhibitions in this village' (I10)</i>                                                                                                                                                                               |
| Stimulate<br>initiative<br>participant                                                      | <i>'Let these party members and villager representatives take the lead first, he must be like this, party members and cadres look at village cadres, and then the people look at party members...so between the villagers and the villagers, he will go to discuss this matter after tea and dinner' (I2)</i>                                                                                                          |
|                                                                                             | <i>'It is that the village has taken out nearly 120 acres of land, so that the people can try to plant for 4 months, is free, and if you have the ability to have labour, will give you a trial plant, and the products grown will be sold by the Yingshanhong Service Centre to help you' (I2)</i>                                                                                                                    |
|                                                                                             | <i>'We treat the village as a big family, that is, let our villagers take the initiative to participate, which is also their old profession, and it is also the work they love, and they can find the same energy they had when they were young' (I1)</i>                                                                                                                                                              |
|                                                                                             | <i>'In fact, they also want to find such an ecology, but no one leads them. After activating all these idle lands, and then these villagers participated, basically 85% of the families were involved' (I2)</i>                                                                                                                                                                                                        |

In the rural construction of Guyan Painting village, meeting the basic needs of the painters settled here is the key to promoting the development of local culture and tourism, almost all of them belong to the local oil painting association of the non-governmental organization, this demand satisfaction and reciprocity mechanism is often reflected in the government to provide policy incentives such as rent reduction and exemption to the painter groups settled here, so that they have enough space to create

without worrying about economic problems, and at the same time invite entrepreneurs to hold some charity auctions. It not only solves the problem of marketing and sales of painters' works, but also indirectly solves some social problems. In addition, various platform construction activities, such as free booths at art exhibitions and large-scale events such as the China Sketching Conference, also have the opportunity to allow painters to come into contact with the resources of some enterprises and other organizations, helping them better broaden their art sales channels and build favourable network resources. In addition to being an entrepreneur, I8, as the chairman of the local Federation of Overseas Chinese, sometimes receives funding support from the government to help them promote activities that are within the scope of the policy and are beneficial to local development. The international art museum and homestay of I8 and I9 greatly nourish and meet the spiritual and cultural needs and aesthetic education of local people and other merchants and provide the visiting sketching groups with art appreciation opportunities and pleasant sketching life experience that are difficult to access in first-tier cities.

Table 4.19 Samples of quotes about top-down empowerment of Guyan Painting village

| Top-down<br>Empowerment<br>of Guyan<br>Painting village | Quotes of interviewee                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reciprocal<br>mechanisms                                | <i>'We are now mainly the subsidies that the government has given us now, so usually some platforms are shared, he invites entrepreneurs over, we get to know each other again, in fact, I think it is to build such a platform, because people still rely on each other to support information or something' (I11)</i> |
|                                                         | <i>'...they give us a housing support subsidy, and we have solved the problem of food and housing, which is originally a big problem...so this is the first to solve a kind of housing for us, and usually build some platforms for us (I11)</i>                                                                        |
|                                                         | <i>'No, he just subsidized the rent, and then when he first came here, he went out to show something and provided some booths, free booths' (I12)</i>                                                                                                                                                                   |
|                                                         | <i>'But the government does have it, like our Federation of Overseas Chinese, he will have tens of thousands of yuan a year...to help complete the task' (I8)</i>                                                                                                                                                       |
|                                                         | <i>'Because they also have their own needs...and then their needs I provide services for them...Yes, why I do it is actually an educational package' (I9)</i>                                                                                                                                                           |
| Stimulate<br>initiative<br>participant                  | <i>'It is that some people will slowly realize that this is a cultural phenomenon, and they will follow it, for example, to make a homestay, and they will also feel that they need to design, how to beautify, or what kind of theme they need to think...' (I9)</i>                                                   |
|                                                         | <i>'You can't do it if you don't do it yourself. Many artists came, a feel wrong when they didn't see me, and they had to see me to feel at ease' (I9)</i>                                                                                                                                                              |
|                                                         | <i>'We keep doing activities and exhibitions here, a month or two months, we paint an exhibition desperately, I let local people understand more about contemporary art, so that the art of this place is more diversified' (I8)</i>                                                                                    |

#### 4.3.3.2 Sub- theme 2: Bottom-up (civil society to innovation genes)

The study found that in the rural revitalization of Dashigai village, the Women's Federation provided a platform for enterprises, social capital and the empowerment of female labour force through the resources of the Women's Federation. Through its organizational network, the Women's Federation connects enterprises to market-oriented platforms and provides many indirect sales channel network resources for I2's Yingshanhong Company. At the same time, they provide a stable female labour force by selecting female labour force that meets the criteria to join I2's vegetable and agricultural and sideline product processing business. In addition, they used the platform of the Women's Federation to help I2 establish the 'Jinguo's Common Prosperity' workshop, 'Jinguo' in Chinese represents the outstanding female power, and this workshop was opened in the village, which was filled with female staff, and the workshop sold agricultural and sideline products from Dashigai village and surrounding villages, which virtually enhanced the social brand image and brand credibility of I2's enterprises. The women's federation also actively organizes rural activities, such as makeup and flower arrangement courses, which greatly improves the richness and happiness of the women left behind in the village, balances and alleviates their boring labour work in the fields and realizes the balance between life and work. The reason why the rural governance and people's mobilization in Dashigai village can be successfully implemented is not only the use of digital technology, but also the trust and endorsement of non-governmental organizations such as women's federations and village committees. The 'Work Points System' required by the government are easily reduced to cold algorithmic indicators without the daily coordination and emotional mobilization of non-governmental organizations. Through this bottom-up participation, civil society groups provide real public opinion feedback and behaviour samples for the digital decision-making of governments and enterprises, ensuring the temperature based on human centric and effectiveness of rural governance.

Table 4.20 Samples of quotes about bottom-up empowerment of Dashigai village

| Bottom-up Empowerment of Dashigai village                        | Quotes of interviewee                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Women's Federation Resources (platform/social capital/resources) | <i>'Because he needs to have women at every stage, and there are many, I always think that in many details, it must be women who play a greater role, and men may be a leader to make a decision, but many work details to do to participate are women...' (I4)</i>               |
|                                                                  | <i>'That's right, we set up a women's common prosperity workshop, we were originally there...which is more women-oriented, and then gives you approval, so that you can show it better, in the city and the province, and then there will be a certain economic subsidy' (I4)</i> |
|                                                                  | <i>'For organizations like women's federation interact with them, we primarily use these informal, non-official platforms to expand our sales network. Through these platforms, we can promote our product concepts, brand image, and</i>                                         |

|  |                                                                                           |
|--|-------------------------------------------------------------------------------------------|
|  | <i>corporate initiatives, and in turn, attract business opportunities from them' (I3)</i> |
|--|-------------------------------------------------------------------------------------------|

In Guyan Painting village, the Oil Painting Association plays a very important role, because one of the cores of the entire Guyan Painting village lies in the artists, and artists are an important medium to trigger local cultural tourism business. They provide more participatory empowerment, stationed on both sides of the main cultural tourism blocks, and need to spend a lot of time creating here, so that tourists can feel the strong artistic atmosphere of the painting township when they come. The Oil Painting Association provides soft power support for the government's rural governance through cultural injection and life-oriented display, transforming artistic creation into a perceptible rural landscape, and they are the landscape itself, which is not only artistic creation, but also a reconstruction of spatial value. By activating the original rural cultural genes, the Oil Painting Association allows the government to perceive the governance potential of art intervention, thereby promoting the Guyan Painting village from an unnamed town to a cultural benchmark. In addition, because their existence indirectly attracts more tourists to come here, it has brought a lot of economic benefits to local homestay family companies and other shops, and they will often do some activities together to empower each other. For example, they will write some free couplets during the Chinese New Year and actively participate in service activities such as street sanitation governance to empower the government to jointly promote local rural governance.

Table 4.21 Samples of quotes about bottom-up empowerment of Guyan Painting village

| Bottom-up Empowerment of Guyan Painting village      | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oil Painting Association (participatory Empowerment) | <i>'We are quite like 'actors', have such a scenery here, and then when it first got up, it had not yet become an official scenic spot...the road was done and the store was renovated, and after these people were invited, as the equivalent of the first batch of builders, it can also be said that we the pioneers...an uninhabited island, you need someone to go, then we immigrate there' (I11)</i>          |
|                                                      | <i>'Then we are a cultural injection on behalf of it, that is, the person who paints...they come to have something to see, then this is first to open a gallery, and then the scenic spot is a little bit of advertising is also being promoted...and then the scenery is good...then slowly there will be more tourists, and there will be more tourists before this so-called homestay will be produced' (I11)</i> |
|                                                      | <i>'They also have a homestay alliance, and then our oil painting association and calligraphy and painting alliance will often engage in activities together' (I12)</i>                                                                                                                                                                                                                                              |
|                                                      | <i>'After painters activating this place, the government felt that this place could have a new development model, so it proposed the construction of Guyan Painting villages, so it was in line with the entire direction of the government's promotion. The second is also in line with a direction of the development of this place...' (I12)</i>                                                                  |

In addition, the township sages and the Federation of Overseas Chinese are also part of the backbone of empowering rural revitalization. For example, I2 himself also belonged to the return of the township sages, and I8 was the chairman of the Federation of Overseas Chinese who returned to the countryside for village construction. They usually have rich social experience, overseas vision, and some financial advantages, and their willingness to return to the countryside virtually breaks the closed loop of rural information and provides diversified perspectives for government decision-making and rural governance. Their years of social experience and social prestige abroad are also an endorsement to enhance the credibility of local investment promotion. Civil society groups provide meaning and contextual transformation for rural governance, and they transform rigid planning into daily life that villagers can understand and participate in. This empowerment is a powerful supplement to the administrative logic of the government and the academic logic of the university. The government provides land and policies, the university provide professional development recommendation, but civil society groups inject loads of real perceptible fireworks and emotional connections. This bottom-up feedback has turned the originally blunt planning and governance requirements into an invisible spiritual and cultural orientation.

Table 4.22 Samples of quotes about bottom-up empowerment of Guyan Painting village

| Bottom-up Empowerment of Guyan Painting village | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other associations                              | <i>'Then our other business is some private associations, yes, that is, the resource side is still some association organizations...' (I3)</i>                                                                                                                                                                                                                                                                            |
|                                                 | <i>'The township sages have also returned, because these people have mastered external information resources and certain connections, and some township sages have strong financial strength in doing enterprises outside, so they must be attracted to provide some scientific and technological funds and technical information for the local area after returning, and give full play to their advantages...' (I6)</i> |
|                                                 | <i>'...our locals have limited perspectives; they don't often go out, and they don't have a very clear understanding of the outside world. Their ideas are relatively traditional. Therefore, some external information might help break these constraints and lead to the emergence of new ideas' (I6)</i>                                                                                                               |

#### 4.3.4 Theme 4: Dynamics of Sustainable Development

The theme mainly reflects the second layer of dynamic mechanisms in the conceptual framework, and the relationship between sustainable development goals (SDGs) and innovation genes and civil society. This theme mainly analyses which SDGs are jointly promoted by innovation genes and civil society under the condition of mutual empowerment, in other words, what specific social problems or needs

are solved by successful rural revitalization development or the implementation of social innovation. On the contrary, the study also analysed the adverse effects of successful SDGs implementation or social innovation on innovation genes and civil society, that is, which triggered the simultaneous evolution or spawning changes of organizations and civil society groups.

#### *4.3.4.1 Sub-theme 1: Value co-creation relates to Sustainable Development Goals (SDGs)*

Through an in-depth examination of the rural practice of Dashigai village and Guyan Painting village, and with the joint efforts of the dynamic interaction of innovative genes and the mutual empowerment of civil society, they all together have fulfilled the reconstruction of rural values and innovative development and co-governance and symbiosis. Its core value creation covers the solution and digestion of the local economy and employment, the revitalization and replacement of rural resources, the activation of rural civilization governance, the improvement of rural ecology and the revitalization of people's spiritual well-being. This process aligns well with the United Nations Sustainable Development Goals (SDGs) (*Sustainable Development Goals*, 2015) on poverty eradication (SDG 1), good health and well-being (SDG 3), gender equality (SDG 5) decent work and economic growth (SDG 8), sustainable cities and communities (SDG 11), and partnerships for the achievement of the goals (SDG 17).

In the practice of rural revitalization in Dashigai village, the 'Yingshanhong' APP agricultural and sideline product integration platform and the digital governance of the 'Work Points System' provide certain technical support for sustainable development. But this is not the most important thing, the most important thing is that in the specific rural governance, in the common actions of many parties and the participation and mutual empowerment of the people, the governance tool is no longer to complete the cold indicator task, but to connect the hard administrative logic of the government with the flexible logic of civil survival. By recycling agricultural products and promoting digital operations, enterprises have solved the main social problems of connecting the smallholder economy with the big market, revitalized and transformed the original rural resources into new production methods, and at the same time solved the employment problem of the people and improved their disposable income. Through digital governance, the government transforms public affairs such as environmental improvement and civilized habits into quantifiable 'points' and uses effective leading demonstrations and incentive mechanisms to enhance the spontaneous participation of the people. This not only improves the development of rural industries, environmental ecology, and people's livelihood and well-being, but also subtly establishes a set of modern governance models that adapt to sustainable development. Besides, in the traditional rural development model, value is often limited to agricultural output. However, Guyan Painting village has aesthetically empowered rural resources through the spontaneous sketching of natural landscapes by painters and artistic intervention into new production and lifestyle transformed into culture and tourism. When other artists introduced sketching conferences into

nameless villages, the originally cheap land and houses had a cultural premium. This leap from survival to aesthetics and cultural dissemination is essentially the regeneration and reconstruction of the logic of rural resources and assets, which makes the countryside no longer just the back garden of the city, but a cultural tourism scenic spot and cultural and artistic base with independent civilization characteristics. This dissemination from natural scenery to cultural tourism culture has produced a strong chemical reaction in civil society, allowing villagers to evolve from simple existence to guardians and beneficiaries of cultural space.

Table 4.23 Samples of quotes about value co-creation relates to SDGs

| Value co-creation relates to SDGs | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDG 1<br>SDG 5                    | <i>'...if we sort (vegetables)...we will summon these women in our village to let them sign up ...so that we can help local villagers re-employ' (I4)</i>                                                                                                                                                                                                                              |
|                                   | <i>'That's right, we set up a women's common prosperity workshop, we were originally there...which is more women-oriented, and then gives you approval, so that you can show it better, in the city and the province, and then there will be a certain economic subsidy' (I4)</i>                                                                                                      |
| SDG 8                             | <i>'...Male labourers work 8 to 10 hours a day for 200 yuan, and female labourers work for 150 yuan...So I2 said that there is work to do, and they are willing to do it, because our grandparents have labour insurance, they don't have labour insurance, one has money, and the second is Alzheimer's disease when watching TV at home, why don't you go? So they went...' (I1)</i> |
|                                   | <i>'We feel that what we are doing is first to solve the employment problem of many local people... 90% of whom are local, all of whom are nearby villagers' (I9)</i>                                                                                                                                                                                                                  |
| SDG 3                             | <i>'...we also advocate what the life group advocates ...we are talking about is called traditional planting, including don't use of pesticides and chemical fertilizers' (I1)</i>                                                                                                                                                                                                     |
|                                   | <i>'In fact, we thought it was relatively simple at the beginning, because many people bought our products and vegetables at the beginning, and they felt that what you ate was safe' (I3)</i>                                                                                                                                                                                         |
|                                   | <i>'In the follow-up, we use the front and back of the house to clean up the dirty mess, some idle land can be used as these ecological parks, these ecological parks...and our villagers were gardeners' (I2)</i>                                                                                                                                                                     |
|                                   | <i>'This is just a point of the economic empowerment, in fact, the real point is their inner pleasure, the spiritual enjoyment in their hearts' (I2)</i>                                                                                                                                                                                                                               |
|                                   | <i>'We empower them to improve their aesthetics, improve their eyes, and then let them know the value of artworks, because it is rare to receive contact with this thing in the countryside...' (I8)</i>                                                                                                                                                                               |

In addition, the embodiment of value creation lies in the profound creation and stimulation of people's life and the dual prosperity of the modern economy and spirit. Through 'top-down' resource investment and 'bottom-up' private undertaking, the enterprise, university and government have jointly completed a reshaping of the ideal space and spiritual civilization and happiness of people's living environment. For business owners, their identity has been sublimated from the main creator of economic benefits to

a rural partner with a sense of social responsibility, and for the university, their academic functions have extended from a single teaching to a governance think tank and flexibility to serve the society. The most profound changes occur in the villagers, when they obtain additional wealth through labour re-employment and personally participate in rural governance, their survival dignity and quality of life as the main body of their hometown have been improved like never before. In addition to economic benefits, the most important thing is that the profound and intangible spiritual well-being caused by this provides support for maintaining the long-term stability of rural ecology and harmonious development. Therefore, the rural revitalization practice of Dashigai village and Guyan Painting village provides a model of China's social innovation ecosystem with multi-dimensional value co-creation. Administrative power is transformed into field construction, and the government is no longer a single manager, but builds infrastructure and mobilizes participation for value creation through policy support and digital guidance. The empowerment of intellectual capital in the university injects aesthetic soul into the localized space of traditional villages and elevates the rural society from a low-end labour market to a cultural space connected with beauty. Through operational revitalization and a dual vision based on economic and social value, the company ensures an endogenous sustainable cycle of value creation. Through participatory empowerment, civil society groups can accurately transform top-up resource investment into bottom-up economic and cultural revitalization. This deep interaction based on the SDGs goals finally realizes a sustainable value co-creation symbiosis on the countryside, which allows economic growth to be accompanied by aesthetic dignity, digital transformation to be accompanied by emotional connection, and resource utilization to be accompanied by ecological protection.

Table 4.24 Samples of quotes about value co-creation relates to SDGs

| Value co-creation relates to SDGs | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDG 11                            | <i>'Dashi Gai is the village and took us to the secretary and their propaganda committee...we negotiated or communicated with them...because of the relationship between I10, I have communicated with them more, this time I designed an art museum for them' (I1)</i>                                                                                       |
|                                   | <i>'He revitalized all our land, and this is the greatest empowerment...' (I5)</i>                                                                                                                                                                                                                                                                            |
|                                   | <i>'So it can only be said that it is a slow and cultural one for the local people. Infiltration...slowly infiltrate...such as doing exhibitions, people who know will come to see it' (I9)</i>                                                                                                                                                               |
|                                   | <i>'As soon as the export of these ducks that are put into the countryside for common prosperity is solved, it is the problem of surplus agricultural products that cannot be sold. The second is how to make farmers generate income. He ducks are raised for local employment, and then teach them let more farmland is used to reduce pesticides' (I2)</i> |
| SDG 17                            | <i>'Then we did some design there... design improvement...some planning...we participated in its whole is its architecture, its entire cultural state, its format, its form, its ecology, its active state, it can also be said that we have deep involvement in the five states, so I7 has also become a good friend with you' (I1)</i>                      |

|  |                                                                                                                                                                                                                                                                                                                            |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <i>'Now you can see that their village is always very clean and beautiful, because everyone has a strong awareness of hygiene, because we can see that there are QR codes in front of and behind their houses, I can scan the QR code to give them a score of their home...' (I2)</i>                                      |
|  | <i>'I think this is good for our local township enterprises, for the local youth, his spark can be burned, seeing good things, he will remember the good things you once gave him, I believe he will change the art of a group of people or township enterprises, and their ability to innovate may also change' (I10)</i> |
|  | <i>'...I let the best artists with international vision who hold exhibitions in first-tier cities put them in the art museum in this village, so that others can enjoy international exhibitions in this village' (I10)</i>                                                                                                |

#### 4.3.4.2 Sub-theme 2: Co-evolution mechanism to innovation genes

The development of rural revitalization in Dashigai village and Guyan Painting village has brought some organizational changes to the government, efficiency and enterprises. The government's work philosophy has shifted from traditional administrative instructions to more scientific and rational planning. The government began to pay attention to the pre-planning of land use, reviewed land compliance before the start of the project, avoided useless work, and shifted from typical establishment to policy iteration. By implementing digital platform management measures, the government has driven the spontaneous participation of the people and achieved efficient governance of grassroots governance, which is rare in the case of rural revitalization. This method not only improves the quality of the rural environment but also establishes a new incentive and feedback relationship between the government and the villagers. In addition, the government has improved the aesthetic planning thinking concept of rural construction, rather than simply built practical infrastructure and completed index tasks. The demand for sustainable development has prompted the university to think about the new discipline direction of social innovation and the construction of social application value, the development of the discipline began to focus on social empowerment rather than staying in the traditional closed model of ivory towers, laying the foundation for the depth of institutional innovation in the future. For example, the university have changed from passive invited design to active strategic advice based on social mission calling. The university through formal and informal intervention in the governance process to contributing design, creativity and theoretical empowerment and enhancing the cultural brand position of rural areas.

Table 4.25 Samples of quotes about co-evolution mechanism to innovation genes

|                                            |                       |
|--------------------------------------------|-----------------------|
| Co-evolution mechanism to Innovation genes | Quotes of interviewee |
|--------------------------------------------|-----------------------|

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Government | <i>'We are doing some things now, we also learn lessons, one of us is to plan the land in front, the last project, we must first see whether this land is in line with the law, look at this plan, is it right, to avoid all the useless work later... The second is the operational potential, my thing is built, I must find a good object first, I will get it, if I don't find the object, it is built and left there, then it will be abandoned after a few years...' (I6)</i> |
|            | <i>'It must have changed slowly. From the relatively old and old-fashioned thinking to the current innovative thinking is being introduced little by little, this must have changed gradually, right' (I5)</i>                                                                                                                                                                                                                                                                      |
|            | <i>'He also felt that this might not be sustainable, so he made up his mind to do that and become an entrepreneur...' (I1)</i>                                                                                                                                                                                                                                                                                                                                                      |
|            | <i>'...it is typical to confirm the rationality of the policy, and then it can promote the iteration of the policy' (I7)</i>                                                                                                                                                                                                                                                                                                                                                        |

At the same time, the profound artistic concept is transformed into cultural products that ordinary people can participate in and benefit, and the social value spillover effect of knowledge is realized. Rural revitalization has stimulated the endogenous rejuvenation of corporate social responsibility, and enterprises take the initiative to assume social responsibility based on local feelings and participate in solving local livelihood problems. Besides, in the interaction with the government and university, the operation of the enterprise has become more in line with the laws of the market and more rational, in addition to the original intention of local feelings, but also actively improve the operation model and ideas through interactive resources, so as to ensure the sustainability of the business model. More importantly, through deep participation in rural governance, business owners have gained a sense of emotional identity and honour, which far exceeds material remuneration and further stimulates their enthusiasm for long-term rural cultivation. The solution of sustainable development issues indirectly shapes the common evolution mechanism of the government, enterprise and university, which promotes the government to shift from large-scale to refined empowerment, promotes the university to transition from paper to rooted in the earth, and promotes enterprises to shift from predatory development to symbiotic management.

Table 4.26 Samples of quotes about co-evolution mechanism to innovation genes

| Co-evolution mechanism to Innovation genes | Quotes of interviewee                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| University and enterprise                  | <i>'So those old people liked I2 very much, and they regarded him as the equivalent of the children of their fellow villagers, and he also gained this sense of honour and emotional value' (I1)</i>                        |
|                                            | <i>'We also follow the development of the times, because they have come to the countryside, they may be more advanced than us in the city...and he also needs some new technology to support, so I will get it up' (I9)</i> |
|                                            | <i>'It is more in line with the laws of the market, calmer, more rational, and more in line with the laws of the market...' (I1)</i>                                                                                        |

#### 4.3.4.3 Sub-theme 3: Co-evolution mechanism to social structures

The realization of the SDGs in rural areas is not only the improvement of the physical environment or the elimination of poverty indicators, but also the fact that it triggers a profound revolution in civil society subjectivity. This change presents a progressive evolution from matter to organization to spiritual soul. First of all, sustainable development has completed the capitalization and restructuring of rural idle value and the deep revitalization and transformation of existing resources, giving the masses economic independence and dignity. In the traditional context, rural labour (especially the elderly and women) is often seen as an inefficient asset. However, through top-down resource empowerment and operation, these idle labour forces are accurately embedded into the modern industrial value chain. When villagers find that their labour can be transformed into value output, their identification with sustainable development changes from an abstract slogan to a solid main driving force. This is not only the elimination of poverty, but also the re-anchoring of the value of individual life in the modern economic system, so that the masses can obtain equal social dignity and happiness in life while creating economic benefits. Secondly, the coupling of digital governance and civil society has built a modern grassroots order with autonomous participation. The sustainable development of rural areas has long been trapped by a relatively loose structure, and a reasonable rural governance model promotes the collective spontaneous initiative of the people.

Table 4.27 Samples of quotes about co-evolution mechanism to social structures

| Co-evolution mechanism to Social structures | Quotes of interviewee                                                                                                                                                                                                                                           |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Subjectivity of civil society               | <i>'Yes, he will feel that when he introduces it to others, I will have a sense of pride when you come to play in Guyan Painting village' (I9)</i>                                                                                                              |
|                                             | <i>'In recent years, whether it is rural revitalization or the implementation of beautiful villages, the people's sense of gain and satisfaction has been significantly improved, which is also a social benefit' (I6)</i>                                      |
|                                             | <i>'There is also a kind of finding his own trace, he is proud to do this, I am from Dashigai village, and then the villagers of other villages said that the things you grow in Dashigai village are reimbursed, which is different from our village' (I2)</i> |
| Initiative of civil society                 | <i>'They actively participated in the activities organized by the Women's Federation, and then the response was very enthusiastic, and then this was actually a kind of repercussion' (I4)</i>                                                                  |
|                                             | <i>'Everyone loves their hometown, and this energy is an inexhaustible sustainable and resilient local spirit' (I1)</i>                                                                                                                                         |
|                                             | <i>'Because his own starting point is to make life better, isn't it, to make society more harmonious, its starting point is such a starting point, everyone must be very happy to take part in' (I4)</i>                                                        |

Finally, the infiltration of art and education has contributed to the cognitive awakening of the masses from the limitations of their survival identity to cultural consciousness. When the masses are transformed from a state of ‘only knowing how to farm and watch TV and sleep’ to ‘participants’ who can take the initiative to introduce their hometown art to outsiders, take the initiative to learn photography and etiquette, the boundaries of identity are broken. This improvement in cognitive and spiritual education has narrowed the long-standing cultural gap between urban and rural areas. The villagers’ pride in their homeland is not vanity, but a return of self-confidence based on the value of their homeland that has been highly recognized by modern civilization. This spontaneous cultural consciousness is the most valuable internal vitality brought by sustainable development, and the masses are no longer passive objects waiting to be redeemed, but have become the masters of guarding, creating and inheriting local civilization. In this process, the grassroots masses have completed the leap from passive followers to value co-creators. This change proves that true sustainable development has not only achieved economic enrichment in the process of modernization but also gained cognitive enhancement and rediscovery of the value of self-existence, as well as a deep sense of dignity and pride as the owner of one’s hometown.

Table 4.28 Samples of quotes about co-evolution mechanism to social structures

| Co-evolution<br>mechanism to<br>Social structures | Quotes of interviewee                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cognitive<br>enhancement of<br>civil society      | <i>‘...It has driven the cultural awareness of a large part of the local people, not that they only know how to far...and then they will say that they will watch art exhibitions or that some people may progress to the point of saying that they will listen to an opera, or that I will also paint’ (I9)</i> |
|                                                   | <i>‘His governance of the entire village has achieved certain results, including the use of digitalization, how to manage the field with QR codes, how to use less pesticides and fertilizers for natural growth, and thus driving other areas’ (I8)</i>                                                         |
|                                                   | <i>‘In this regard, I think what is more important is that Yingshanhong Plan and ‘Work Points System’, it is a means of modern mobile communication in the new era, so that people can return to the village rules and people to do good deeds’ (I2)</i>                                                         |

#### 4.3.5 Theme 5: Social Contexts Conditions

This theme mainly presents the impact of the framework conditions in the conceptual framework on rural revitalization. It mainly analyses the main influencing factors of social context conditions on the sustainable development of rural revitalization, which mainly includes specific analysis of policy and institutional factors, socio-cultural or climate factors, and resource and environmental factors.

#### 4.3.5.1 Sub-theme 1: Institutional/policy environment

In the process of rural revitalization; there are many policy and institutional factors that limit its sustainability and innovative development. Although the government provides some incentives for actions within a reasonable range of policies, it largely depends on the personal leadership and overall literacy of tenure government officials. If the tenured government personnel have a strong sense of social mission, work initiative, and are willing to listen to professional and grassroots organization's suggestions and make bold innovation ideas, they can play a better role in the process of promoting rural revitalization. Because in China's environment, the government's macro plans and orientation are still the key factors in determining the overall development direction, and good innovative ideas and actions will not be supported by policy and legitimacy if they do not conform to the government's overall regional planning or are considered risky initiatives.

In the practice of rural revitalization, there is often a contradiction between the instability of administrative logic and the sustainability of long-term development. The frequent change of government leadership has led to the inability to effectively continue policy implementation. In order to demonstrate personal ability or shift focus, new leaders will largely change the practices of previous leaders, resulting in the sudden interruption or loss of continuous incentives for projects that were originally on the right track. In a certain sense, the administrative logic is limited by the performance appraisal and tenure system, and if each official only cares about personal administrative performance, he often pursues short-term efficiency or efficacy, and rapid visualization of 'typical role model' results. However, the development of rural areas needs continuous incentives and maintenance to ensure their sustainable development, which causes a dislocation between administration and development rhythm, resulting in the phenomenon of when officials are in office, all development is as usual, and when officials leave, all administrative support leaving as well in rural governance. Besides, the standardized work mode of administrative logic is difficult to match the complexity and uniqueness of the countryside. The complexity and lack of flexibility in procedures stems from the government's habit of achieving regulatory security through standardized documents and processes, which indirectly makes it difficult to innovate boldly in order to be controllable and avoid errors.

Table 4.29 Samples of quotes about co-evolution mechanism to institutional/policy environment

| Institutional/policy environment | Quotes of interviewee                                                                                                                                                                                                                                                                         |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insufficient leadership          | <i>'The change of term is just about to change. He wants to change the original leader's approach, I won't push the things you push...although the prior one is working excellent...but after I came on stage, I didn't push this, I did some things, I tried my best to change one' (I1)</i> |
|                                  | <i>'There is also a change of government, each leader comes up with his own policies, and then his change of strength is to make you uncontrollable' (I8)</i>                                                                                                                                 |

|                         |                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insufficient engagement | <i>'So I also told our mayor secretary that this is not how the work division treasure is made. Because they will stay for two and a half years at most, and now I still have half a year left, they think what will I give you ...' (I2)</i>                                                                                                       |
| Management rotation     | <i>'...the continuity of a government policy is very important, and now our government has a policy that is not a continuity, too short, because he changes quickly, so the leadership policy are not the same and not connected, resulting in us, especially a gallery like us, in this kind of place, it is difficult for it to survive' (I8)</i> |
|                         | <i>'...generally, it only stays for two or three years before it changes, and his sustainability does not exist, so after the change, he will not do this exhibition' (I9)</i>                                                                                                                                                                      |
| Insufficient incentives | <i>'It turned out that the government was mainly building cultural tourism, and the current leader of our Guyan Painting village was transferred to another business...then here was left out, resulting in planning like when we first came, there were nearly 100 artists in this place, resulting in only a few dozen left...' (I8)</i>          |

What's more, rigorous and relatively restrained incentive mechanisms do not match the continuous incentive needs needed to create rural value. The 'icing on the cake' incentive orientation reflects the conservative mentality of administrative decision-making under risk control. The government tends to support successful and brand-effective 'typical role model' projects, and this fixed-pie mindset often leads to the rupture of resources. Because the development of rural revitalization is inseparable from the continuous innovative development strategy, due to regulators do not always participate in actual governance, their decisions may be out of touch with reality, and it is difficult to carry out new value potential that is beneficial to rural development found by other organizations in practice. And actions without government legitimacy cannot be rationalized, enterprises cannot solve the problem of infrastructure investment and capital breakage. The government's conservatism not only frustrates the innovation initiative of enterprises but also leads to good projects that either cannot be carried out or are in trouble due to the inability to obtain corresponding subsidy adjustments during the implementation process. This allows the system to only exist on the basis of policies and the will of official leaders, and enterprises can feel the 'icing on the cake' rather than 'come to rescue'. Finally, the asymmetry between the government office logic and other organizations' operation frequency. Government officials believe that they tend to start from the overall system and have their own office rhythm, while enterprises pay more attention to the implementation of projects, so that the two often lead to communication deviations due to different underlying logic in cooperation. At the same time, due to the government's relatively conservative publicity of policies, grassroots organizations have a relatively single channel to obtain policy information, and there is attenuation or misreading in the process of information transmission, which also causes a certain amount of policy waste.

Table 4.30 Samples of quotes about co-evolution mechanism to institutional/policy environment

| Institutional/policy | Quotes of interviewee |
|----------------------|-----------------------|
|----------------------|-----------------------|

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| environment                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Insufficient management flexibility | <p><i>'The most important thing is the government, especially in China is a powerful regime, if the Chinese government does not agree to you, no matter how big the good things are, it cannot be implemented...but the power of the government is so great that it is boundless...we have a saying that the government is dominant' (I1)</i></p> <p><i>'You say he has no effect; he will have to supervise you tomorrow immediately; this is not right or that not right' (I2)</i></p>                                                                 |
| Procedure complication              | <p><i>'Something can be very fast solved but now seem to be solved very slowly, just procrastinated, I don't know what's going on, it seems that there are more people working, and things are slow' (I2)</i></p> <p><i>'His policy is not always to conform to the people's will, he is what he loves to decide... the town government must not dare to do anything... just like our Yingshanhong has a project is to get subsidies, we have invested money for 4 years or 5 years, my subsidy has not come down yet' (I4)</i></p>                      |
| Frequency misalignment              | <p><i>'I often talk to my friends about this matter, including the officer leader, our policy has been introduced, and he hopes that everyone can get this policy, but in fact very few people know about it' (I9)</i></p> <p><i>'That is to say, the government is a system, it has its own rhythm when it operates, and he does not mean that a certain leader is useless and there is no way, because he is only a part, and we are all a part. Yes, so many times the embarrassment is that there will be a misalignment in the rhythm' (I7)</i></p> |

#### 4.3.5.2 Sub-theme 2: Social culture/climate environment

The success of rural revitalization in the early stage often depends on the emotional governance brought about by the personal prestige of the leader, which is behind the local feelings and the trust of the local people, and the interaction between organizational leadership based on the same vision is an important factor to promote the smooth development of rural revitalization. Although the establishment of affection and trust driven by a sense of common mission in grassroots governance is an effective way to jointly operate rural revitalization and development, this kind of governance, which relies heavily on organizational leadership, also has certain vulnerabilities and instability. The reality is that it is difficult for most villages to encounter this synergy, so even if the countryside has good resources, it is difficult to achieve rural development without assembling with people who are willing to create and operate together. In addition, gaining the understanding and support of the local people is very important for rural revitalization and development. If the people feel that this is really helpful to their living environment and personal life, they will jointly promote rural governance through the mode of spontaneous participation, which will be smoother for the government, enterprise and university as relatively authoritative organizations in the process of rural transformation and operation. If it is only a superficial project, or a random demolition and construction, as well as an operation model that sacrifices the living environment only for private or higher organizations' profit, it will not be possible to promote the sustainable development of the countryside without the support of the local people. This is why these two villages can achieve certain success, because they have improved the villagers' self-

awareness and existence value to some extent, which is the most beneficial social capital. This change in the social and cultural environment has transformed the people from empowered to self-worth operators, and this kind of spontaneous action has well driven the sustainability of rural development and indirectly resisted the impact of ‘bureaucratic hierarchization’ and ‘policy non-continuity’.

Table 4.31 Samples of quotes about social culture/climate environment

| Social culture/climate environment | Quotes of interviewee                                                                                                                                                                                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emotional governance               | <i>‘In fact, the main thing is that I2 himself was a village cadre, so what he could gain the trust of the local people was to say that he was standing with them, not with the government or other interests’ (I5)</i>                                             |
|                                    | <i>‘The people must first trust you, a village cadre, before he will come to do this with you. If there is only one village cadre, even if it is the village secretary, no matter how enthusiastic he is, the people do not support you how you do things’ (I4)</i> |
| Trust of civil society             | <i>‘Yes, at least comparing looking for the government, local people which must be more friendly to us, because the government has to be in charge of everything’ (I3)</i>                                                                                          |
|                                    | <i>‘They actively participated in the activities organized by the Women’s Federation, and then the response was very enthusiastic, and then this was actually a kind of reply’ (I4)</i>                                                                             |

Overall, in the current social and cultural environment, the understanding of social innovation is relatively weak. The lack of understanding of social innovation is not reflected in action, but in the lag of cognition and theoretical consciousness. Although the behaviour of the participants has deeply practiced the core concept of social innovation, due to insufficient understanding of the innovation paradigm, there is a serious disconnect between practice and institutionalization. In some way, the rural revitalization is essentially shown the attributes of restructuring of social relations. The definition of these actions within the organization remains at the level of policy directives, project execution or governance means, and fails to identify them as a social innovation action that changes the logic of social governance. This lack of cognition leads to innovation often relying on the contingency of specific individuals or organizations, rather than on the inevitability guided by macro innovation theory. When innovation behaviour is only regarded as a practical pilot under the guidance of policy rather than an institutionalized strategic orientation, once faced with management rotation or change, it is easy to lose innovation results. Although all parties have assumed cross-border functions in practice, this multi-functional performance is mostly based on individual vision rather than strategic consciousness. This state limits the leap of rural revitalization to a higher-dimensional rural innovation and development strategy, and it is easier to making rural revitalization often reduced to a material repair rather than an overall reconstruction of social ecology.

Table 4.32 Samples of quotes about social culture/climate environment

| Social culture/climate environment        | Quotes of interviewee                                                                                                                                                                                                                                                            |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disconnection between practice and theory | <i>'Its overall social innovation, it actually needs to have a bold idea and a superhuman idea...so that it can be boldly innovative, and now it does not dare to create' (I2)</i>                                                                                               |
|                                           | <i>'I think we can continue to push, but we need to innovate, or inject some new ideas and models, which needs to be constantly explored' (I6)</i>                                                                                                                               |
| Disconnection between practice and system | <i>'The government is actually still working hard in this regard, although they may not have figured out how to do it now, how to do this thing, he has not yet sorted out this thing, but this place is still concerned...' (I8)</i>                                            |
|                                           | <i>'We know something, but we can't refine it into a pattern, or refine it to a certain height, they have thinking, that is, both sides have to combine' (I6)</i>                                                                                                                |
|                                           | <i>'Because we have also inspected many places, in fact, many places are not comparable to us at all...in fact, he has always lacked a real value system that truly sorts out from the cultural level and belongs to the entire value system of Guyan Painting village' (I7)</i> |

#### 4.3.5.3 Sub-theme 3: Resources environment

The resources environment also affects the development of rural revitalization in a certain sense, which is not only reflected in the shortage of factors, but also in ecological dilemma. The core resource of rural revitalization not only represents in land or capital, but also talents with business awareness. Traditional rural construction mainly relies on the improvement of facilities, while modern rural revitalization requires the operation of the countryside as a branded product. The deep reason for the current lack of talents lies in the lack of supporting environment, which requires financial matching, and needs the cognitive resonance and full support of local chiefs of government (such as village chiefs and town mayors). Without this synergistic environment, it is difficult for talents to produce sustained chemical reactions even if they enter the countryside. Besides, the capital environment presents a contradiction between fragile investment orientation and relatively weak financial support. Enterprises in rural revitalization face extremely high operating thresholds. This can easily lead to many enthusiastic private enterprises becoming pioneers rather than beneficiaries and have to withdraw in the face of the reality of the broken capital chain, which has hit the enthusiasm and innovation of enterprises. More, environmental emergencies (such as the epidemic) reveal the fragility and limitations of the rural industrial chain. The epidemic is not only a public health event, but also a heavy blow to the rural export-oriented cultural economy. Once the environment fluctuates, the shrinkage of downstream consumption will quickly go upstream, resulting in the countryside on the resource side (such as painting sales, tourism consumption) to stagnate completely, blocking the flow of rural and top art resources, and making rural cultural products lose the window to export to the city. The resource environment of rural areas is dynamically interacted with the government and related organizations, so

its elements are not static, and its obstacles are not only due to the absolute lack of talents or funds, but also because the channels of resource flow are hindered by rigid management procedures, unstable policy continuity and sudden environmental changes.

Table 4.33 Samples of quotes about resources environment

| Resources environment | Quotes of interviewee                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Macro environment     | <i>'At that time, I had contacted many top art museums, including Beijing, Shanghai, and Guangzhou, but I was blocked by the epidemic for 20 years...'</i> (I8)                                                                                                                                                                                            |
|                       | <i>'And now you look at the tourists who come out and basically don't consume, unless they actually eat everyone has to eat, right? He is very cautious when he buys things'</i> (I12)                                                                                                                                                                     |
| Talents               | <i>'...if I2 has a better think tank, if there is a think tank team or a young franchise who comes in and manages well, if he has his own ambitions, he will become a very famous Chinese agricultural brand in a few years'</i> (I2)                                                                                                                      |
|                       | <i>'...infrastructure of village is to be promoted, it has always been a problem to introduce talents, and there is no way, at the level of our villages, there are basically no talents, and talents cannot be retained'</i> (I5)                                                                                                                         |
|                       | <i>'... still lack some operational talents, they used to be called build villages, and now they are called running villages. If you run it, you let the village cadre work part-time, and he will not be able to mobilize his enthusiasm'</i> (I6)                                                                                                        |
| Capital               | <i>'Therefore, many private enterprises are full of enthusiasm, spending three or four years for him, and the funds are also broken and quit, because he does agriculture...he must have come with full of passion, he must also come with funds...so the survival rate of agriculture is only 5%, it is to rely on a will to do this thing well'</i> (I1) |
|                       | <i>'Funds have always been a big problem for agricultural enterprises, because agricultural enterprises have a lot of investment, whether it is a site, it is not its own assets, it is rented, and its investment is heavy investment...the bank has his own concerns, he is unwilling to take higher risks, although you are a good project...'</i> (I3) |
|                       | <i>'Why is it too difficult to do this art museum in the countryside, this road is really difficult, I hope that you as this business owner...the gallery manager you have to be able to hold on, you have to have this financial strength to play here, otherwise you basically can't play'</i> (I8)                                                      |

## 4.4 Conclusion

This chapter mainly systematically analyses the results and findings of data collection, and summarizes, refines and interprets the rural revitalization situation in Dashigai village and Guyan Painting village. On the whole, the essence of rural revitalization is a social innovation practice with the collaborative participation of multi-dimensional subjects, and its success lies not only in the renovation of physical space, but also in the dynamic interaction and mutual empowerment between administrative power, university professional knowledge, enterprise operation and civil society to jointly promote the sustainable development of rural areas and the solution of social sustainability problems. Through the

resonance of leadership and the endogenous sense of social responsibility, the government, university and enterprise have broken the rigid boundaries of traditional governance and jointly driven the innovation and development of rural areas in the cross-border of identity and role embedding. At the same time, mutual empowerment with civil society has created innovation in social relations (Moulaert, Simmons and Parra, 2025), so that the rural governance model can jointly promote the solution of social problems and sustainable development problems through effective mechanisms such as participation and reciprocity and accurately anchor the grand policy picture on the material benefits and spiritual well-being of the people. This collaborative interaction realizes value co-creation under the framework of the Sustainable Development Goals (SDGs), which not only reshapes the civilization consciousness and organizational resilience of the people, but also promotes the common evolution of all participants, so that rural revitalization has leaped from an external blood transfusion administrative task to a life community with self-hematopoietic ability. Although this process still faces the constraints of the real environment such as management rotation, institutional rigidity and weak factor support, the efficiency of knowledge flow and two-way empowerment energy it shows have explored a very vital path for the modernization and transformation of China's rural areas.

## 5 FINDINGS

### 5.1 Introduction

Based on the in-depth empirical research on Dashigai village and Guyan Painting village, the research found that the operating logic of the social innovation ecosystem is manifested in the innovation genes composed of the government, enterprise, and university (Triple Helix) and civil society (Quadruple Helix) as the core innovation factors through a dynamic mechanism of deep synergy in the social structure and evolve together with the sustainable development goals (Quintuple Helix) and the overall social innovation ecosystems. In the evolution of practice, due to the reality of the institutionalization of social innovation in organizational functions and the national innovation system, its dynamic promotion is highly dependent on informal multi-actor and multi-functional inter-embedded collaboration. The activation of this collaboration mechanism essentially stems from the value resonance between multi-organizational leaders in terms of initiative, cognitive dimension and sense of social mission. The mutual empowerment of innovation genes and civil society has achieved interactive influence in the process of giving birth to innovation in social relations, driving the iteration of synergy mechanism and the reshaping of social structure. This multi-dimensional co-evolution not only promotes the solution of sustainable development goals but is also constrained and guided by environmental factors such as social institutional, cultural climate, and resource factors.

Literally, the term rural revitalization is not accurate enough to describe the practice of these two villages in promoting rural development, because their practice is not limited to the infrastructure or surface transformation of rural water, electricity transportation or sanitation rectification. These two villages reflect that rural revitalization is not only the reshaping of physical space but also involves how multi-actors jointly drive the solution of rural social problems and sustainable innovation and development. Therefore, the essence of rural revitalization in these two villages is a profound social innovation practice and reflects the characteristics of the social innovation ecosystem. The following section, based on the social innovation concept analysis framework constructed in this study, will distil and present core research findings according to the multi-level coding of thematic analysis, and then systematically explain the innovation dynamic model of the social innovation ecosystem constructed in this research.

## 5.2 Data Saturation

Before presenting specific empirical findings, it is necessary to provide a methodological explanation regarding the adequacy of the sample size used in this study and the degree of data saturation. This study employs purposive sampling techniques, focusing on two representative cases of rural revitalization, precisely identified 12 key leaders from various innovative entities including the government, university, enterprise, and the civil society. In the qualitative research paradigm, the adequacy of the sample does not depend on the pursuit of statistical or mechanical information redundancy, the meaning is not a predetermined object that can be simply discovered but it is generated through the continuous interpretation process between the researcher and the data (Braun and Clarke, 2021). The adequacy of the sample in qualitative research does not depend solely on the absolute number of participants but depends more on the information power contained within the sample (Malterud, Siersma and Guassora, 2016; Braun and Clarke, 2021). When the research objectives are highly focused and certain specificity, and the dialogue is high quality relate to theoretical support, a smaller sample size can still provide extremely rich explanatory potential (Dey, 1999; Braun and Clarke, 2021). Correspondingly, in this research, the objectives focus on multi-helix coordination mechanisms, the samples exhibit industry and organization specificity, The participants in this study were directly and deeply involved in the decision-making processes related to rural revitalization and the collaborative efforts among various entities. As holders of key information specific to different organizations, they provided highly targeted, context-specific, and detailed firsthand accounts. The interview discussion is thorough, backed by a solid conceptual framework, then these data contain a vast amount of information and potential for interpretation. Besides, during the detailed manual coding process of analysing 12 respondents from various sectors including the government, enterprise, university and civil organization, the data and conceptual analysis framework demonstrated a high degree of theoretical alignment and cognitive depth. The intrinsic characteristics, action logic, and

interaction mechanisms of each core category have been fully and thoroughly empirically explained and contextualized from multiple perspectives, without new dimensions that challenge or reconstruct the core theoretical logic, thereby achieving solid theoretical sufficiency and qualitative saturation at the epistemological level.

## 5.3 The Dynamic Mechanism of Social Innovation Ecosystems

### 5.3.1 Finding 1: The Dynamic Mechanism of Triple Helix

#### 5.3.1.1 *Innovation genes-motivations*

The study found that the implementation of social innovation by the government and the public sector usually is mainly driven by national policy influence. In China's specific governance context, rural revitalization is positioned as a core strategy to achieve common prosperity. This national macro-level policy advocacy provides legitimacy support for the local government, and local officials should respond to governance actions within the policy framework. Under the national policy directives, the university concern for social issues and the localization of subject knowledge drive them to play an active role in promoting rural revitalization practices. The main leader responsible for collaboration with rural revitalization in the university are not limited to formal project-based paid cooperation but also intervene in an informal way based on social responsibility and empower local sustainable innovative development by providing professional strategic consulting advice to the government and enterprises. The enterprise in promoting rural revitalization and development is not limited to private economic gains, but out of a strong sense of social responsibility and local attachment to their roots. Solving local problems requires continuous policy and financial support, however, even if they encounter capital turnover problems, they are still willing to continually promote rural sustainable development by using their own money or resources, it shows entrepreneurs' social responsibility in solving the local social problems and promoting the activation of local resources and the transformation of rural value.

*'...the government is indeed the promoter, and the way the government promotes is often promoted in the form of policies' .... because of this policy, I can attract everyone to participate, and then test the rationality of the policy, to test its benefits, its transformation, its conversion rate, and so on' (I7)*

*'In the early stage, it is like planning and design at the top level to the overall positioning layout, including the village positioning of beautiful villages, and some cultural excavations in history must be dominated by university...The reason why the China Academy of Arts is now in the forefront of the country is encouraging everyone to serve in society and encourage everyone to do things' (I1)*

*'The vision is because I am a native farmer, I grew up in the countryside, my ancestors have been in this village for generations, and then after returning from work, I was a village cadre, and the responsibility of village cadres is to establish their hometown, that is, to establish a place where their ancestors have survived and grew up here' (I3)*

*'So, when we came back at that time, we thought of one thing: since I understood that such a thing didn't exist yet, I would be the one to start creating it, I would be the first to develop it' (I8)*

### *5.3.1.2 Innovation genes- functions*

The study found that in the collaborative governance network of social innovation, the government mainly plays a leading role. Based on the macro-planning orientation of the region, the government will give legitimacy to the selected executors to implement and operate the plan and provide corresponding support and supervision for relevant actions within the scope of the policy, such as investing in public infrastructure and financial incentives and other preferential policies. Besides, the cognition, work initiative and sense of mission of the current government leaders let them show the function beyond basic routine. For example, the government officials in the case are more daring to practice innovation because of their cross-field professional knowledge and rich social experience. Their broad vision and cognition enable them to build the relatively inclusion policy environment. The function of the university shows a collaborative capability through embodying the knowledge application and value translation. Therefore, it is not only an educator, but also a connector and promoter. Through providing professional solution and planning suggestions to reconstruct the value of the countryside, transform the originally fragmented and inefficient rural space into cultural capital with high premium capabilities, and reshape rural functions and features in terms of physical space and cultural shaping. In addition to formal project cooperation to obtain knowledge payment, the university also played multiple cross-border roles as governance consultants, such as providing strategic guidance for government planning and enterprise development through informal non-commercial cooperation, but it mainly depends on the personal sense of social mission and leadership of university leaders.

*'...you said that after I handed it over to you, I really didn't care? It won't be like this. I still have to supervise your action.....' (I7)*

*'For this reason, the Propaganda Department of the Provincial Party Committee felt that we were recommended by his subordinates...the Provincial Federation of Literary and Art Circles recommended me, and the reason why he thought of me first was because I had experience in local service, the second I belonged to the party member, and the third was public institutions...' (I10)*

*'I am actually a social practitioner, not just an official, an official is just an identity I use...the reason is that we are turning, and we also have an academic framework' (I7)*

*'In the middle of this, I am very positive to see such a person, seeing people like I7, we must want to think of different ways to help...as work in university we cherish talents, and we can do a little like this within our ability, which is such a role' (I1)*

The enterprise are mainly the specific implementers and operators of the government's macro-planning and guidance. In the collaborative ecology of rural revitalization, the main functions of enterprises are resource transformation and market-oriented operations. Through capital injection and operation management, rural resources are revitalized and reorganized into sustainable commercial formats. In

addition, the enterprises show part the governance and service functions of the government, which comes from entrepreneurial leadership and a strong sense of social responsibility. They show a transformed attributes from business operators into social governance partners by cooperating with the government to develop governance tools and other products and services. Besides, as an intermediary of trust between the government and civil society, the enterprise undertakes part public obligations to through a series of social services. This multi-functional role makes enterprises no longer mere investors, but co-governors deeply embedded in the rural social ecology.

*'Use its own integrated platform to help some large farmers, such as vegetable basket bases, including some units with good products in hand, to solve marketization' (I3)*

*'So, there are artists from all over the country, and I am not only a window to introduce local artists to the outside world, but also a window for foreign artists to come to us to do some exchanges with the local community' (I9)*

*'For me, the purpose of spreading art was precisely this..... In that sense, my participation in this community was purely about contributing and helping to spread art' (I8)*

#### 5.3.1.3 Core dynamic mechanism

The dynamic mechanisms of innovation genes are mainly reflected in three interrelated levels. First, the core dynamic mechanism in the complex social innovation ecosystem of rural revitalization between the innovation genes embodies the hierarchical characteristics in its functions and dynamics. The government is the leading force, located at the first level, and is the main macro guideline for launching actions. Under the guidance of the national policy-oriented macro-strategy, the government formulates regional policy planning and development plans that are in line with the national strategic orientation. Enterprises are the main execution force and are located at the second level. The government selects operable enterprises for implementation and provides legal action and policy incentives. On this basis, enterprises carry out market-oriented operations according to local conditions. The university show toward a collaborative capacity and are located at the third level. Through formal and informal means, the university cooperate with the government to provide top-level design plans based on professional knowledge for local policy planning and informally provide strategic advice and insights such as innovation and creativity to the government and enterprises based on a sense of social responsibility.

*'The most important thing is the government, especially in China, which is a powerful regime, and if the Chinese government does not agree with you, no matter how big the good things are, they will not be able to implement it' (I1)*

*'...and of course, the guidance of the government is more important. If the government says that the place that leads...is not called Guyan Painting village, it means that you still develop your other things, which may not be like this' (I9)*

*'So first of all, our position improvement is also different from other villages, we invited the China Academy of Art, Wangjing Design Institute to help us form a top-level design of a village, at that time it was a universal beautiful village, in fact, we are designing a beautiful village at the same time, we have taken into account the beautiful economy' (I2)*

*'Use its own integrated platform to help some large farmers, such as vegetable basket bases, including some units with good products in hand, to solve marketization' (I3)*

Second, the hierarchy attributes are a catalyst for initiating collaboration, while the dissolution of role boundaries and the inter-woven of multi-function performance is the core elements in promoting the effectiveness of inter-helix interactions. The government loose partial administrative space during interaction have promotes the effectiveness of collaboration. By giving respect and trust to other organizations decision-making power at the micro-management level, the university are allowed to fully utilize professional ideas in top-level design and implement them according to the plan. At the same time, they are given operational space, and some public culture and service governance functions are delegated to socially responsible enterprises. The enterprise fulfils some of the functions of grassroots government through operation and management models that suit local characteristics, while the university transcend academic research and assume the functions of discovering resource potential and providing governance advice. This mutually dynamic function performance to a certain extent reduces the institutional transaction costs brought by the bureaucracy and improves the response speed of rural social innovation.

*'Then some of the designs we invite from the university ...because they have some aesthetics, this kind of architectural and landscape design still have advantages...' (I6)*

*'It's just to complete what the government should do...it is not political culture, it is a political achievement, and then there are enterprises to implement, and there is university in the middle' (I7)*

*'I think the first and most important thing, the leading role of universities in this part, so that they know what is right, what is beautiful, what is sustainable and hopeful, and they also slowly learn because we are constantly entangled with each other' (I1)*

Third, the coupling and resonance of cognition, leadership and sense of mission is the key trigger of inter-woven function performance among inter-helix leading to continues informal and formal interaction and transformation. When the government and social forces reach a consensus on values, a spontaneous coordination that goes beyond administrative orders can be generated to reconstruct the grassroots social order. In this case, the government is not limited to implementing policy orders and supervision, but by giving a certain amount of administrative inclusivity to cooperate with entrepreneurs and the university to smoothly carry out innovative ideas and actions; entrepreneurs are not only carriers of capital, but also as social partners, transforming personal local identity into social innovation practices; the university transcend the boundaries of the academic ivory tower and serve as boundary spanners, deeply bind its third mission of participating in social innovation with the reconstruction of

rural values. This dynamic mechanism prompts the three parties to move from a cooperation model driven by a purely formal contractual relationship to an informal collaboration model driven by value coupling, laying a deep emotional trust and foundation for continued dynamic interaction.

*'I think the team of I6 is very professional first, and secondly, the communication cost between us is very low, because what we want to do, the values are similar, and the aesthetics are also similar' (I10)*

*'A common goal, yes...because the government does want to build the Guyan Painting village well, and I7 does want to build it well' (I8)*

*'I2 said that even I pay out of pocket and I would do it, at this time his role was still the village secretary, so he did it, and then it was impossible for the village to pay out of money...' (I1)*

*'Because when I do something, I always put the public interest ahead of my personal interests. I never consider things from a selfish perspective. If I had such a narrow mindset, I would never have been able to become a special commissioner' (I10)*

Figure 5.1 shows the government, university and enterprise as innovation genes constitute the Triple Helix and its dynamic mechanism, the size of the circles in the diagram below shows their organizational hierarchy in function identity and dynamic interaction. The size of the circle is flexible, which is manifested in the fact that it may have different coverage mechanisms in different social institutional contexts. In addition, the interwoven parts of the circle represent the dynamic interaction mechanism of innovation genes, in the Triple Helix of technological innovation, call this core dynamic mechanism as 'taking the role of the other'. While in the finding of this research, the interaction mechanism shows an informal 'taking the role of the other' rather than out of complete institutional confirmation, therefore, here the figure is marked follow, as multi-functional interwoven to show the findings of its dynamic mentioned in above, which will be further discussed in detail in the discussion chapter.

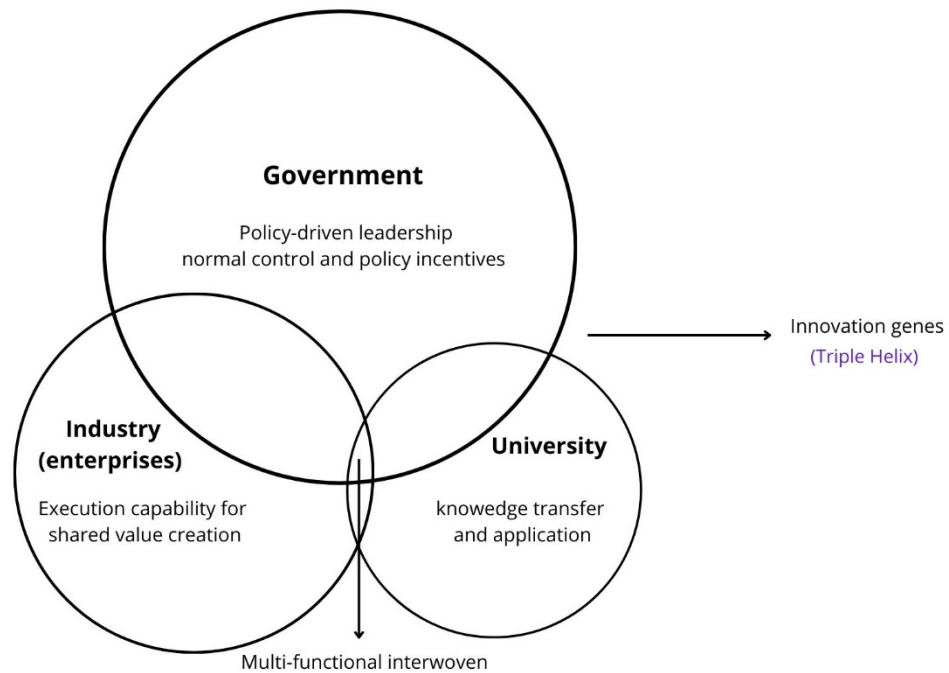


Figure 5.1 The Triple Helix Mechanism of Social Innovation Ecosystems

Source: the author

The government, university and enterprise promote the realization of sustainable development goals and the collaborative evolution of organizations through dynamic interaction. In the process of solving sustainable social issues such as employment, economic growth, and people's well-being, the three parties have solved a series of problems such as scattered elements and governance failures in rural development through leadership resonance based on a common vision, a hierarchically nested collaborative model of action, a synergistic mechanism of interwoven multifunctional elements, and formal and informal knowledge flows. This is reflected in the non-equivalent power structure, which achieves collaborative order through functional complementarity and the establishment of a trust mechanism based on a shared vision, in particular.

### 5.3.2 Finding 2: The Dynamic Mechanism of Quadruple Helix

#### 5.3.2.1 Civil society-the identity and function

In China's rural revitalization, civil society shows a very local identity attribute, they are not only deeply empowered participants in the governance system, but also flexible enablers to maintain the operation of rural society. The identity attributes are not based on management and decision-making power, but on the interaction with the government, university and enterprise, through the embedding of social identity and the implementation of functions to achieve value transformation and common governance. The subjective identity of civil society is participatory rather than dominant. The party members through

taking the lead and coordinating with the enterprise to mobilize grassroots to participate in rural governance based on reciprocal mechanisms. For example, through digital tools, individuals' daily behaviours can be transformed into quantifiable social credit and economic benefits. This way of motivating through action participation stimulates the initiative and ownership of the grassroots masses, at the same time stimulates the villagers' cultural and action consciousness from the material level to the spiritual level. Besides, the civil society mainly play an assistant role, and they become a bridge for coordination between multiple organizations and resource expansion through flexible force intervention. For example, the new sage often has strong social capital and local attachment feelings, and by taking the lead in providing and introducing resources, they have injected value added space into their hometown beyond the land itself. However, their authority stems more from the sense of honour and emotional identity among neighbours and lands than from rigid administrative power. This informal influence based on the emotional identity of the countryside and neighbourhood resolves the rigidity of administrative directives in governing the countryside, so that complex governance goals can be harmoniously promoted through emotional bonds.

*'This is the women's federation that recognizes you, and then recommends it to you, and then conducts organizational inspections or something, and then it can be approved, and if it is approved, there will be a certain amount of financial subsidy' (I4)*

*'After painters activating this place, the government felt that this place could have a new development model, so it proposed the construction of Guyan Painting villages, so it was in line with the entire direction of the government's promotion. The second is also in line with a direction of the development of this place...' (I12)*

#### 5.3.2.2 Mutual empowerment with innovation genes

In the complex field of social innovation in rural revitalization, the research found that innovation genes and civil society jointly improve the innovation quality and value spillover of social innovation through top-down and bottom-up empowerment, and the mode of new social relations are further developed and reflected in the co-governance, co-construction and symbiotic. The participation mode of civil society is not an isolated individual behaviour, but a dynamic participation process in the collaborative network of the government, university, and enterprise. The interactive mode of bidirectional empowerment is on the one hand, top-down resource input and institutional absorption, aiming to activate the internal vitality of the countryside through authoritative organizations. on the other hand, it is the bottom-up social capital empowerment and emotional feedback, and the synergy of governance goals is achieved through the localization and nourishment of civil society.

The top-down empowerment mechanism is the main driving force in the early stage of rural revitalization, it embodies the government, university and enterprise use their political, academic and capital function and power to systematically reshape the functions of fragmented civil society. Which

is not only a one-way investment of resources, but also a mobilization of collective action. The government, university and enterprise transform governance goals into symbiosis and co-governance to meet the survival and development of the grassroots through a series of actions such as policy guidance and incentives, reciprocal mechanisms and cultural and educational infiltration. By solving practical problems and empowering participation modes to mobilize and stimulate the initiative of grassroots, so that rural governance and public affairs can be directly linked to the value and need of civil society. The government provides administrative empowerment through system plan, technology tools, construction of infrastructure and subsidy incentives. The enterprises fulfil livelihood empowerment through market embedding and recapitalization, such as absorbed disadvantaged groups (left-behind women and the elderly) into the value chain, realizing the initiative from passive poverty alleviation to active income generation. And the university shows cognitive empowerment through knowledge input which have broken the closed loop of rural information and promoted its cultural value.

*'Let these party members and villager representatives take the lead first, he must be like this, party members and cadres look at village cadres, and then the people look at party members...so between the villagers they will go to discuss this matter after tea and dinner' (I2)*

*'...if we sort (vegetables)...we will summon these women in our village to let them sign up, and after screening, we will use them to work in Yingshanhong, so that we can help local villagers re-employ' (I4)*

*'...they give us a housing support subsidy, and we have solved the problem of food and housing, which is originally a big problem...so this is the first to solve a kind of housing for us, and usually build some platforms for us' (I11)*

*'No, he not just subsidized the rent, and then when he first came here, he went out to show something and provided some booths, free booths' (I12)*

In the rural society, pure administrative governance and market-oriented behaviour often lack the flexibility and adaptive capacity of implementation and on the ground execution. In this case, the civil society as soft and flexible power like represented by the women's federation, business association, village committee and the special elites transformed the blunt policy goals into an emotional rural governance model through their own prestige, social resources and social capital, giving the social foundation of government governance and the trust and endorsement of business activities. At the same time, civil society integrate their own affairs and activities into the deep responsible participation of rural development through actions, provide scenario content and value empowerment for government planning and top-level design of the university, and indirectly increase resources and operational benefits for enterprises. This bottom-up empowerment reflects the contribution of civil society in transforming the originally blunt policy text into a vivid collective action of social innovation and provides its unique institutional resources to innovation genes, thereby enhancing the synergy and value extension of the entire governance system. Without this bottom-up active participation, the rural revitalization initiate exclusively between innovation genes will be reduced to a soulless field construction, without the support of the grassroots masses, the solution of sustainable social problems

will lose its meaning, and social innovation actions will be difficult to carry out smoothly and sustainably locally.

*'Because he needs to have women at every stage, and there are many, I always think that in many details, it must be women who play a greater role, and men may be a leader to make a decision, but many work details to do to participate are women...' (I4)*

*'For organizations like women's federation interact with them, we primarily use these informal, non-official platforms to expand our sales network. Through these platforms, we are able to promote the product concepts, brand image, and corporate initiatives, and in turn, attract business opportunities from them' (I3)*

*'Then we are a cultural injection on behalf of it, that is, the person who paints...they come to have something to see, then this is first to open a gallery, and then the scenic spot is a little bit of advertising is also being promoted...and then the scenery is good...then slowly there will be more tourists, and there will be more tourists before this so-called homestay will be produced' (I11)*

*'We are quite like 'actors', have such a scenery here, and then when it first got up, it had not yet become an official scenic spot...the road was done and the store was renovated, and after these people were invited, as the equivalent of the first batch of builders, it can also be said that we the pioneers...an uninhabited island, you need someone to go, then we immigrate there' (I11)*

*'They also have a homestay alliance, and then our oil painting association and calligraphy and painting alliance will often engage in activities together' (I12)*

Figure 5.2 shows how innovation genes and civil society as innovation factors interact with each other, which manifest the dynamic of Triple Helix and Quadruple Helix in social innovation ecosystems. The ellipsis represents the diverse innovation genes and civil society combinations and groups in the social structure, the circle and larger levels of innovation genes represent its current dominant position in promoting social innovation, they together constitute the innovation factors that promote social innovation in the social structure. In the inter-helix interaction and cross-influence, innovative ideas, knowledge, resources and actions form a dynamic flow, and the innovation of social relations is triggered and jointly acts on the evolution of the social innovation ecosystem.

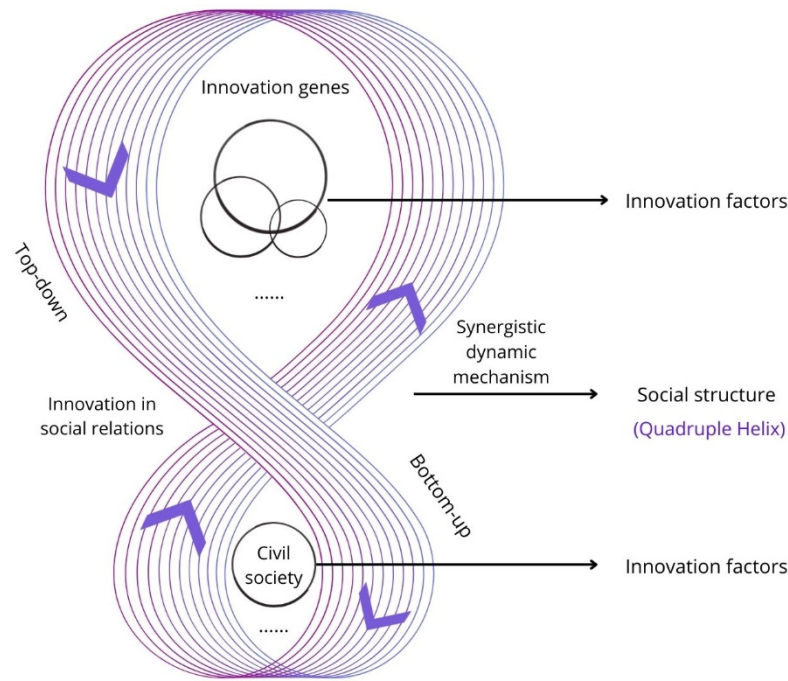


Figure 5.2 The Quadruple Helix Mechanism of Social Innovation Ecosystems

Source: the author

Innovation genes and civil society work together to promote social innovation through top-down and bottom-up empowerment mechanisms. As the main authoritative organization, innovation gene mobilizes the enthusiasm and initiative of civil society to participate in action through policy guidance and reciprocal mechanisms, and cooperates with innovation gene to achieve co-governance, co-construction and value sharing. In turn, civil society empowers innovation genes through participatory action, platform resources and social capital. Even so, social innovation currently mostly comes from top-down trigger mechanisms, and civil society does not have enough organizational power or freedom to spontaneously initiate bottom-up social innovation actions. Civil society is still a subsidiary and subordinate role in the social innovation ecosystem, and they do not have much decision-making power to make decisions, and all actions need to be followed up and supported by other organizations under the guidance of government policies.

### 5.3.3 Finding 3: The Dynamic Mechanism of Quintuple Helix

#### 5.3.3.1 Co-evolution with social innovation ecosystem

The research found that in the process of promoting social innovation, civil society and innovation genes as innovation factors evolve together with ecosystems. This means that social innovation without synergistic mechanisms will not achieve the desired social innovation outcomes. Social innovation aims to solve social needs, and civil society and innovation genes jointly promote the solution of social problems through collective action in a mutually empowering mechanism, and in turn improve the well-

being of civil society subjects. This behavioural logic is that participation and feedback have a certain degree of unity and consistency, that is, it is not only a participant in the empowerment system but also the biggest beneficiary of system evolution, and this cycle is constantly evolving in continuous collective action.

*'That's right, we set up a women's common prosperity workshop, we were originally there...which is more women-oriented, and then gives you approval, so that you can show it better, in the city and the province, and then there will be a certain economic subsidy' (I4)*

*'We feel that what we are doing is first to solve the employment problem of many local people... 90% of whom are local, all of whom are nearby villagers' (I9)*

*'We empower them to improve their aesthetics, improve their eyes, and then let them know the value of artworks, because it is rare to receive contact with this thing in the countryside...' (I8)*

In the process of solving sustainable development problems, innovation genes promote the development of social innovation through synergy to generate innovative actions, ideas, products, etc., and in practical actions, they benefit from the reflection and evolution of concepts, management, operations and systems brought by practice. Organizations constantly adjust and improve their organizational capabilities in the process, and the collaboration and interaction between organizations affect each other. Under this mechanism, the innovation gene is constantly adjusted and coordinated in formal and informal synergy through the organizations with which it interacts and achieves common progress through the construction of trust and the flow of knowledge and experience. The consistency and quality of interaction among innovation genes will further affect the empowerment mechanism with civil society. This indicates that the synergy between innovation factors in driving social innovation is mutual influence and shaping the trajectory together to decide the effectiveness and quality of social innovation are continuously promoted or decrease. In this benign interaction of two-way empowerment, it provides the possibility for sustainable rural revitalization and development, which not only jointly solves the problems like employment, environment and relevant sustainable development, but also indirectly reflects the innovation of social relations.

*'Dashigai is the village and took us to the secretary and their propaganda committee...we negotiated or communicated with them...because of the relationship between I10, I have communicated with them more, this time I designed an art museum for them' (I1)*

*'His governance of the entire village has achieved certain results, including the use of digitalization, how to manage the field with QR codes, how to use less pesticides and fertilizers for natural growth, and thus driving other areas' (I8)*

*'Then we did some design there... design improvement...some planning...we participated in its whole is its architecture, its entire cultural state, its format, its form, its ecology, its active state, it can also be said that we have deep involvement in the five states, so I7 has also become a good friend with us' (I1)*

*'It must have changed slowly. From the relatively old and old-fashioned thinking to the current innovative thinking is being introduced little by little, this must have changed gradually, right' (I5)*

*'We also follow the development of the times, because they have come to the countryside, they may be more advanced than us in the city...and also needs some new technology to support, so I will get it up' (19)*

Figure 5.3 shown a further evolution mechanism of Figure 5.2 and how they through synergistic dynamic mechanism work together to shape and drive the achievement of the SDGs. Through the top-down and bottom-up dynamic synergy mechanism, civil society and innovation genes together constitute the inter-helix dynamic DNA evolutionary link of social innovation, and they are like Mobius rings, intertwined with each other, influence each other and shape each other in dynamic flow, forming a two-sided link of social innovation development. In their interaction, new collaborative models and enabling mechanisms to have constantly evolved, so that the innovation of social relations can be reshaped in incremental way, innovated, transformed and evolved in the continuous joint promotion of the solution of social problems.

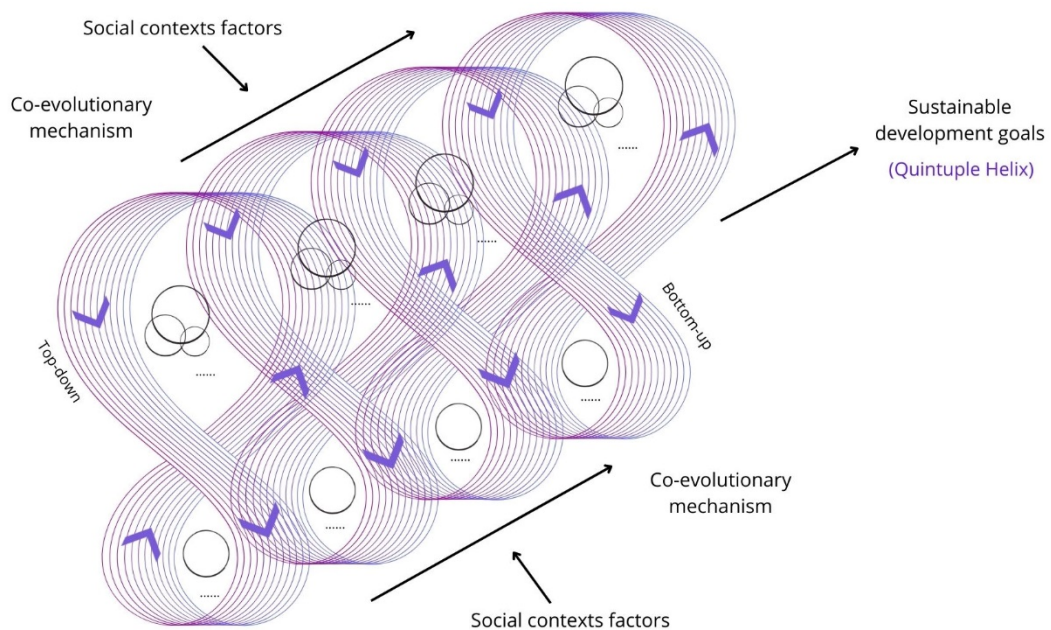


Figure 5.3 The Mechanism of Quadruple Helix to Quintuple Helix of Social Innovation Ecosystems

Source: the author

Only at present, the social innovation ecosystem is still in the development stage, different social environments exhibit varying levels of evolution due to differences in the institutional frameworks and systemic mechanisms that underlie social innovation. It is precisely because these institutional and conceptual frameworks have not yet been fully established at the level of the innovation system that knowledge, actions, and resources flow in both formal and informal ways. In this process, triggering gradual value co-creation and dynamic cycles, and the evolution of governance tools and collaborative models improves governance efficiency and the sustainable development of social innovation, which

gradually drives the potential paradigm shift of social structure, and ultimately promotes the co-evolution and potential social change of individual organizations and the entire ecosystem.

### *5.3.3.2 Contextual factors*

As a profound social innovation practice, the effectiveness of rural revitalization does not only depend on the subjective will and initiative of the innovation subject but is also rigidly constrained and dynamically shaped by complex social contexts factors. In the field of collaborative governance between the government, university, enterprise, and civil society, the continuity of policy systems, the sense of social and cultural identity, the completeness of cognition and institutionalization of social innovation paradigm, and the influence of resource elements together constitute the ecological boundary of social innovation emergence and evolution.

The research found that the in-depth promotion of rural revitalization not only depends on the synergy of internal dynamics but also is deeply affected by the interact dynamic of internal and complex constraints and potential influences of external social contexts factors. Although the government's policy leadership constitutes a leading role in rural revitalization, the fracture of management rotation, the rigidity of procedures, and the structural deviation of incentive mechanisms often lead grassroots innovation into intermittent failures of resignation and shutdown. This contradiction between institutional rigidity and the complexity of rural development reflects the urgent need for rural revitalization to shift from policy-driven to institutional-driven in the process of sustainable modern governance. Besides, while providing emotional identity and traditional value support, the social and cultural environment also faces the challenge of disconnection between practical and theoretical guidance due to lack of paradigm cognition of social innovation and ecosystems mechanism. Although rural revitalization is essentially a social innovation action that changes social relations, solves social needs and even triggers future potential social change, due to the lack of macro theoretical guidance, many explorations with pre-emptive significance cannot be transformed into sustainable institutionalized strategies, making it difficult to lead follow-up actions on a large scale and spread good models to other villages. In addition, resource and environmental factors have also led to certain development restrictions, such as the lack of operational talents, poor financing channels for private enterprises, and the imbalance between input and output. In addition, sudden global public health events such as the epidemic have further exposed the high dependence of the rural economy on the external environment by blocking cultural flow and consumption chains.

*'There is also a change of government, each leader comes up with his own policies, and then his change of strength is to make you uncontrollable' (I8)*

*'...generally, it only stays for two or three years before it changes, and his sustainability does not exist, so after the change, he will not do this exhibition' (I9)*

*'The people must first trust you, a village cadre, before he will come to do this with you. If there is only one village cadre, even if it is the village secretary, no matter how enthusiastic he is, the people do not support you how you do things' (I4)*

*'Its overall social innovation, it actually needs to have a bold idea and a superhuman idea....so that it can be boldly innovative, and now it does not dare to create' (I2)*

*'...infrastructure of village is to be promoted, it has always been a problem to introduce talents, and there is no way, at the level of our villages, there are basically no talents, and talents cannot be retained' (I5)*

This interaction between inherent drivers and environmental constraints are mutually constrained and mutually shaped, collectively determines the trajectory of development within the ecosystem of social innovation. For example, if the government wield significant leadership within a particular social context, this may inherently limit the freedom of innovation and indirectly affect its enthusiasm. If social innovation is not institutionalized within organization or national innovation frameworks, it can also undermine its coherence and efficiency. Furthermore, if civil society is unable to actively participate in addressing social issues and governance processes that are closely related to its own interests, or if it does not support certain initiatives in the field of social innovation, then such efforts are likely to struggle to achieve sustainability or effectiveness. Therefore, social contexts factors also influence each other in the evolution of the entire social innovation ecosystem, and through these dynamic interactions, they continuously shape and influence the iterative development of the ecosystem as a whole. Figure 5.4 shows the overall dynamic mechanism of innovation genes and civil society as innovation factors and the entire social innovation ecosystem, which shows the overall inter helix dynamic between the Triple Helix, Quadruple Helix and Quintuple Helix in the social innovation

ecosystem.

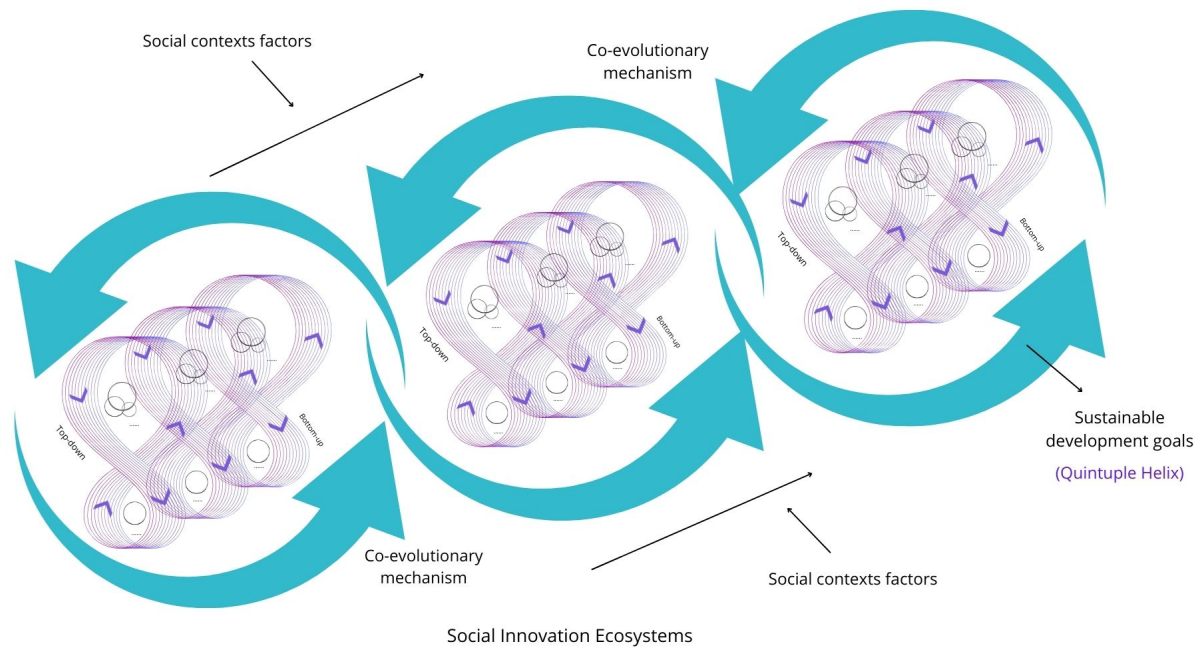


Figure 5.4 The Helical Dynamic Mechanism of Social Innovation Ecosystems

Source: the author

## 5.4 Conclusion

In the operation logic of the social innovation ecosystem, the functional attributes and the domain of power of the innovation genes show significant hierarchical characteristics, which are deeply shaped by the specific cultural institutional environment and nested in the dynamic mechanism of innovation. The sustainability of social innovation is highly dependent on the deep inter-embedding and informal interaction mechanism between the functional roles of various subjects, and the activation of this mechanism is mainly due to the value resonance and logical coupling of multi-organizational leadership and social mission. Innovation genes and civil society have built a collaborative closed loop through top-down and bottom-up two-way empowerment and jointly promoted the paradigm transformation of social governance to co-creation, co-governance and symbiosis. While, the mechanism of informal interaction based on the sense of local identity of specific leaders, would easily lead social innovation falls into an unstable mode which is accidental coupling of multi-organizational visions rather than the inevitable actions based on institutional certainty. In addition, it has to take into consideration that the effective development of rural revitalization relies not only on internal dynamic coordination but also on the interaction between internal complex constraints and potential external context factors.

## 6 DISCUSSIONS

### 6.1 Introduction

The social innovation ecosystem is defined as a complex system of interactions between various stakeholders, where co-creation practices in a social innovation ecosystem refer to agreements between multiple stakeholders to achieve a common goal (Maldonado-Mariscal and Alijew, 2023). In the previous academic research on social innovation, it was more understood from the perspective of a single organization, so the dynamic interaction mechanism between multiple participants in social innovation is relatively ambiguous in theoretical and empirical research. Scholars have proposed the need to understand and develop social innovation from the perspective of ecosystems, but due to the lack of exploration of its systematic approach, it often use an interdisciplinary perspective to understand social innovation ecosystems, that is, by draw on the helical models of innovation from technological realm to understand the social innovation ecosystem (Bellandi, Donati and Cataneo, 2021). Some studies clearly suggest the need to understand and develop social innovation ecosystems from the helical models of innovation, but the research is more at the level of conceptual inspiration (Terstriep, Rehfeld and Kleverbeck, 2022; Domanski, Kaletka and Krüger, 2023), few studies have dialectically explored the applicability and synergy of the helical models of innovation and the social innovation ecosystem at the theoretical and empirical levels, so as to further clarify the innovation helix mechanism of the social innovation ecosystem that conforms to the attributes of the social innovation paradigm. Other empirical studies on social innovation ecosystems are rarely linked to the helical model mechanism, but they show its conceptual characteristics.

Scholars consider social innovation ecosystems to be complex systems of interaction between various stakeholders through collaboration to achieve a common goal of solving complex social challenges and needs, but research often focuses on a single organization and its social innovation initiatives with a certain organization, such as the government and business (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025), the government and university (Parjanen and Pässilä, 2025), or the perspective of a university or enterprise (Carayannis et al., 2021; Berg-Postweiler and Leicht-Scholten, 2024), or explore the facilitators or barriers to social innovation ecosystems (Burton, Pikkemaat and Dickinger, 2025), or the management of a mixed structure of interests that a single organization needs to consider in the process of social innovation (Garin et al., 2025), and the application mechanism of technological innovation in social innovation (Albuquerque and Siqueira, 2025), or regard social innovation as an auxiliary effect of technological innovation. There are few studies that comprehensively explore the dynamic mechanisms of multiple actors in the social innovation ecosystem, namely the government, university, enterprise and civil society. Therefore, the boundaries of social innovation ecosystems are still blurred, and a comprehensive framework for social innovation ecosystems has not been effectively developed.

This is partly due to the fact that the research and development of social innovation ecosystems is still in its infancy, and the term and paradigm of social innovation are relatively new and have not yet been fully effectively institutionalized in organizational and national innovation systems (Pellizzoni and Nodari, 2024). For a long time, the field of technological innovation has always focused on developing its systems approach, but because social innovation is fundamentally different from technological innovation in its innovative attributes, the lack of rigor in the application of interdisciplinary system mechanisms to social innovation ecosystems without dialectical application often leads to the inability to integrate insights from the two disciplines. At present, there is still limited research on how to effectively integrate these two innovative paradigms and apply them in practice. This study retains the basic innovation attributes of social innovation in theory, differentiates the conceptual framework of the social innovation ecosystem that draws on the system mechanism of the helical models of innovation, and further adjusts the conceptual framework in the empirical research, redefines the system model of the helical mechanism of social innovation, and develops a new social innovation ecosystem framework.

This chapter builds upon the empirical findings presented earlier and examines them within the framework of the social innovation ecosystem. First, the key research findings are discussed in relation to the aspects of the social innovation ecosystem, in order to assess the compatibility between concepts and practice. Second, by critically examining the helical models of innovation mechanism in the field of technological innovation, it determines the limits of its application in social innovation contexts and propose necessary conceptual adjustments and additional mechanisms. Taking into account the practical characteristics of rural development in this study, a critical theoretical analysis is conducted regarding the applicable scope and practical effectiveness of the helical models of innovation within the social innovation ecosystem. The aim is to provide insights that combine theoretical depth with practical guidance, thereby helping to understand how social innovation can contribute to rural revitalization.

## 6.2 Discussion on the Findings with Social Innovation Ecosystems

### 6.2.1 The Discussion of Finding 1

#### *6.2.1.1 Innovation genes*

Scholars mentioned that the government need to build an effective enabling ecosystem to promote systematic cooperation, including stakeholder willingness to cooperate, open communication, trust, common goals, the right incentives and resilience, as well as the improvement of tools and methods such as living laboratories and co-production platforms, as well as other initiatives from the public sector (Perikangas, Kostilainen and Kainulainen, 2024). The research found that, the government shows a certain degree of administrative inclusivity and learning ability, like actively absorb innovative ideas and professional knowledge that are beneficial to development from other organizations, which loosening the relatively rigid and conservative governance cognition and bureaucratic habits. It In

addition, the introduction of digital governance tools and collaborative governance lead the governance in an efficient, flexible and sustainable way (Sirolli et al., 2025). Nevertheless, the Chinese government still plays a dominate role in promoting rural revitalization, the effective enabling ecosystem haven't fully established, and the administrative logic still tend to focusing on efficiency and marketization (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025), which to a certain extent hinders the inevitability, efficiency and stability of social innovation practise. If other organizations have good innovative ideas but do not conform to the main planning orientation of the policy, they will not receive legitimacy and relevant policy support, and they will not be able to implement them.

*'The most important thing is the government, especially in China, which is a powerful regime, and if the Chinese government does not agree with you, no matter how big the good things are, they will not be able to implement it' (I1)*

The research found that in the university as one of the participants reflect the role of design, co-creation, implementation and promotion as knowledge think tanks in social innovation (Maldonado-Mariscal and Papageorgiou, 2024). In addition, in the practice of social innovation, the university embody the function of social value empowerment think tanks beyond academic ivory towers. In the process of participating in rural revitalization, universities not only fulfil the traditional function of knowledge production, but also embody their third mission to create social value and social impact (Yordanova et al., 2025) . This transcendence of traditional functions is manifested in the fact that the knowledge production model is not limited to cooperation with paid projects with economic value, or only to complete tasks based on the needs of the project, but crosses functional boundaries, deeply internalizes the sense of social responsibility into the organizational identity (Padua, 2025) , and continues to intervene and promote the development of social innovation in an informal collaborative mode.

*'This matter did give him a lot of advice...I went to him at least dozens of times... to help him build a better modern management method and brand awareness, and at the same time allow him to establish a so-called business model' (I1)*

To a certain extent, this strengthens the link between the university's discipline construction and the social innovation ecosystem, lays a practical foundation for the in-depth reform of the discipline system in the future, and promotes the initial organic unity of academic value and social contribution. Nevertheless, the social innovation ecosystem also emphasises the role of universities in managing the social innovation process (Parjanen and Pässilä, 2025), however, in China's social innovation ecosystem, the government as the main leading force, the university has not fully evolved the function of in managing social innovation projects. This is consistent with the fact that universities have not yet established a comprehensive approach to promoting social innovation (Berg-Postweiler and Leicht-Scholten, 2024) . Therefore, at this stage, the university have not yet achieved in-depth organizational evolution, that is, implementing and deepening the theoretical and practical logic of the social

innovation paradigm in the discipline and college mechanism, and reflecting more organizational power functions to promote the management and policy pattern of social innovation projects.

The Enterprise embody the characteristics of social entrepreneurship and corporate social innovation beyond pure economic profit-seeking (A. Sottini, Zupic and Giudici, 2025). In the field of rural revitalization, enterprises are facing external challenges such as long input-output cycles and complex social environments, but their strong sense of social responsibility and deep concern for hometown problems have become their long-term strategic initiative. Corporate identity is no longer an external exploiter and resource user in the countryside, but is reflected in deep embedding in rural ecology, co-governance and risk sharing with the government and civil society, and achieving shared value creation (Camilleri et al., 2023). Nevertheless, this also presents certain problems, the personal experiences of social entrepreneurs do bridge welfare and inclusion gaps in formal structures (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025), but the study finds that it is not enough to be driven by personal vision and experience, especially when the system and mechanism are not perfect, for-profit enterprises need to pay out of their own pockets to solve problems to adhere to the realization of social vision. Therefore, enterprises have not achieved complete organizational evolution in carrying out social innovation at the current stage, such as a clear social innovation business model and strategy. Therefore, in the social innovation ecosystem, there is a balance between the dual management structure of economic benefits and social impact for stakeholders is necessary to considerate in the next stage (Garin et al., 2025).

*‘The economic benefits are actually almost non-existent, and you can pay employees’ salaries, but we just insist on doing this, which is a kind of love for this group and a recognition of this matter’ (I9)*

#### 6.2.1.2 Innovation dynamics

In the relevant research on social innovation ecosystems, scholars pay more attention to the cooperation mechanism between two organizations to promote and initiate social innovation initiatives and projects, such as the government and university or the government and enterprise, and it is embodied in a conscious cooperation model, which will include collective reflection and workshops to summarize social innovation lessons, strengthen the common vision and give birth to local networks to promote the development of local social innovation (Parjanen and Pässilä, 2025). Government policies and the political environment are important factors affecting the success of social innovation at the macro level (Burton, Pikkemaat and Dickinger, 2025), when policies are imperfect, social entrepreneurs can drive social innovation based on their own experience rather than relying solely on institutional support (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025), especially in the context of limited public policy support, the core institution acts as a bridge connecting heterogeneous participants by building trust (Pellizzoni and Nodari, 2024).

*'That is to say, the government is a system, it has its own rhythm when it operates, and he does not mean that a certain leader is useless and there is no way, because he is only a part, and we are all a part....so sometimes the embarrassment is that there will be a misalignment in the rhythm' (I7)*

The research shows organizations cannot freely carry out their organizational functions, the government is still the leading force in initiating social innovation, the other two organizations do not have complete organizational freedom and legitimacy to carry out social innovation projects. In addition, in the current stage of development, the dynamic collaboration process of the organization does not reflect the conscious and orderly reflexive behaviour, that is, through collective learning or reflection to deepen the effectiveness of cooperation and consensus to strengthen network building. It more based on informal dynamic collaboration between organizations, and the effectiveness of this informal synergy depends more on contingency, that is, the cognition, vision and mission resonance between organizational leaders, rather than through conscious and consensual reflexive joint learning and experience summarization.

Besides, in the social innovation ecosystem, the mechanisms of interaction between the university and the other two organizations are still understudied, but the university are seen as playing an important role as an intermediary function, with universities playing a key intermediary role in managing the social innovation process, connecting participants, analysing data, and sharing information (Parjanen and Pässilä, 2025), the terms social innovation and entrepreneurship are rarely mentioned explicitly in colleges and universities (Berg-Postweiler and Leicht-Scholten, 2024), although it is regarded as one of the important actors that triggers the design, creation, implementation and promotion of social innovation (Maldonado-Mariscal and Papageorgiou, 2024). The research found that, the university are the hub of knowledge flow, and knowledge is supplied and transmitted in formal and informal ways. In the stage where the relevant social innovation theories and practices have not yet been clearly implemented at the discipline or college level, the flow of knowledge is manifested as the continuous empowerment of social innovation in an informal way.

*'I7 went to us several times, and I also went to them several times, it should be said that it was mainly the two of us, of course, he also had a director above, there was no one above me, I rarely asked the leader for instructions at that time...' (II)*

In informal knowledge empowerment, university leaders, out of a strong sense of social mission and to corporate and government personnel who share the same vision, spontaneously and continuously provide them with strategic consulting services such as innovation and creativity ideas. Through informal knowledge flows with the government and enterprise, professional knowledge and creative ideas are transformed into executable administrative plans, and by providing strategic advice for enterprise development, the financial resources and strategic development thinking of enterprises are broadened. Many effective ideas for promoting rural revitalization and development are generated in

daily conversations, which reflects the importance of the establishment of trusting relationships and a common vision for action for the effective and smooth flow of knowledge (Ahmadi, 2024).

In the study of social innovation ecosystems, scholars mention that loose coupling is the key to establishing collaborative mechanisms, as it provides cost-effective collaboration and knowledge generation space while ensuring the independence of participating institutions. The advantage of this model is that it allows institutions to adapt locally without affecting the overall system and can respond quickly to local needs (Landa, 2024). This indirectly reflects the necessity of co-evolution between organizations and social innovation ecosystems, but the contradiction is that the realization of this mechanism requires further institutionalization of the social innovation paradigm at the theoretical and practical levels at the organizational and national levels, otherwise the organization cannot achieve the effective independence of the organization in social innovation triggered by the legitimacy and rationality mechanism, and cannot efficiently stimulate the evolution and full play of organizational functions through common reflexivity to quickly adapt to the relevant social needs and challenges in the development of social innovation through collaborative interaction. There is currently insufficient attention in academia to how these social innovation ecosystems can be mobilized in emergencies and their role in reshaping the policy landscape (Bucio-Mendoza and Solis-Navarrete, 2025). Therefore, the evolutionary path of organizations in the social innovation ecosystem is relatively fragmented, unstable, and has the characteristics of sporadic and non-systematic. This further affects the improvement of the government's cumbersome bureaucratic procedures, cross-stakeholder collaborators and the formal and informal collaborations they lead to have failed to achieve a clear consensus and balance at the level of controlling interests and social benefits (Garin, 2025), universities have not yet incorporated social innovation terms into their discipline development and social impact systems in their discipline construction mechanisms (Berg-Postweiler and Leicht-Scholten, 2024). Therefore, the dynamic collaboration and further in-depth evolution of multiple organizations have not been based on the consensus on the social innovation paradigm and the conscious optimization of the mechanism through joint reflection and discussion mechanism in promoting the development of social innovation (Parjanen and Pässilä, 2025).

## 6.2.2 The Discussion of Finding 2

### 6.2.2.1 *Civil society*

Scholars mentioned that in the social innovation ecosystem, civil society organizations play an important role in the ecosystem, and they are not only beneficiaries, but also providers and co-producers of knowledge (Parjanen and Pässilä, 2025), and placing civil society and culture at the centre of innovation and encouraging the development of civil society relevant innovations (Godinho Ferreira

Pereira and de Lourdes Bittencourt, 2024), in particular, the real empowered to led or initiate social innovation (Perikangas, Kostilainen and Kainulainen, 2024).

*‘That's right, we set up a women's common prosperity workshop, we were originally there...which is more women-oriented, and then gives you approval, so that you can show it better, in the city and the province, and then there will be a certain economic subsidy’ (I4)*

Despite this, the research found that the civile society are often in an auxiliary position in macro planning and resource allocation, and do not have full management decision-making power to initiate bottom-up social innovation. They gain participation space through relevant policies or organizational empowerment (e.g., accepting rent reductions, participating in reciprocal compacts), and achieve organizational development and improve well-being in the process of addressing sustainable development goals. Although they do not have the highest decision-making authority, without the support of civil society, social innovation actions are difficult to carry out effectively and sustainably (Golestaneh and Sadeghi Naeini, 2024). This participation and empowerment of civil society based on identity attributes provides the most solid public opinion foundation and endogenous resilience for rural revitalization and regional development (Kirby, Stasiak and von Schneidemesser, 2025).

#### *6.2.2.2 Mutual empowerment with innovation genes*

In the social innovation ecosystem, scholars highlight the importance of bottom-up social innovation initiatives in addressing complex societal challenges and how resident-driven knowledge creation contributes to enhancing community spirit and cooperation (Parjanen and Pässilä, 2025). Civil society participation supports social innovation, co-shapes the legitimacy and rationalization of innovation, and promotes community adoption and learning of social innovation approaches and projects (Godinho Ferreira Pereira and de Lourdes Bittencourt, 2024). In particular, civil society is viewed as individual or collective actors in designing, co-creating, implementing and promoting social innovations (Maldonado-Mariscal and Papageorgiou, 2024). This highlights the importance of civil society initiation, participation, rationalization and legitimization of its actions in social innovation initiatives, and the supply of wisdom in specific participatory mechanisms to trigger co-creation and collective action. However, the research finds that civil society is currently more in the participatory stage, and its bottom-up participation mechanism is more reflected in the empowerment of social capital and other resources of its own organization, or auxiliary participation in specific top-down policy initiatives, the solution and satisfaction of its own needs based on reciprocal mechanisms, rather than having more legitimacy to initiate bottom-up initiatives or trigger bottom-up social innovation through collective action. This reflects the dominant position of government policies in social innovation in the study, therefore, in different social contexts, civil society initiates bottom-up social innovation initiatives and collective actions, as well as the degree of actual decision-making power and discourse power in social innovation may exist heterogeneity. The degree of participation and empowerment of civil society in

social innovation does not currently have an absolute degree of freedom, but only a relative degree of freedom, and this relativity depends on the differences of different countries and social cultures or institutions.

## 6.2.3 The Discussion of Finding 3

### 6.2.3.1 Co-evaluation with social innovation ecosystem

In the social innovation ecosystem, the social problems related to sustainable development are symbiotic with the entire ecosystem, because the social problems themselves exist in the actual life of human beings, instead of viewing the sustainable development of the ecological environment as a better guarantee or a driving force for balancing the effectiveness of technological innovation in achieving economic objectives in the technological innovation ecosystem. In social innovation, some scholars refer to social innovation as both a method and a result, emphasizing it as a single element or micro perspective, so social innovation is measured as a strategy or instrument mechanism (Jareh, 2025).

*'In the follow-up, we use the front and back of the house to clean up the dirty mess, some idle land can be used as these ecological parks, these ecological parks...and our villagers were gardeners' (I2)*

The research found that in the social innovation ecosystem, its attributes as both methods and outcomes should be understood from a multi-element and macro perspective and re-anchored as a force of action and reaction. Therefore, within the ecosystem of social innovation, it is necessary to understand its nature both as a method and as a result from a multi-element perspective, by integrating microscopic, mesoscopic, and macroscopic viewpoints (Blanchet, 2024; Burton, Pikkemaat and Dickinger, 2025), re-anchoring it into a complex dynamic mechanism of inter-helix interaction, co-evolving with the social innovation ecosystem. What triggers its action mechanisms is the innovation factor under the social structure, that is, the dynamic interaction and co-evolution of multiple actors (innovation genes and civil society) and their co-evolution with the ecosystem.

Scholars have mentioned that government policies and political environment are macro-level factors affecting social innovation, but they are still incomplete at the system level currently (Burton, Pikkemaat and Dickinger, 2025), the social innovation ecosystem is fragmented, and national innovation strategies focus more on market-oriented economic growth and technological innovation (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025). As a result, this further hinders the government's efforts to establish an effective ecosystem that enables multi-actors to develop their capabilities (Perikangas, Kostilainen and Kainulainen, 2024). In this research, although various entities have demonstrated certain levels of organizational adaptation and micro-evolution in participating in social innovation efforts, profound and substantial organizational changes have not yet taken place.

*'I think this is good for our local township enterprises...his spark can be burned, seeing good things, ...I believe he will change the art of a group of people or township enterprises, and their ability to innovate may also change' (I10)*

The realization of this transformation depends not only on the formal establishment of the macro-national innovation system in terms of institutional provision and legitimacy empowerment, but also on the deep integration of the meso-level organizations into the social innovation paradigm at the levels of organizational structure, operational logic, and institutionalization. However, at present, the relevant discipline mechanisms and methods on social innovation have not been effectively established in the university (Berg-Postweiler and Leicht-Scholten, 2024). Scholars mentioned the systematic response of universities to the global social challenges of the 21<sup>st</sup> century (Cai and Ahmad, 2023), but this is limited to the personal leadership and mission-driven nature of specific university leaders instead of the establishment of a well-functioning system and mechanism. Besides, enterprises do not have a high degree of innovation autonomy, and many actions or innovative ideas need to obtain policy permission and support from incumbent leaders. Otherwise, it will not be licensed and supported in terms of legality, infrastructure, and policy financial incentives, and it will be difficult for enterprises to take direct action. And they face the problems of dual management structure that balances economic benefits and social impact (Garin, 2025), this is also due to the failure to effectively institutionalize social innovation into business strategies.

#### *6.2.3.2 Contextual factors*

Among the social context elements of social innovation, policy and institutional factors are not only the enablers of innovation, but also often become the source of resistance to innovation. In China, the main initiative of the government in rural revitalization practice comes from the top-level orientation of national policies, which provides action guidelines for the social innovation practice of the grassroots government, the legitimacy of policy implementation, and the initial power to allocate resources (Xin, 2026). However, there is a natural tension between the rigidity of China's institutional environment and the complexity and flexibility of rural social innovation (Wang and Rodriguez-Pose, 2025).

*'There is also a change of government, each leader comes up with his own policies, and then his change of strength is to make you uncontrollable' (I8)*

*'...generally, it only stays for two or three years before it changes, and his sustainability does not exist, so after the change, he will not do this exhibition' (I9)*

The cyclical rupture of policy is the biggest environmental challenge at present. The misconnection between grassroots government management rotation and policy planning has caused many innovative projects with long-term social benefits to stagnate due to the lack of institutional guarantees across tenures. Besides, the cumbersome procedures and the lag of administrative logic often cannot adapt to

the iterative needs of social innovation. When innovative behaviour tries to break through the original policy boundaries, it is often limited by the old planning proposal and regulatory framework. Moreover, due to the strong dominance of the Chinese government, if the relevant actions and projects do not conform to the government's macro planning orientation, it is difficult for enterprises to obtain the legality of implementation and relevant policy support for good localized operation ideas, which requires enterprises to constantly adjust their ideas to meet the policy priorities defined by the state (Ouyang *et al.*, 2026), but to a certain extent, it undermines the independent innovation and enthusiasm of enterprises.

In addition, social innovation cannot operate in a vacuum, no matter how strong the policy mechanism is, it must be nested in a specific social and cultural network. When the goals of social innovation are in line with the livelihood and living needs and problems of the local people, the cultural environment changes from resistance to thrust. The sense of mission of government officials, the entrepreneurs' return home sentiment, and the will of university scholars to cultivate locally constitute an emotional bond that transcends economic contracts. This makes participants willing to take on responsibilities beyond their organizational functions and persist in investing in the early stages when economic benefits are not apparent, thus resolving the sustainable development of social innovation in the period of resource scarcity (Málovics *et al.*, 2025).

*'The government is actually still working hard in this regard, although they may not have figured out how to do it now, how to do this thing, he has not yet sorted out this thing, but this place is still concerned...' (I8)*

It indicates the need to resonate with the broader regime or institutional to be sustainable (Bucio-Mendoza and Solis-Navarrete, 2025). At present, social innovation is often in a state of informal synergy and fragmentation because social innovation has not yet established a complete systematic mechanism in the business model of organizations and national innovation systems (Solar and Vanessa, 2025). This dual absence of theoretical cognition and institutional anchoring leads to the lack of clear action guidelines for each participant, making collaborative governance highly dependent on the coupling of specific individuals' sense of social mission or episodic vision, rather than the inevitable choice based on institutional rigidity.

At the level of resources and environment, the vulnerability of a company's capital chain (Burton, Pikkemaat and Dickinger, 2025), effective management of the structural balance of social impact and economic benefits in the business model (Garin, 2025), and the extreme shortage of rural operation talents constitute multiple bottlenecks (Maldonado-Mariscal and Papageorgiou, 2024). Rural revitalization urgently needs operational talents with cross-border integration capabilities, but the existing talent pool is mostly concentrated in traditional management or a single technical field, and

there is a lack of compound intermediary talents who can coordinate academic, administrative, and market multiple organizations (Wei and Wan, 2024). In addition, sudden changes in the external environment, such as uncertain events like the epidemic, have posed a certain test to the resilience of rural development (Liu *et al.*, 2025). The impact of the general environment not only blocks the material flow between the countryside and the external market but also exposes the fragility of the social innovation ecosystem by affecting the dynamic collaboration chain of the organization.

*‘...infrastructure of village is to be promoted, it has always been a problem to introduce talents, and there is no way, at the level of our villages, there are basically no talents, and talents cannot be retained’ (15)*

## 6.3 Discussion on the Compatibility of Helical Models of Innovation in Social Innovation Ecosystems

### 6.3.1 Reflection on the Triple Helix of Social Innovation Ecosystems

In the Triple Helix model, the innovation gene is mainly composed of government, universities and enterprise, its functions are mainly highlighted in neo-evolutionary theory as the government is responsible for standardized control, universities are knowledge production, and enterprises are wealth creation (Leydesdorff, 2012a); and the linkage mechanism of neo-institutional theory further clarify its identity attributes with knowledge, consensus and innovation space (Etzkowitz, 2008). These two viewpoints are shaped the innovation dynamics among universities-industries-governments, and the core dynamic mechanism of the Triple Helix model of technological innovation that is ‘taking the role of the other’, such as the concept of entrepreneurial universities and academic enterprises, which are mostly based on formal inter helix interactions of multi-organizational functions triggered by clear market and R&D purposes (Hailu, 2024). The weight of these three organizations at the level of functional play is relatively balanced, and they have a certain degree of organizational freedom and flexibility. Organizations can implement innovative actions based on market operation, have more initiative and decision-making power, and can give full play to the functional characteristics of each organization (Zadegan, Ghazinoory and Nasri, 2025).

This is due to the institutionalization mechanism of technological innovation with a relatively complete innovation system. While the research on social innovation ecosystems is relatively new (Pellizzoni and Nodari, 2024), it is still in the early stages of development, and its system boundaries are relatively blurred (Albuquerque and Siqueira, 2025), the institutionalization of innovation paradigms lagging behind practice (Matus-Ruiz, Saka-Helmhout and Carillo, 2025). Since social innovation is still in the exploratory stage at the system and institutional levels, compared to technological innovation, it is found that the functional attributes and the domain of power of innovation genes in the social innovation ecosystem show different hierarchical or degree characteristics according to different social contexts,

and further influence in the specific dynamic mechanism. It indicates the formal Triple Helix of social innovation shows specific contextual differences, the functional performance and dynamic interaction of innovation genes reveal characteristics of instability and imbalance, and the absolute action certainty at the institutional level. Therefore, the interaction mechanism of taking the role of the others is more reflected in an informal and shows a spontaneous behaviour. The effective social innovation actions and ideas often arise from informal interactions and synergies rather than formal cooperation out of the institutional confirmation of the innovation system paradigm. The effectiveness of informal collaboration is based on the multi-functional integration of multiple identities in the organization. However, the underlying logic and core elements that trigger the embedding of multiple functions are the coupling or resonance between the organizational leaderships, cognition, initiative and sense of mission.

The deep-seated reason for the existence of this informal synergy mechanism is that the theoretical paradigm of social innovation and the concept of social innovation ecosystem are relatively new and in the early stages of development, it is not fully institutionalized as the existence of innovation strategies or innovation systems at the organizational and national levels (Adomaitytė-Subačienė, Jančiauskaitė and Høj, 2026). Technological innovation often attracts much attention as the main innovation mechanism in the national innovation system, while the current system of social innovation lags behind innovation practice. Although the inter-organizational action model has embodied the characteristics of the social innovation ecosystem, due to the lack of theoretical and institutional guidance, the social innovation action between organizations is more limited to fragmented practical experiments (Maldonado-Mariscal and Alijew, 2023; Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025), rather than having a unified consensus and action guide to lead practice. This results in the consensus building relying more on the accidental coupling between organizations, and the multi-function play more on the personal quality of the organizational leader, rather than the institutional norms of systematic theories under the innovation paradigm and the cognitive internalization of deep consensus. This not only affects the enthusiasm of organizations for social innovation but hinders the further clear adjustment and reshaping of the management structure adapted to the development of social innovation, and causes the occurrence of social innovation to exist in the accidental mechanism rather than the inevitability of institutional and theoretical improvement, which further affects the efficiency of social innovation and the diffusion and sustainability of valuable social innovation practises.

### 6.3.2 Reflection on the Quadruple Helix of Social Innovation Ecosystems

In the helical models of innovation, the Triple Helix primarily sees social structures as the discourses background, and the Quadruple and Quintuple Helix models introduce the concept of knowledge democracy, emphasizing the role of media-based and culturally influenced public and civil society in

shaping innovation systems through discourse and public dialogue (Cai, 2022; Carayannis, Campbell and Grigoroudis, 2022). This aspect emphasises and recognizes the subjectivity and importance of civil society in the generation of innovation, that is, the necessity of interaction between innovation genes in social structure and civil society as a multi-participant element in social structure. On the other hand, it does not truly reflect the actual participants and interaction mechanism under social structure, because civil society embodies more of a public opinion intervention than real participation. In the social innovation ecosystem, even there is a lack of policies and systems specifically designed to support social innovation in the national framework, such initiatives are nevertheless flourishing among civil society organizations (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025) and trigger innovation in social relations (Moulaert, Simmons and Parra, 2024). This interaction mechanism produces practical interactivity, and through action participation based on reciprocal mechanisms, co-governance, capacity building, and resource sharing are embodied in mutual empowerment and collaboration with innovation genes (Terstriep, Rehfeld and Kleverbeck, 2022; Domanski, Kaletka and Krüger, 2023).

Therefore, compared to the Neo-Triple Helix model of innovation ecosystem in technological innovation (Cai, 2022), which distinguish innovation genes from social society in structure, or where civil society is merely regarded as a background factor or an influence on social discourse within innovation, in social innovation ecosystems, they should be considered as a unified entity in order to effectively contribute to social innovation and manifested its core innovation attributes. Civil society and innovation genes are both innovation factors in the social structure that promote the development of social innovation, driving the evolution of the entire ecosystem through dynamic interaction and co-evolution, only their participation mechanisms, functional attributes and organizational power levels are different. Scholars have emphasised that civil society organizations and community activists play a central role in promoting the development of innovative social ecosystems (Bucio-Mendoza and Solis-Navarrete, 2025), the legitimacy and rationalization of civil society in social innovation participation, empowering citizens and users, and bottom-up social innovation initiatives designed, co-created, implemented and disseminated by civil society rather than relying solely on top-down and expert-led social innovation initiatives are emphasised (Godinho Ferreira Pereira and de Lourdes Bittencourt, 2024; Maldonado-Mariscal and Papageorgiou, 2024; Perikangas, Kostilainen and Kainulainen, 2024).

### 6.3.3 Reflection on the Quintuple Helix of Social Innovation Ecosystems

In the helical models of innovation, sustainable development as the driving force of technological innovation aims to guide technological innovation to pay attention to the ecological environment while pursuing economic value, and to use the ecological environment as the driving force of technological innovation, as the masses in the social structure, civil society advocates expressing opinions through the media to exert influence on the sustainability of the human ecological environment caused by

technological innovation (Carayannis, Campbell and Grigoroudis, 2022; Zakaria *et al.*, 2025b). In the social innovation ecosystem, innovation is not just a technological or market-driven solution but a manifestation of social coordination, collective action, and shared value. The need for social innovation as a regional and sustainable development core component and linked to the achievement of the Sustainable Development Goals (SDGs) (Bucio-Mendoza and Solis-Navarrete, 2025). It indicates social issues or challenges closely related to the SDGs and the innovation factors in the social structure, i.e., innovation genes and civil society, are integrated, they coexist and evolve together. On the other hand, it to a certain extent breaks the logic of innovation economy first or weight priority but incorporates every innovation activity and social problem into the normalization, which indirectly reflect the concept of Industry 5.0, the human-cantered innovation (Li and Duan, 2025).

To a certain extent, this stems from the difference between the innovation essence of technological innovation ecosystem and social innovation ecosystem. Technological innovation focuses on the impact of innovation on the sustainable development of the ecological environment while generating economic benefits. Social innovation focuses on the ecological environment and more socially relevant issues and challenges, which are more closely related to the subjects of civil society, because they directly affect their living environment, existence values and spiritual well-being. The innovation factors under social structure are intertwined, they are iterative consistent with the entire social innovation ecosystem and promotes the incremental evolution of the entire social innovation ecosystem in solving the relevant issues of the SDGs. Alignment of ecosystem participants' interests, identifying the evolving roles of each actor, aligning roles, responsibilities, and actions to ensure effectiveness is critical to the success of the social innovation ecosystem (Maldonado-Mariscal and Papageorgiou, 2024). Therefore, compared to the disruptive innovation in social structure and societal transformation that direct technological innovation can provoke, social innovation tends to involve an incremental and interactive process of evolutionary change within the social structure, influenced by various innovation factors. At the same time, social context factors such as institutional frameworks, social climate or culture, and resource endowments play a crucial role in shaping the efficiency of this evolutionary process, its operational effectiveness, and the sustainability of the value it generates (Audretsch, Eichler and Schwarz, 2022; Parjanen and Pässilä, 2025).

## 6.4 Insight into the Social Innovation Ecosystem in Rural Development

This study finds that the Triple Helix model in the dynamic operation of the social innovation ecosystem needs to be adapted to the heterogeneity of state-led institutional contexts. This not only dialectically reflects the contextualization boundaries of classical helix theory but also provides theoretical and empirical insights for a deeper understanding of rural development logic under institutional embeddedness. Rural practitioners should fully understand the power structures and institutional logic

in each context and determine the relative positions of different organizations in resource allocation and decision-making processes to maximize the effectiveness of each actor's functions. Most importantly, the social innovation ecosystem constructed in this study consider all possible innovation factors within social structure, incorporating all potential organizations that empower rural development. Which to some extent bridge the long-standing binary separation between exogenous or neo-endogenous theory, reduced the challenges faced by rural development that are limited to 'external dominance' or 'internal empowerment' of power checks and balances (Bock, 2016; Bosworth *et al.*, 2020; Zang *et al.*, 2023), and instead adopts more inclusive, dynamically adaptable, and holistic systematic thinking, coordinating all potential actors under the consideration of sensitivity of rural contexts.

Besides, it gives the insight of strengthen informal interaction mechanisms across organizations to compensate for the temporary absence of institutional coordination functions (Landa, 2024; Bucio-Mendoza and Solis-Navarrete, 2025). In a phase where the social innovation paradigm is not yet fully established in institutional and governments haven't built holistic system mechanism; rural practitioners can pay close attention to the leveraging effect of informal collaborative networks among various actors. Through flexible informal communication, emotional bonds, and flexible cooperation, it is possible to effectively break down bureaucratic barriers and establish alternative and complementary collaborative mechanisms that can address the practical challenges faced by rural areas. It requires the actors proactively taking initiative for the emergence of collaborative innovation to transcend organizational boundaries, rather than waiting passively for institutional arrangements to be made. Practitioners should consciously identify and connect key actors who possess a sense of local identity and a sense of social responsibility. By fostering value alignment and shared understanding, a foundation of trust can be built, and initiatively recognize and empower key leaders who combine inspiration and collaborative thinking to enhance the efficiency of resource integration and the effectiveness of cross-border innovation.

What's more, this model emphasises creating a two-way empowering collaborative mechanism that involves civil society in the co-governance system. It given insight to the academic reflection and practical tendency of Western rural development projects that overly focus on the 'bottom-up' approach and the Chinese context's emphasis on 'top-down' logic (Hazenbergh and Paterson-Young, 2024; Kirby, Stasiak and von Schneidemesser, 2025; Xin, 2026), instead focusing on the holistic perspective of ecosystem evolution. In the process of designing and implementing rural development strategies, systematically integrate the core institutions and civil society, enhance empowerment mechanisms by coordinating two-way dynamic flows and collaborative synergy, maximize the complementary advantages and resource synergy effects of diverse and heterogeneous organizations, and promote the transformation of collaborative governance models based on co-creation, co-governance, and coexistence, thereby broadening and enhancing the comprehensive effectiveness of rural social innovation. Practitioners in rural practise can transform the mindset inertia and path dependence and

enhance the flexibility, go beyond a single perspective based on binary oppositions and based on local contexts to promote a dynamic balance of mutual empowerment as much as possible.

Finally, this research focuses on the connectivity and integrity of social innovation ecosystems. To some extent it expanded for the emphasis on technical rationality and economic benefits in rural innovation systems (Yin, Chen and Li, 2019, 2022b; Lu *et al.*, 2025). It emphasises innovation system in rural should incorporate the core priorities of ‘social’ and consider it as rural social innovation system, thereby promoting a rebalancing of diverse value propositions within rural areas and complex social systems. The concept of a social innovation ecosystem is based on a network of different actors seeking social change and solving social challenges for social purposes, with the government, social entrepreneur, university and civil society as key pillars driving innovation (Godinho Ferreira Pereira and de Lourdes Bittencourt, 2024). It indicates that the sustainable development is no longer a driving force, but a dynamic interaction and mutual empowerment of innovation factors in the social structure, continuously optimizing the iterative and evolution of the entire social innovation ecosystem. In this case, social innovation is promoted by innovation factors, and the change of social relations means new ways to solve social problems, subtly trigger the protentional transformation of social structure, and finally promote the evolution of the entire ecosystem. In turn, the transformation of the system affects the organizational cognition, structure or action mode of the innovation gene, and affect the life and well-being of whole society.

## 6.5 Conclusion

This chapter systematically advances the dialogue between empirical research findings and the conceptual framework of the social innovation ecosystem. Based on this, it critically examines the collaborative mechanisms, contextual applicability, and theoretical compatibility of the helical model of innovation derived from the context of technological innovation when used to guide the development of social innovation ecosystems. Furthermore, it reflects and adjusts the underlying application logic of the helical model in a dialectical manner, taking into account the findings of the research and the social innovation ecosystem that has been constructed. Ultimately, based on these findings and the social innovation ecosystem established, this chapter offers insights that combine contextual sensitivity with systematic explanations, thereby helping to expand the theoretical understanding and practical approaches in rural social innovation. Nevertheless, at present, the evolution of social innovation ecosystem still in its infancy and fragmented exploration (Kristinsdóttir, Hrafnisdóttir and Hulgård, 2025), rather than more deterministic practice based on deep theoretical cognition and improving the institutional framework. This dislocation pattern of action before theory and practice before system makes current innovation highly dependent on the informal coupling of inter-organizational consensus, individual initiative and social mission. Although this informal collaboration mechanism lacking

structural support shows strong flexibility locally, it faces insurmountable unsustainability risks at the macro level due to the lack of stable theoretical guidelines and institutional guarantees, which has become the core bottleneck restricting the transition of social innovation to a higher governance paradigm.

## 7 CONCLUSIONS

### 7.1 Introduction

This chapter serves as the concluding part of the entire paper. Its purpose is to provide a systematic condensation and significance enhancement of the mechanisms that drive rural revitalization through social innovation ecosystems. On the solid foundation of earlier conceptual construction, qualitative empirical analysis, and the refinement of systems dynamics models, this chapter will comprehensively address key research issues and provide a systematic evaluation of the overall contributions of this study in terms of theoretical innovation and practical implementation. Specifically, the content of this chapter is arranged as follows, first, the key findings of this study are summarized, and an overall overview of the entire paper is provided, highlighting the original academic contributions made by this research. Second, based on the mechanism of social innovation ecosystems, practical insights and targeted policy recommendations are proposed for enabling sustainable development in rural areas in the future. Finally, it objectively examines the limitations brought about by research paradigms, contextual constraints, and accordingly proposes cutting-edge topics and research directions that urgently need further deepening exploration in academia and practice in the future.

### 7.2 Summary of the Thesis and its Theoretical Contributions

This thesis focuses on exploring the innovation dynamic mechanisms of social innovation ecosystems, grounded in the institutional background and vivid practice of China's rural revitalization strategy. Through interdisciplinary theoretical integration and solid multi-case qualitative research, it systematically reveals the internal mechanism behind the synergy of multiple actors driving social innovation. At the theoretical level, this thesis reflects on and breaks through the limitations of direct transplantation of the traditional helical models of technological innovation, deeply integrating the endogenous attributes and value orientations of social innovation to construct a conceptual analysis framework suited to the characteristics of social innovation. At the empirical level, the study precisely selected two typical rural cases to systematically characterize the interaction paths of various actors within the ecosystem, ultimately developing a comprehensive inter helix model revealing their underlying dynamic mechanisms. Specifically, the research contributions are mainly reflected in the following dimensions:

- 1) It has expanded and strengthened the theoretical and empirical foundation of social innovation. This study systematically reviews and integrates the core characteristics and components of social innovation, overcoming the limitations of single organizational perspectives. By conducting empirical studies involving various actors, the analysis scope of social innovation is effectively extended, which provides empirical support for the development of a more comprehensive theoretical framework of social innovation.
- 2) A dialectical conceptual framework for ecosystems that are suitable for social innovation characteristics has been further developed. In response to the lack and ambiguity in existing research on social innovation ecosystems, as well as the theoretical gaps caused by the direct application of the helical models of innovation across disciplines without taking into account the unique features and dialectical nature of social innovation, this study integrates interdisciplinary insights with the core attributes of social innovation. A deep integration and localized development of interdisciplinary theories within the context of social innovation have been achieved.
- 3) The compatibility mechanisms for the transition of the helical models of innovation into a social innovation ecosystem have been further refined and improved. Based on solid empirical data, this study systematically examined the applicable boundaries and compatibility conditions of the multi-helix mechanism derived from the technological innovation within a social innovation ecosystem. Through critical analysis and reflection, necessary theoretical adjustments and conceptual expansions were made to the inter-helix interaction mechanisms. This has laid the foundation for future theoretical interpretations and empirical validation of social innovation ecosystems using systems approaches.
- 4) A comprehensive model of social innovation ecosystems has been proposed. By combining empirical findings, the systematic dynamic of helical model tailored to the characteristics of social innovation has been developed. This clearly shows the essential elements of ecosystems, the interaction mechanism among various actors, as well as the overall dynamics and key factors that drive system evolution.
- 5) It promotes a cross-paradigm reflection and integration of mechanisms in the two major areas of knowledge, technological innovation and social innovation. This study clearly distinguishes the inter-helix interaction mechanisms under two different types of innovative approaches, technology oriented and social oriented. By demonstrating the inherent logic of their synergistic relationship, this study offers insights from an interdisciplinary perspective that can help achieve a dynamic balance between technological and social values within broader innovation ecosystems.
- 6) It provides contextual guidance and practical approaches for rural development and broader social innovation efforts. This study is grounded in China's rural revitalization institutional

contexts, the insights into the functioning mechanisms of social innovation ecosystems directly address the real challenges faced during complex rural development. The research not only enhance scholars' understanding of the patterns and evolution of rural social innovation ecosystems, but also offer policymakers, rural operators, and various social innovators a set of practical guidelines that combine theoretical insight with actionable steps.

### 7.3 How the Research Objectives Were Attained

Achievement of RO1, this study crosses disciplinary barriers, dialectically incorporates the mechanical advantages of the helical models of innovation derive from technological innovation with deeply anchors the intrinsic attributes and value orientation of social innovation, further constructs a conceptual analysis framework suited to the characteristics of social innovation ecosystems, serving as a conceptual blueprint to guide subsequent qualitative tool development and field data collection.

Achievement of RO2, the study is rooted in vivid practices of rural revitalization in China. Using purposive sampling and snowball sampling strategies, two typical village cases that align with the research theme were precisely selected. 12 key actors and high-abundance information providers from the government, university, enterprise, and civil society were conducted in depth, thereby obtaining detailed, intercorporate, and highly contextualized first-hand qualitative corpora. Besides, the study conducted a rigorous thematic analysis and manual coding over 200,000 words of interview text, it reveals the interaction mechanisms among multiple entities in rural contexts.

Achievement of RO3, based on the core concepts and interaction mechanisms identified from empirical research, the boundaries of the helical models derived from technological innovation in the application of social innovation field were carefully analysed, and the adaption of the actual application mechanism of the helical model within social innovation ecosystems has been further developed, a systematic reflection and interpretation are also provided for the dynamic mechanism of social innovation ecosystems.

Achievement of RO4, combined with empirical insights and discussion, strategies and recommendations were provided for practitioners in rural areas and across a wider range of sectors. These suggestions also effectively enlighten the reflection and guide the way to the imbalance between technological and social innovation, thereby potentially promoting an inclusive and sustainable dynamic balance within the overall innovation ecosystem.

### 7.4 Lessons for Rural Development from the Case Studies

According to research findings, the social innovation ecosystem is essentially an organic evolutionary whole with multi-dimensional element interaction, dynamic synergy and functional integration. In this

system, the government, university and enterprise are the core ‘innovation genes’(Leydesdorff and Etzkowitz, 1998; Cai and Amaral, 2024), and together with civil society constitute the underlying innovation factors that drive the evolution of the system. These factors do not exist in isolation but are intertwined and dynamically flow like a double helix structure of DNA (Cai and Etzkowitz, 2020; Cai, 2022). This dynamic synergy between innovation genes and its mutual empowerment mechanism with civil society not only gave birth to a deep reshaping of social relations but also drove a paradigm shift in social structure through the blurring of organizational boundaries and functional inter embedding. In the continuous dynamic synergy and interaction, the flow of knowledge, actions and resources in formal and informal ways triggers the co-creation and cycle of value and ultimately contributes to the co-evolution of individual, organizations and the entire ecosystem. At the same time, social contexts factors, including institutional framework, social climate or cultural and resource endowment (Unceta *et al.*, 2019; Terstriep, Rehfeld and Kleverbeck, 2022; Domanski, Kaletka and Krüger, 2023), play a key role in constraining and guiding the efficacy of system evolution, operational efficiency, and sustainability of value output as external influences. The mutual constraints and mutual shaping of these endogenous dynamic and contexts influences jointly determine the evolution trajectory of the social innovation ecosystem.

The social innovation ecosystem framework developed in this study not only provides theoretical support and empirical references for addressing the current challenges in rural revitalization but also offers strategic guidance for promoting long-term sustainable innovation development and deep structural transformation in rural areas. It is true that different countries and regions possess objective differences in institutional environments, cultural traditions, policy orientations, rural complexity, and resource endowments. For the research framework to be effectively applied in broader contexts beyond Zhejiang and even across China, the target regions better possess at least two of the key conditions that are consistent with those of the rural areas in the case studies. In particular, the healthy functioning of this ecosystem depends on entrepreneur who possess a deep sentiment connection to their local environment and have both extensive social experience and a broad perspective. At the same time, the local government need to demonstrate forward-looking awareness, administrative inclusiveness, and collaborative ability, to establish a solid institutional guarantee for collaboration among various entities. Besides, at least one higher education institutions within the region can actively fulfil their ‘third mission’ with providing deep support for local development through professional expertise and academic responsibilities. Furthermore, the region has active civil organizations willingness to engage in integration and coordinated governance. Finally, at the base level, rural areas better possess at least one unique resource such as agricultural, tourism, and intangible cultural heritage assets that can be utilized.

Moreover, since this study is based on qualitative case study research, its primary academic goal is to

conduct a deep analysis and explanation of specific social phenomena in theoretical generalizability, rather than aiming for statistical conclusions and universal applicability based on large-sample statistics, as is typical in quantitative research. Therefore, the findings do not aim to provide universal principles applicable everywhere. Nevertheless, the social innovation inherently emphasises context sensitivity in action, adapting to local constraints is precisely the essential characteristic of the social innovation mechanism. The social innovation ecosystem framework developed in this study has incorporated contextual conditions as part of analytical dimensions, it provides the analysis model with high explanatory flexibility and adaptability. This enables other rural practitioners to flexibly adapt and apply this framework dynamically, based on the institutional and social context in which they operate, thereby achieving theoretical transfer and practical innovation that are suitable for specific contexts.

Further, based on the findings of this study, future research and rural practices can further test and deepen the following three core propositions:

Proposition 1: Where social innovation lacks formal institutional backing, government-university-enterprise collaboration depends on leaders holding multiple roles, so leadership rotation weakens it.

Proposition 2: In a differentiated institutional context, establishing flexible top-down and bottom-up mechanisms for empowerment can help civil society gain more substantial decision-making power and legitimacy to act in governance innovation, thereby enhancing the internal sustainability of social innovation.

Proposition 3: When the innovation paradigms haven't fully established at the national innovation system, informal cooperation and interaction mechanisms driven by shared visions and missions can effectively integrate and allocate various resources, thereby ensuring the efficient operation and sustainable development of social innovation efforts.

Future researcher can be further advanced by developing dynamic tracking and evaluation mechanisms tailored to social innovation organizations. For example, multi-case qualitative analyses can be used to explore the deeper differences among various rural development phenomena, while large-sample quantitative studies can be employed to examine the causal effects of organizational changes on rural development outcomes. At the same time, policymakers can actively deepen their systematic understanding of social innovation paradigms and its ecosystem dynamics. By reconfiguring and optimizing relevant organizational structures, they can effectively address the structural shortcomings in current institutional arrangements.

## 7.5 Practical and Policy Implications

### 7.5.1 Government

Based on this research, the optimization of policies and governance mechanisms aimed at fostering social innovation in the future can be further advanced along several dimensions. First, it is necessary to establish institutional resilience mechanisms that extend beyond the term of individual, thereby ensuring the continuity of policy support across different periods. There is an urgent need for the establishment of a long-term tracking management system at the grassroots level. This will help to reduce the policy gaps caused by the turnover of officials and the length of management cycles, thereby providing stable policy expectations and resource support for social innovations that possess long-term public value. Second, it is necessary to promote the deep integration of social innovation into regional and national innovation systems, and to shift from a governance model based on simple control to one that emphasises empowerment. The government should transform fragmented, short-term project-based initiatives into institutionalized long-term and medium-term strategic plans. This not only expands the institutional space for diverse collaborations, improves the mechanisms for empowering various organizations such as social society, but also deepens the delegation of authority and inclusion to social forces. As a result, it activates the internal motivation of various organizations, thereby promoting the free flow of resources and cross-organizational collaborative governance. Finally, rebuild the cognitive frameworks and professional leadership of public managers, and leverage the role of administrative power as a catalyst for social capital. Officials should maintain a keen understanding of cutting-edge innovative theories and social governance practices. By breaking through cognitive limitations and path dependencies, managers can more accurately identify, embrace, and nurture cutting-edge social innovations. In this way, a virtuous cycle and mutual benefit can be better achieved between administrative authority and social capital.

### 7.5.2 Enterprise

Based on this research, there are two key problems in the practice of social innovation of enterprise, one is the balance of the management structure in bridging economic benefits and social impact, and the other is to solve the instability of resources and knowledge expansion in social innovation. Therefore, the enterprise needs to further strengthen their understanding of the social innovation paradigm and develop the driven model based on emotion or social mission into strategic innovation of corporate social innovation. The enterprise needs to build a mature and resilient social innovation business strategy mechanism to break the structural tension between social mission and economic performance. Besides, further strengthen the synergy with other organizations, such as expand the interaction with the university and the civil society, to promote the application and transformation of multi-path resources and enhance the ability to withstand operational risks. Corresponding to this is the need for

further enhance the capabilities of the organization in terms of resource and knowledge absorption. In this research, the enterprise often faces the dilemma of blurred governance boundaries and unclear transformation paths, and the university, as the core centre of knowledge flow, can provide key formal and informal knowledge flow and forward-looking theoretical guidance. The enterprise can enhance the flow of knowledge with the university by establishing social innovation incubation lab or local practice bases, so as to improve the organization's ability to absorb knowledge and apply efficiency and transform the professional knowledge empowerment of the university into a business operation model that can be implemented.

### 7.5.3 University

Based on this research, it shows that there is still a lack of a clear system mechanism for social innovation in the construction of disciplines and colleges, which is unstable for the university to give full play to their identity functions. As the core hub of knowledge flow, the university should be committed to improving the foundation of social innovation disciplines and exploring the establishment of special social innovation colleges to systematically cultivate compound talents with cross-border cognition and governance effectiveness. By constructing related disciplines of social innovation, it can bridge the structural gap between insufficient cognition of social innovation paradigm and lack of operational talents found in the survey and provide a steady stream of intellectual support and cognitive empowerment for future social innovation practice. Besides, building an institutionalized incentive mechanism for scholars and leaders who voluntarily assume social responsibility. This research shows that the success of the university in rural revitalization largely depends on the long-term informal contributions of scholars with deep local feelings and leadership. However, without rigid institutional guarantees, this kind of dedication based on personal moral consciousness often faces unsustainable risks. In the future, the university could further increase the weight of social influence and governance contribution in the personnel assessment, professional title promotion and scientific research evaluation system, and give more institutional freedom to those scholars who conduct experimental practice in the field. This institutional improvement is essentially a legal confirmation of the third mission of academic research, aiming to encourage scholars to shift from wordplay in ivory towers to intervention in real social issues.

## 7.6 Limitations

Although this study has made useful explorations on the social innovation ecosystem in theory and empirical by combining the cross-domain model mechanism, there are still some limitations that need to be broken through. First, the conceptual model constructed in this study still needs to be iteratively tested in a wider range of qualitative and empirical research. Since social innovation is still in the growth

period of paradigm establishment, its underlying logic and theoretical foundation are still being excavated and strengthened, and the current social innovation paradigm has not yet been deeply institutionalized in a large-scale national innovation system and organizational structure. This lag in institutionalization has led to fragmentation of the evaluation dimension, future research can further explore and evaluate the standardized indicator systems for measuring the various elements of social innovation. Second, this study relies on purposive sampling, focusing specifically on two typical villages in single province, as well as 12 key individuals who are well-versed in the collaborative mechanisms. Although this targeted approach provides samples with a high level of informational value and deep situational insights, it still mainly emphasises the organizational aspects at the core levels. Future research can further expand the empirical scope, cross-provincial and even inter-national comparative studies can be conducted to test and enhance the model's adaptability and explanatory capability under different regional institutional and cultural contexts. In addition, horizontally, subsequent research can utilize mixed methods such as large-sample quantitative surveys to incorporate more comprehensive data on the multi-dimensional perceptions of grassroots residents and members of micro-communities, then the overall scope and theoretical depth of studies on the social innovation ecosystem can be further enhanced. Finally, this study focuses on qualitatively exploring the underlying mechanisms of social innovation ecosystems, future research can further incorporate quantitative methods to empirically test and deepen the interaction, the dynamic balance mechanisms, as well as the synergistic effects in various governance contexts between the dimensions of technological innovation and social innovation.

## 7.7 Questions for Further Research

Although this study has made positive contributions to deepening the theoretical foundation of the social innovation ecosystem by building a practical framework that integrates multi-element and interdisciplinary characteristics, future research can further explore the following issues. First, how can build and improve an operable quantitative indicator system to scientifically measure the depth and breadth of social innovation practices and their potential impact on social structure, thereby further providing reliable empirical evidence for systematically monitoring the effectiveness of social innovation? Second, what the commonalities and differences within the established social innovation ecosystems in this study be applied in various social and cultural contexts? And how can the explanatory power of this framework for the complex dynamics of cross-border interactions in the real world be enhanced, thereby strengthening its empirical foundation as a guiding tool? In addition, how can this research framework be further deepened from an interdisciplinary perspective to explore how technological innovation can bridge development gaps and effectively integrate into the social innovation ecosystem, thereby coordinating the differences and synergies between the two innovation models in value orientation, dynamic mechanisms, and feedback loops, and further enhancing the

theoretical completeness and explanatory power of the entire innovation ecosystem? Finally, how can deepen the balance between social and technological innovation through interdisciplinary theoretical reconfiguration and empirical testing, thereby enhancing the systematic interventions within the entire innovation ecosystem to address complex global social challenges and promote sustainable development?

# REFERENCES

- A. Husen, N., K. Loos, T. and H.A. Siddig, K. (2017) 'Social Capital and Agricultural Technology Adoption among Ethiopian Farmers', *American Journal of Rural Development*, 5(3), pp. 65–72. Available at: <https://doi.org/10.12691/ajrd-5-3-2>.
- Adner, R. (2006) 'Match Your Innovation Strategy to Your Innovation Ecosystem', *harvard business review* [Preprint].
- Adner, R. (2012) 'The wide lens: A new strategy for innovation.', 34.
- Adomaitytė-Subačienė, I., Jančiauskaitė, J. and Høj, C.M. (2026) 'Social innovation under institutional voids: micro–macro dynamics in Lithuania', *Innovation: The European Journal of Social Science Research*, 0(0), pp. 1–17. Available at: <https://doi.org/10.1080/13511610.2026.2618064>.
- Afzal, B., Li, X. and Andez-Lara, A. (2024) 'The innovation journey and crossroads of sustainability, resilience and human- centeredness: a systematic literature review Innovation journey', *Transforming Government People Process and Policy*, 18. Available at: <https://doi.org/10.1108/TG-10-2023-0151>.
- Ahmadi, Z. (2024) 'The Challenges of Building Trust and Collaboration in Cross-sector Partnerships for Sustainable Development', *ACE - International Conference*, pp. 301–304.
- Albuquerque, B.V.L. de and Siqueira, S.W.M. (2025) 'Digital Technologies and Information Systems in Social Innovation Ecosystems', *Simpósio Brasileiro de Sistemas de Informação (SBSI). Simpósio Brasileiro de Sistemas de Informação (SBSI)*, SBC, pp. 798–807. Available at: <https://doi.org/10.5753/sbsi.2025.246647>.
- Appiah, P. and Grimm, H. (2025) 'Landscape of social innovation research in the global south: trends and implications for future research', *Journal of Entrepreneurship and Public Policy*, 15. Available at: <https://doi.org/10.1108/JEPP-07-2024-0111>.
- Appiah, P.B. and Grimm, H.M. (2025) 'Evolution of entrepreneurial and social innovation ecosystems across geopolitical, policy and cultural contexts', *Journal of Entrepreneurship and Public Policy*, 15(1), pp. 1–14. Available at: <https://doi.org/10.1108/JEPP-10-2025-0281>.
- Arocena, R. and Sutz, J. (2021) 'Universities and social innovation for global sustainable development as seen from the south', *Technological Forecasting and Social Change*, 162, p. 120399. Available at: <https://doi.org/10.1016/j.techfore.2020.120399>.
- Arroyabe, M.F. et al. (2024) 'Analyzing AI adoption in European SMEs: A study of digital capabilities, innovation, and external environment', *Technology in Society*, 79, pp. 102733–102733. Available at: <https://doi.org/10.1016/j.techsoc.2024.102733>.
- Audretsch, D.B., Eichler, G.M. and Schwarz, E.J. (2022) 'Emerging needs of social innovators and social innovation ecosystems', *International Entrepreneurship and Management Journal*, 18(1), pp. 217–254. Available at: <https://doi.org/10.1007/s11365-021-00789-9>.
- Austin, I. and Jones, G.A. (2024) *Governance of Higher Education: Global Perspectives, Theories, and Practices*. 2nd edn. New York: Routledge. Available at: <https://doi.org/10.4324/9781003283652>.
- Avelino, F. et al. (2019) 'Transformative social innovation and (dis)empowerment', *Technological Forecasting and Social Change*, 145, pp. 195–206. Available at: <https://doi.org/10.1016/j.techfore.2017.05.002>.
- Avelino, F. et al. (2024) 'Just Sustainability Transitions: Politics, Power, and Prefiguration in

Transformative Change Toward Justice and Sustainability’, *Annual Review of Environment and Resources*, 49(Volume 49, 2024), pp. 519–547. Available at: <https://doi.org/10.1146/annurev-environ-112321-081722>.

Ayob, N., Teasdale, S. and Fagan, K. (2016) ‘How Social Innovation “Came to Be”: Tracing the Evolution of a Contested Concept’, *Journal of Social Policy*, 45(4), pp. 635–653. Available at: <https://doi.org/10.1017/S004727941600009X>.

Bååth, J. and Fuentes, C. (2025) ‘Alternativizing markets: the framing of moral commerce’, *Socio-Economic Review*, 23(1), pp. 183–203. Available at: <https://doi.org/10.1093/ser/mwae068>.

Babu, M.M. *et al.* (2020) ‘Value co-creation through social innovation: A study of sustainable strategic alliance in telecommunication and financial services sectors in Bangladesh’, *Industrial Marketing Management*, 89, pp. 13–27. Available at: <https://doi.org/10.1016/j.indmarman.2020.06.003>.

Baldwin, C.Y. *et al.* (2024) ‘Focusing the ecosystem lens on innovation studies’, *Research Policy*, 53(3). Available at: <https://doi.org/10.1016/j.respol.2023.104949>.

Banda, D. (2025) ‘Obstacles to Social Innovation: The Toxic Politics and the Wicked Problem of the Isolated African Nations’, *Journal of Design Service and Social Innovation*, pp. 45–61. Available at: <https://doi.org/10.59528/ms.jdssi2025.0228p31>.

Baselice, A. *et al.* (2021) ‘Application of a Comprehensive Methodology for the Evaluation of Social Innovations in Rural Communities’, *Sustainability*, 13, p. 1807. Available at: <https://doi.org/10.3390/su13041807>.

Bataglin, J.C. (2021) ‘Social Innovation: A Study of International Scientific Publication through Network Analysis’, *Brazilian Business Review*, p. 19. Available at: <https://doi.org/https://doi.org/10.15728/bbr.2021.18.4.6>.

Bataglin, J.C. and Kruglianskas, I. (2022) ‘Social Innovation: Field Analysis and Gaps for Future Research.’, *Sustainability* (2071-1050), 14(3), p. 1153. Available at: <https://doi.org/10.3390/su14031153>.

Bayulgen, O. (2008) ‘Muhammad Yunus, Grameen Bank and the Nobel Peace Prize: What Political Science Can Contribute to and Learn from the Study of Microcredit’, *International Studies Review*, 10(3), pp. 525–547. Available at: <https://doi.org/10.1111/j.1468-2486.2008.00803.x>.

Bayuo, B.B., Chaminade, C. and Göransson, B. (2020) ‘Unpacking the role of universities in the emergence, development and impact of social innovations – A systematic review of the literature’, *Technological Forecasting and Social Change*, 155, p. 120030. Available at: <https://doi.org/10.1016/j.techfore.2020.120030>.

Beckman, C.M. *et al.* (2023) ‘The Social Innovation Trap: Critical Insights into an Emerging Field’, *Academy of Management Annals*, 17(2), pp. 684–709. Available at: <https://doi.org/10.5465/annals.2021.0089>.

Bellandi, M., Donati, L. and Cataneo, A. (2021) ‘Social innovation governance and the role of universities: Cases of quadruple helix partnerships in Italy’, *Technological Forecasting and Social Change*, 164, p. 120518. Available at: <https://doi.org/10.1016/j.techfore.2020.120518>.

Berger, R. (2015) ‘Now I see it, now I don’t: researcher’s position and reflexivity in qualitative research.’, *Qualitative Research*, 15(2), p. 219. Available at: <https://doi.org/10.1177/1468794112468475>.

Berg-Postweiler, J. and Leicht-Scholten, C. (2024) 'Investigating the Institutional Embedding of Social Innovation at Five Leading Technical Universities in Europe', *Journal of Social Entrepreneurship*, 0(0), pp. 1–28. Available at: <https://doi.org/10.1080/19420676.2024.2345378>.

Bertalanffy, L. von (1968) *General system theory: foundations, development, applications*. G. Braziller. Available at: [http://repository.vnu.edu.vn/handle/VNU\\_123/90608](http://repository.vnu.edu.vn/handle/VNU_123/90608) (Accessed: 19 October 2023).

Bhatti, Y. and Prabhu, J. (2019) 'Frugal innovation and social innovation: linked paths to achieving inclusion sustainably', in G. George et al. (eds) *Handbook of Inclusive Innovation*. Edward Elgar Publishing. Available at: <https://doi.org/10.4337/9781786436016.00031>.

Biesta, G. and Burbules, N.C. (2003) *Pragmatism and Educational Research*. Philosophy, Theory, and Educational Research Series.

Bijl-Brouwer, M. van der and Malcolm, B. (2020) 'Systemic Design Principles in Social Innovation: A Study of Expert Practices and Design Rationales', *She Ji: The Journal of Design, Economics, and Innovation*, 6(3), pp. 386–407. Available at: <https://doi.org/10.1016/j.sheji.2020.06.001>.

Bitencourt, C. et al. (2024) 'Rethinking the company's role: Creating shared value from corporate social innovation', *Corporate Social Responsibility and Environmental Management*, 31(4), pp. 2865–2877. Available at: <https://doi.org/10.1002/csr.2723>.

Blanchet, T. (2024) 'The role of social innovation and cross-sector collaboration in addressing wicked problems', *Innovation: The European Journal of Social Science Research*, 37(1), pp. 1–3. Available at: <https://doi.org/10.1080/13511610.2024.2326864>.

Blumer, H. (1986) *Symbolic Interactionism: Perspective and Method*. University of California Press.

Bock, B.B. (ed.) (2012) 'Social innovation and sustainability; how to disentangle the buzzword and its application in the field of agriculture and rural development', *Studies in Agricultural Economics* [Preprint]. Available at: <https://doi.org/10.22004/ag.econ.135760>.

Bock, B.B. (2016) 'Rural Marginalisation and the Role of Social Innovation; A Turn Towards Nexogenous Development and Rural Reconnection', *Sociologia Ruralis*, 56(4), pp. 552–573. Available at: <https://doi.org/10.1111/soru.12119>.

Boni, A., Velasco, D. and Ghosh, B. (2025) 'A human capability approach to transformative innovation policy. Theoretical insights and practical implications for directionality', *Journal of Responsible Innovation*, 12(1), p. 2440966. Available at: <https://doi.org/10.1080/23299460.2024.2440966>.

Bosworth, G. et al. (2016) 'Identifying social innovations in European local rural development initiatives', *Innovation: The European Journal of Social Science Research*, 29(4), pp. 442–461. Available at: <https://doi.org/10.1080/13511610.2016.1176555>.

Bosworth, G. et al. (2020) 'Rural Social Innovation and Neo-endogenous Rural Development', in E. Cejudo and F. Navarro (eds) *Neoendogenous Development in European Rural Areas: Results and Lessons*. Cham: Springer International Publishing (Springer Geography), pp. 21–32. Available at: [https://doi.org/10.1007/978-3-030-33463-5\\_2](https://doi.org/10.1007/978-3-030-33463-5_2).

Bosworth, G., McAreavey, R. and Kennedy, M. (2025) 'Social Innovation in Rural Development Policy: Strengthening Participation, Representation and Accountability', *European Countryside*, 17(3), pp. 412–430. Available at: <https://doi.org/10.2478/euco-2025-0021>.

Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3(2), pp. 77–101. Available at: <https://doi.org/10.1191/1478088706qp063oa>.

Braun, V. and Clarke, V. (2013) 'Successful Qualitative Research: A Practical Guide for Beginners', pp. 1–400.

Braun, V. and Clarke, V. (2021) 'To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales', *Qualitative Research in Sport, Exercise and Health*, 13(2), pp. 201–216. Available at: <https://doi.org/10.1080/2159676X.2019.1704846>.

Braun, V. and Clarke, V. (2023) 'Toward good practice in thematic analysis: Avoiding common problems and becoming a knowing researcher', *International Journal of Transgender Health*, 24(1), pp. 1–6. Available at: <https://doi.org/10.1080/26895269.2022.2129597>.

Bryman, A. (2012) *Social research methods*. 4th ed. Oxford; New York: Oxford University Press.

Bucio-Mendoza, S. and Solis-Navarrete, J.A. (2025) 'Social Innovation Ecosystems in Times of Crisis: Rethinking Innovation Policy Through the COVID-19 Pandemic', *Sustainability*, 17(21), pp. 1–20. Available at: <https://doi.org/10.3390/su17219502>.

Bulkeley, H. *et al.* (2026) 'Towards a research and policy agenda for climate action in smaller municipalities and rural regions', *npj Climate Action*, 5(1), p. 65. Available at: <https://doi.org/10.1038/s44168-026-00367-1>.

Burton, A., Pikkemaat, B. and Dickinger, A. (2025) 'Unlocking sustainable tourism: Exploring the drivers and barriers of social innovation in community model destinations', *Journal of Destination Marketing & Management*, 36(100996). Available at: <https://doi.org/10.1016/j.jdmm.2025.100996>.

Busacca, M. and Coscarello, M. (2025) 'Latin America's grassroots approach to social innovation: Expanding the international debate', *International Journal of Social Welfare*, 34(4), p. e70038. Available at: <https://doi.org/10.1111/ijsw.70038>.

Bussy, A. and Zheng, H. (2023) 'Responses of FDI to geopolitical risks: The role of governance, information, and technology', *International Business Review*, 32(4). Available at: <https://doi.org/10.1016/j.ibusrev.2023.102136>.

Cai, Y. (2022) 'Neo-Triple Helix Model of Innovation Ecosystems: Integrating Triple, Quadruple and Quintuple Helix Models', *Triple Helix*, 9(1), pp. 76–106. Available at: <https://doi.org/10.1163/21971927-bja10029>.

Cai, Y. and Ahmad, I. (2023) 'From an Entrepreneurial University to a Sustainable Entrepreneurial University: Conceptualization and Evidence in the Contexts of European University Reforms', *Higher Education Policy*, 36(1), pp. 20–52. Available at: <https://doi.org/10.1057/s41307-021-00243-z>.

Cai, Y. and Amaral, M. (2024) 'Enhancing Quality in Triple Helix Dialogue: Navigating Research Frontiers and Submission Excellence', *Triple Helix*, 10(3), pp. 215–224. Available at: <https://doi.org/10.1163/21971927-12340017>.

Cai, Y. and Etzkowitz, H. (2020) 'Theorizing the Triple Helix model: Past, present, and future', *Triple Helix*, 7(2–3), pp. 189–226. Available at: <https://doi.org/10.1163/21971927-bja10003>.

Cai, Y. and Lattu, A. (2022) 'Triple Helix or Quadruple Helix: Which Model of Innovation to Choose for Empirical Studies?', *Minerva*, 60(2), pp. 257–280. Available at: <https://doi.org/10.1007/s11024-021-09453-6>.

Cajaiba-Santana, G. (2014) 'Social innovation: Moving the field forward. A conceptual framework', *Technological Forecasting & Social Change*, 82, pp. 42–51.

Camilleri, M.A. *et al.* (2023) ‘Creating shared value through open innovation approaches: Opportunities and challenges for corporate sustainability’, *Business Strategy and the Environment*, 32(7), pp. 4485–4502. Available at: <https://doi.org/10.1002/bse.3377>.

Campos, I. *et al.* (2025) ‘Just participation in wind energy: The role of social innovations’, *Renewable and Sustainable Energy Reviews*, 209, p. 115146. Available at: <https://doi.org/10.1016/j.rser.2024.115146>.

Cantafio, G.U. and Ieromonachou, P. (2019) ‘In Search of a Tool to Support Planning inside Large Cities: The Sustain-LED Model’, *Environmental Science & Sustainable Development*, 4(2), pp. 61–74. Available at: <https://doi.org/10.21625/essd.v4i2.556>.

Cao, Z. and Shi, X. (2021) ‘A systematic literature review of entrepreneurial ecosystems in advanced and emerging economies’, *Small Business Economics*, 57(1), pp. 75–110. Available at: <https://doi.org/10.1007/s11187-020-00326-y>.

Carayannis, E.G. *et al.* (2021) ‘Social Business Model Innovation: A Quadruple/Quintuple Helix-Based Social Innovation Ecosystem’, *IEEE Transactions on Engineering Management*, 68(1), pp. 235–248. Available at: <https://doi.org/10.1109/TEM.2019.2914408>.

Carayannis, E.G. *et al.* (2022) ‘Smart Environments and Techno-centric and Human-Centric Innovations for Industry and Society 5.0: A Quintuple Helix Innovation System View Towards Smart, Sustainable, and Inclusive Solutions’, *Journal of the Knowledge Economy*, 13(2), pp. 926–955. Available at: <https://doi.org/10.1007/s13132-021-00763-4>.

Carayannis, E.G., Barth, T.D. and J, C.D.F. (2012) ‘The Quintuple Helix innovation model: Global warming as a challenge and driver for innovation’, *Journal of Innovation and Entrepreneurship*, 1, pp. 1–12. Available at: <https://doi.org/10.1186/2192-5372-1-2>.

Carayannis, E.G. and Campbell, D.F.J. (2009) “‘Mode 3” and “Quadruple Helix”: toward a 21st century fractal innovation ecosystem’, *International Journal of Technology Management*, 46(3–4), pp. 201–234. Available at: <https://doi.org/10.1504/IJTM.2009.023374>.

Carayannis, E.G. and Campbell, D.F.J. (2010) ‘Triple Helix, Quadruple Helix and Quintuple Helix and How Do Knowledge, Innovation and the Environment Relate to Each Other? : A Proposed Framework for a Trans-disciplinary Analysis of Sustainable Development and Social Ecology’, *International Journal of Social Ecology and Sustainable Development (IJSESD)*, 1(1), pp. 41–69. Available at: <https://doi.org/10.4018/jsesd.2010010105>.

Carayannis, E.G. and Campbell, D.F.J. (2019a) ‘Innovation Systems in Conceptual Evolution: Mode 3 Knowledge Production in Quadruple and Quintuple Helix Innovation Systems’, in E.G. Carayannis and D.F.J. Campbell (eds) *Smart Quintuple Helix Innovation Systems: How Social Ecology and Environmental Protection are Driving Innovation, Sustainable Development and Economic Growth*. Cham: Springer International Publishing (SpringerBriefs in Business), pp. 39–49. Available at: [https://doi.org/10.1007/978-3-030-01517-6\\_5](https://doi.org/10.1007/978-3-030-01517-6_5).

Carayannis, E.G. and Campbell, D.F.J. (2019b) ‘Mode 1, Mode 2, and Mode 3: Triple Helix and Quadruple Helix’, in E.G. Carayannis and D.F.J. Campbell (eds) *Smart Quintuple Helix Innovation Systems: How Social Ecology and Environmental Protection are Driving Innovation, Sustainable Development and Economic Growth*. Cham: Springer International Publishing (SpringerBriefs in Business), pp. 17–30. Available at: [https://doi.org/10.1007/978-3-030-01517-6\\_3](https://doi.org/10.1007/978-3-030-01517-6_3).

Carayannis, E.G., Campbell, D.F.J. and Grigoroudis, E. (2022) ‘Helix Trilogy: The Triple, Quadruple, and Quintuple Innovation Helices from a Theory, Policy, and Practice Set of Perspectives’, *Journal of the Knowledge Economy*, 13(3), pp. 2272–2301. Available at: <https://doi.org/10.1007/s13132-021->

Carayannis, E.G., Draper, J. and Bhaneja, B. (2021) 'Towards Fusion Energy in the Industry 5.0 and Society 5.0 Context: Call for a Global Commission for Urgent Action on Fusion Energy', *Journal of the Knowledge Economy*, 12(4), pp. 1891–1904. Available at: <https://doi.org/10.1007/s13132-020-00695-5>.

Carayannis, E.G. and Morawska-Jancelewicz, J. (2022) 'The Futures of Europe: Society 5.0 and Industry 5.0 as Driving Forces of Future Universities', *Journal of the Knowledge Economy*, 13(4), pp. 3445–3471. Available at: <https://doi.org/10.1007/s13132-021-00854-2>.

Casais, B. and Soares, A.M. (2024) 'Implementing the Quadruple Helix towards Social Innovation: The Case of the Human Power Hub, Braga, Portugal', in A. Thrassou et al. (eds) *Non-Profit Organisations, Volume II: Economy, Industries and Context*. Cham: Springer Nature Switzerland, pp. 285–310. Available at: [https://doi.org/10.1007/978-3-031-62530-5\\_12](https://doi.org/10.1007/978-3-031-62530-5_12).

Castro-Arce, K. and Vanclay, F. (2020) 'Transformative social innovation for sustainable rural development: An analytical framework to assist community-based initiatives', *Journal of Rural Studies*, 74, pp. 45–54. Available at: <https://doi.org/10.1016/j.jrurstud.2019.11.010>.

Cavaye, A. I. M. (1996) 'Case study research: a multi-faceted research approach for IS', *Information Systems Journal*, 6(3), pp. 227–242. Available at: <https://doi.org/10.1111/j.1365-2575.1996.tb00015.x>.

Celik, D. et al. (2024) 'Handbook of social innovation in rural bioeconomies'.

Chatzichristos, G. et al. (2023) 'Support Networks for Social Innovation: Insights from Ireland', *Journal of Social Entrepreneurship*, 0(0), pp. 1–21. Available at: <https://doi.org/10.1080/19420676.2023.2192229>.

Chaudhary, A. et al. (2023) 'Contextual realities and poverty traps: why South Asian smallholder farmers negatively evaluate conservation agriculture', *Renewable Agriculture and Food Systems*, 38, p. e13. Available at: <https://doi.org/10.1017/S1742170523000066>.

Chaudhary, S. et al. (2024) 'Connecting entrepreneurial ecosystem and innovation. Grasping at straws or hitting a home run?' Available at: <https://doi.org/10.1016/j.technovation.2023.102942>.

Chen, H.-C., Knierim, A. and Bock, B.B. (2022) 'The emergence of social innovation in rural revitalisation practices: A comparative case study from Taiwan', *Journal of Rural Studies*, 90, pp. 134–146. Available at: <https://doi.org/10.1016/j.jrurstud.2022.02.003>.

Chen, M. et al. (2021) 'The Integration of New-Type Urbanization and Rural Revitalization Strategies in China: Origin, Reality and Future Trends', *Land*, 10(2), p. 207. Available at: <https://doi.org/10.3390/land10020207>.

Christoph Kaletka, Mona Markmann and Pelka, B. (2016) 'Peeling the Onion. An Exploration of the Layers of Social Innovation Ecosystems. Modelling a context sensitive perspective on driving and hindering factors for social innovation', *European Public & Social Innovation Review*, 1(2), pp. 84–93. Available at: <https://doi.org/10.31637/epsir.16-2.3>.

Cohen, W.M. and Levinthal, D.A. (2000) 'Absorptive Capacity: A New Perspective- on Learning and Innovation', *Strategic Learning in a Knowledge Economy*. Routledge.

Coviello, N. et al. (2024) 'Organizational scaling, scalability, and scale-up: Definitional harmonization and a research agenda', *Journal of Business Venturing*, 39(5). Available at: <https://doi.org/10.1016/j.jbusvent.2024.106419>.

Creswell, J.W. (2009) *Research design: qualitative, quantitative, and mixed methods approaches*. 3rd ed. Thousand Oaks, Calif: Sage Publications.

Creswell, J.W. (2013) *Qualitative inquiry and research design: choosing among five approaches*. third edition. Los Angeles, Calif. London New Dehli Singapore Washington DC: SAGE.

Creswell, J.W. and Poth, C.N. (2016) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. SAGE Publications.

Crisafulli, B., Dimitriu, R. and Singh, J. (2020) 'Joining hands for the greater good: Examining social innovation launch strategies in B2B settings', *Industrial Marketing Management* [Preprint]. Available at: <https://doi.org/10.1016/j.indmarman.2019.11.012>.

Crossan, F. (2003) 'Research philosophy: Towards an understanding', *Nurse Researcher (through 2013)*, 11(1), pp. 46–55. Available at: <https://doi.org/10.7748/nr2003.10.11.1.46.c5914>.

Crotty, M.J. (1998) 'The Foundations of Social Research: Meaning and Perspective in the Research Process', pp. 1–256.

Culkin, N. and Kyriakopoulos, P. (2024) *State of the Art Review: Unlocking Potential through Investment in Rural Innovation*. Report. National Innovation Centre Rural Enterprise - NICRE. Available at: <https://uhra.herts.ac.uk/id/eprint/25741/> (Accessed: 17 March 2026).

Cunha, J., Silva, F., *et al.* (2025) 'Determining the impact of social innovation across different contexts: a review and survey on supporting metrics', *SN Social Sciences*, 5(9), p. 140. Available at: <https://doi.org/10.1007/s43545-025-01138-1>.

Cunha, J., Ferreira, C., *et al.* (2025) 'The social innovation process: exploring critical success factors and the role of higher education institutions', *International Review on Public and Nonprofit Marketing* [Preprint]. Available at: <https://doi.org/10.1007/s12208-025-00457-6>.

Dacin, M.T., Dacin, P.A. and Tracey, P. (2011) 'Social Entrepreneurship: A Critique and Future Directions', *Organization Science*, 22(5), pp. 1203–1213. Available at: <https://doi.org/10.1287/orsc.1100.0620>.

Dai, S. *et al.* (2024) 'Innovation Network Formation and the Catalyzing State: A Study of Two Innovative Industry Clusters in China', *Journal of Contemporary China*, 33(147), pp. 373–391. Available at: <https://doi.org/10.1080/10670564.2023.2172554>.

David, W. (2017) 'The Coding Manual for Qualitative Researchers (3rd edition)', *Qualitative Research in Organizations and Management: An International Journal*, 12(2), pp. 169–170. Available at: <https://doi.org/10.1108/qrom-08-2016-1408>.

Dedehayir, O., Mäkinen, S.J. and Roland Ortt, J. (2018) 'Roles during innovation ecosystem genesis: A literature review', *Technological Forecasting and Social Change*, 136, pp. 18–29. Available at: <https://doi.org/10.1016/j.techfore.2016.11.028>.

Deetz, S. (1996) 'Crossroads—Describing Differences in Approaches to Organization Science: Rethinking Burrell and Morgan and Their Legacy', *Organization Science*, 7(2), pp. 191–207. Available at: <https://doi.org/10.1287/orsc.7.2.191>.

Denzin, N.K. and Lincoln, Y.S. (2011) *The SAGE Handbook of Qualitative Research*. SAGE.

Dey, D. (1999) 'Grounding Grounded Theory', *Grounding Grounded Theory*, pp. 249–269. Available at: <https://doi.org/10.1016/b978-012214640-4/50011-5>.

Di Maso, A. *et al.* (2025) ‘Exploring the Mechanisms of Transformative Social Innovation: Empirical Data Through a Systematic Literature Review’, *Journal of Social Entrepreneurship*, 0(0), pp. 1–26. Available at: <https://doi.org/10.1080/19420676.2025.2492058>.

Dias, J. and Partidário, M. (2019) ‘Mind the Gap: The Potential Transformative Capacity of Social Innovation’, *Sustainability*, 11(16), p. 4465. Available at: <https://doi.org/10.3390/su11164465>.

Diessner, S. *et al.* (2025) ‘The transition to the knowledge economy in advanced capitalist democracies: a new index for comparative research’, *Socio-Economic Review*, p. mwaf018. Available at: <https://doi.org/10.1093/ser/mwaf018>.

Ding, W. *et al.* (2025) ‘Social Innovation Perspective on Regional Design and Sustainable Development Research’, *Sustainability*, 17(3), p. 1175. Available at: <https://doi.org/10.3390/su17031175>.

Djamba, Y.K. and Neuman, W.L. (2002) ‘Social Research Methods: Qualitative and Quantitative Approaches’, *Teaching Sociology*, 30(3), p. 380. Available at: <https://doi.org/10.2307/3211488>.

Domanski, D. (2018) ‘Developing regional social innovation ecosystem’, *Osterreichische Akademie der Wissenschaften*, pp. 117–127. Available at: [https://doi.org/10.1553/ISR\\_FB047S117](https://doi.org/10.1553/ISR_FB047S117).

Domanski, D., Howaldt, J. and Kaletka, C. (2020) ‘A comprehensive concept of social innovation and its implications for the local context – on the growing importance of social innovation ecosystems and infrastructures’, *European Planning Studies*, 28(3), pp. 454–474. Available at: <https://doi.org/10.1080/09654313.2019.1639397>.

Domanski, D., Kaletka, C. and Krüger, D. (2023) ‘Ecosystems of social innovation’, *Encyclopedia of Social Innovation*. Edward Elgar Publishing, pp. 159–163. Available at: <https://www.elgaronline.com/display/book/9781800373358/ch28.xml> (Accessed: 3 March 2026).

Dwivedi, A. and Weerawardena, J. (2018) ‘Conceptualizing and operationalizing the social entrepreneurship construct’, *Journal of Business Research*, 86, pp. 32–40. Available at: <https://doi.org/10.1016/j.jbusres.2018.01.053>.

Edwards-Schachter, M. and Wallace, M.L. (2017) “‘Shaken, but not stirred’: Sixty years of defining social innovation”, *Technological Forecasting and Social Change*, 119, pp. 64–79. Available at: <https://doi.org/10.1016/j.techfore.2017.03.012>.

Etzkowitz, H. (2008) *The Triple Helix: University-Industry-Government Innovation in Action*. New York: Routledge. Available at: <https://doi.org/10.4324/9780203929605>.

Etzkowitz, H. and Leydesdorff, L. (2000) ‘The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations’, *Research Policy*, 29(2), pp. 109–123. Available at: [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4).

Etzkowitz, H. and Zhou, C. (2006) ‘Triple Helix twins: innovation and sustainability’, *Science and Public Policy*, 33(1), pp. 77–83. Available at: <https://doi.org/10.3152/147154306781779154>.

European Commission, E.C. (2025) *European Innovation Ecosystems - Research and innovation*. Available at: [https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-innovation-ecosystems\\_en](https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/european-innovation-ecosystems_en) (Accessed: 23 October 2025).

Fagerberg, J. (2018) ‘Mobilizing innovation for sustainability transitions: A comment on transformative innovation policy’, *Research Policy*, 47(9), pp. 1568–1576. Available at: <https://doi.org/10.1016/j.respol.2018.08.012>.

Fahmi, F.Z. and Arifianto, A. (2022) 'Digitalization and Social Innovation in Rural Areas: A Case Study from Indonesia', *Rural Sociology*, 87(2), pp. 339–369. Available at: <https://doi.org/10.1111/ruso.12418>.

Fauzi, M.A., Muhamad Tamyaz, P.F. and Kumar, S. (2025) 'Social Entrepreneurship and Social Innovation in ASEAN: Past, Present, and Future Trends', *Journal of Social Entrepreneurship*, 16(1), pp. 146–168. Available at: <https://doi.org/10.1080/19420676.2022.2143870>.

Flores, M.C. *et al.* (2024) 'Entrepreneurial universities and intrapreneurship: A process model on the emergence of an intrapreneurial university', *Technovation*, 129(C). Available at: <https://doi.org/10.1016/j.technovation.2023.102906>.

Forliano, C., De Bernardi, P. and Yahiaoui, D. (2021) 'Entrepreneurial universities: A bibliometric analysis within the business and management domains', *Technological Forecasting and Social Change*, 165(C). Available at: <https://doi.org/10.1016/j.techfore.2020.120522>.

Freeman, C. (1995) 'The "National System of Innovation" in historical perspective', *Cambridge Journal of Economics* [Preprint]. Available at: <https://doi.org/10.1093/oxfordjournals.cje.a035309>.

Fu, J.S. and Cooper, K.R. (2025) 'Organizational Hybridity of Multiple Identities: Drivers and Implications for Social Innovation', *Management Communication Quarterly*, 39(3), pp. 470–498. Available at: <https://doi.org/10.1177/08933189241303736>.

*Full text of the report to the 20th National Congress of the Communist Party of China* (2023). Available at: <https://www.idcpc.org.cn/english2023/tjzl/cpcjj/20thPartyCongrassReport/> (Accessed: 23 October 2025).

Galvao, A. *et al.* (2019) 'Triple helix and its evolution: a systematic literature review', *Journal of Science and Technology Policy Management*, 10(3), pp. 812–833. Available at: <https://doi.org/10.1108/JSTPM-10-2018-0103>.

Garan, Ö. and Güneş, İ. (2025) 'Reframing SDG 11 Through the Triple Helix Model: Rethinking Urban Sustainability and Institutional Synergy', *İktisat Politikası Araştırmaları Dergisi*, 12(2), pp. 528–549. Available at: <https://doi.org/10.26650/JEPR1650031>.

García-Mieres, H. *et al.* (2025) 'Bridging generations: the power of digitization and social innovation in preserving rural cultural heritage', *Innovation: The European Journal of Social Science Research*, 38(3), pp. 1184–1197. Available at: <https://doi.org/10.1080/13511610.2024.2424773>.

Garin, A. (2025) *Collective hybridity in social innovation ecosystems: Sharing social values and management activities to balance social impact and profitability*. Theses. Université Paris-Est Créteil Val-de-Marne - Paris 12. Available at: <https://theses.hal.science/tel-05263655> (Accessed: 3 March 2026).

Garin, A. *et al.* (2025) 'Profitability and social impact: Maintaining collective hybridity in social innovation ecosystems', *IPDMC: Innovation and Product Development Management Conference*. Porto, Portugal. Available at: <https://hal.science/hal-05453544> (Accessed: 3 March 2026).

Gawer, A. and Cusumano, M.A. (2014) 'Industry Platforms and Ecosystem Innovation', *Journal of Product Innovation Management*, 31(3), pp. 417–433. Available at: <https://doi.org/10.1111/jpim.12105>.

Gaziulusoy, İ. and Erdoğan Öztekin, E. (2019) 'Design for Sustainability Transitions: Origins, Attitudes and Future Directions', *Sustainability*, 11(13), p. 3601. Available at: <https://doi.org/10.3390/su11133601>.

Georgios, C. and Barraí, H. (2023) 'Social innovation in rural governance: A comparative case study

across the marginalised rural EU’, *Journal of Rural Studies*, 99, pp. 193–203. Available at: <https://doi.org/10.1016/j.jrurstud.2021.06.004>.

Gioia, D.A., Corley, K.G. and Hamilton, A.L. (2013) ‘Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology’, *Organizational Research Methods*, 16(1), pp. 15–31. Available at: <https://doi.org/10.1177/1094428112452151>.

Godinho Ferreira Pereira, A.R. and de Lourdes Bittencourt, B. (2024) ‘an Ecosystems of Social Innovation? Analysis of the Role of the Actors Who make up 4H in the Aveiro Region, Portugal.’, *Environmental & Social Management Journal / Revista de Gestão Social e Ambiental*, 18(12), p. 1. Available at: <https://doi.org/10.24857/rgsa.v18n12-023>.

Goldkuhl, G. (2012) ‘Pragmatism vs interpretivism in qualitative information systems research’, *European Journal of Information Systems*, 21(2), pp. 135–146. Available at: <https://doi.org/10.1057/ejis.2011.54>.

Golestaneh, H. and Sadeghi Naeini, H. (2024) ‘The Transformative Role of Design for Social Innovation in Community Development at the Local Level’, *Quarterly Journals of Urban and Regional Development Planning*, 9(31), pp. 31–67. Available at: <https://doi.org/10.22054/urdp.2024.81817.1659>.

Gomes, L.A. de V. *et al.* (2018) ‘Unpacking the innovation ecosystem construct: Evolution, gaps and trends’, *Technological Forecasting and Social Change*, 136, pp. 30–48. Available at: <https://doi.org/10.1016/j.techfore.2016.11.009>.

González-Martínez, P., García-Pérez-De-Lema, D. and Castillo-Vergara, M. (2025) ‘The Role of Society in the N-Helix Innovation Model: A Systematic Review of the Literature’, *Journal of the Knowledge Economy* [Preprint]. Available at: <https://doi.org/10.1007/s13132-024-02581-w>.

Granstrand, O. and Holgersson, M. (2020) ‘Innovation ecosystems: A conceptual review and a new definition’, *Technovation*, 90–91, p. 102098. Available at: <https://doi.org/10.1016/j.technovation.2019.102098>.

Grimm, R. *et al.* (2013) ‘Social innovation, an answer to contemporary societal challenges? Locating the concept in theory and practice.’, *Innovation: The European Journal of Social Sciences*, 26(4), pp. 436–455.

Guba, E.G. and Lincoln, Y.S. (1982) ‘Epistemological and methodological bases of naturalistic inquiry’, *ECTJ*, 30(4), pp. 233–252. Available at: <https://doi.org/10.1007/BF02765185>.

Guba, E.G. and Lincoln, Y.S. (1994) ‘Competing paradigms in qualitative research’, pp. 105–117.

Guerrero-Ocampo, S.B. *et al.* (2024) “Evolution of multi-actor co-innovation partnerships: Key factors in 4 case studies in rural Iberia”, *Journal of Rural Studies*, 106, p. 103194. Available at: <https://doi.org/10.1016/j.jrurstud.2023.103194>.

Gutiérrez, J.C.L. *et al.* (2024) ‘Integrating Neutrosophic Theory into Regression Models for Enhanced Prediction of Uncertainty in Social Innovation Ecosystems’, *Neutrosophic Sets and Systems*, 71, pp. 141–146.

Hailu, A.T. (2024) ‘The role of university–industry linkages in promoting technology transfer: implementation of triple helix model relations’, *Journal of Innovation and Entrepreneurship*, 13(1), p. 25. Available at: <https://doi.org/10.1186/s13731-024-00370-y>.

Han, J.H. (2025) ‘A Dual-Axis Framework for Social Innovation: Mapping Dynamic Transitions Through 121 Social Businesses in Developing Countries’, *Sustainability*, 17(19). Available at:

<https://doi.org/10.3390/su17198964>.

Harrison, H. *et al.* (2017a) 'Case Study Research: Foundations and Methodological Orientations', *Case Study Research*, p. 17.

Harrison, H. *et al.* (2017b) 'Case Study Research: Foundations and Methodological Orientations', *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 18(1). Available at: <https://doi.org/10.17169/fqs-18.1.2655>.

Havas, A. (2025) 'Shortcomings of social innovation definitions and a proposed new definition'. Rochester, NY: Social Science Research Network. Available at: <https://doi.org/10.2139/ssrn.5126985>.

van der Have, R.P. and Rubalcaba, L. (2016) 'Social innovation research: An emerging area of innovation studies?', *Research Policy*, 45, pp. 1923–1935.

Hazenbergh, R. and Paterson-Young, C. (2024) 'Top-down funded employment integration programmes: promoting bottom-up social innovation to empower the disadvantaged', *Handbook on Social Innovation and Social Policy*. Edward Elgar Publishing, pp. 219–234. Available at: <https://www.elgaronline.com/edcollchap/book/9781800887459/book-part-9781800887459-24.xml> (Accessed: 22 February 2026).

Herrera, M.E.B. (2015) 'Creating competitive advantage by institutionalizing corporate social innovation', *Journal of Business Research*, 68, pp. 1468–1474.

Herrera, M.E.B. (2016) 'Social innovation for bridging societal divides: Process or leader? A qualitative comparative analysis', *Journal of Business Research*, 69, pp. 5241–5247.

High, C. and Nemes, G. (2007) 'Social Learning in LEADER: Exogenous, Endogenous and Hybrid Evaluation in Rural Development', *Sociologia Ruralis*, 47(2), pp. 103–119. Available at: <https://doi.org/10.1111/j.1467-9523.2007.00430.x>.

Hossen, M.A. *et al.* (2025) 'Decoding university–industry collaboration: A SEM-ANN quadruple helix approach', *Future Business Journal*, 11(1), p. 236. Available at: <https://doi.org/10.1186/s43093-025-00655-y>.

Howaldt, J. (2019) 'New Pathways to Social Change-Creating Impact Through Social Innovation Research', *fteval Journal for Research and Technology Policy Evaluation*, (48), pp. 37–48. Available at: <https://doi.org/10.22163/fteval.2019.365>.

Howaldt, J., Domanski, D. and Kaletka, C. (2016) 'Social innovation: Towards a new innovation paradigm', *RAM. Revista de Administração Mackenzie*, 17(6), pp. 20–44. Available at: <https://doi.org/10.1590/1678-69712016/administracao.v17n6p20-44>.

Howaldt, J., Hölsgens, R. and Kaletka, C. (2024) 'Chapter 10: Social innovation and sustainable development'. Available at: <https://www.elgaronline.com/edcollchap/book/9781800887459/book-part-9781800887459-16.xml> (Accessed: 21 October 2025).

Howaldt, J., Kaletka, C. and Schröder, A. (2016) 'Social Entrepreneurs: Important Actors within an Ecosystem of Social Innovation', *European Public & Social Innovation Review*, 1(2). Available at: <https://pub.sinnergiak.org/esir/article/view/43> (Accessed: 29 August 2023).

Howaldt, J. and Schwarz, M. (2025) 'Social Innovation', *Handbook of Innovation*. Springer, Cham, pp. 1–16. Available at: [https://doi.org/10.1007/978-3-031-25143-6\\_40-1](https://doi.org/10.1007/978-3-031-25143-6_40-1).

Hualou, L. *et al.* (2023) 'Urban-rural Integrated Development at County Level under Chinese Path to

Modernization', *Economic geography*, 43(7), pp. 12–19. Available at: <https://doi.org/10.15957/j.cnki.jjdl.2023.07.002>.

Huang, P., Broto, V.C. and Westman, L. (2024) 'Harnessing social innovation for a just transition: A case study of tea industrialization in China's era of ecological civilization', *Environmental Innovation and Societal Transitions*, 53, p. 100917. Available at: <https://doi.org/10.1016/j.eist.2024.100917>.

Humphreys, P. and Imas, M. (2022) 'Decision support for social innovation enabling sustainable development', *Journal of Decision Systems* [Preprint]. Available at: <https://www.tandfonline.com/journals/tjds20> (Accessed: 28 July 2022).

Iansiti, M. and Levien, R. (2004) 'Strategy as ecology', *Harvard business review*, 82(3), pp. 68–78, 126.

Irungu, R.W. *et al.* (2023) 'Role of Networks of Rural Innovation in Advancing the Sustainable Development Goals: A Quadruple Helix Case Study', *Sustainability*, 15, p. 13221. Available at: <https://doi.org/10.3390/su151713221>.

Jacobides, M.G., Cennamo, C. and Gawer, A. (2024) 'Externalities and complementarities in platforms and ecosystems: From structural solutions to endogenous failures', *Research Policy*, 53(1), p. 104906. Available at: <https://doi.org/10.1016/j.respol.2023.104906>.

Jareh, A. (2025) 'Sustainable Social Innovation as a Solution for Systemic Change and Resilience', *Sustainability*, 17(4), pp. 1–21. Available at: <https://doi.org/10.3390/su17041583>.

Jia, C., Tang, X. and Kan, Z. (2020) 'Does the Nation Innovation System in China Support the Sustainability of Small and Medium Enterprises (SMEs) Innovation?', *Sustainability*, 12(6), pp. 1–18. Available at: <https://doi.org/10.3390/su12062562>.

Jia, X. and Desa, G. (2020) 'Social entrepreneurship and impact investment in rural–urban transformation: An orientation to systemic social innovation and symposium findings', *Agriculture and Human Values*, 37(4), pp. 1217–1239. Available at: <https://doi.org/10.1007/s10460-020-10133-6>.

Jiang, Y. (2017) 'Poverty Eradication in 2030 Agenda: China's Efforts and Their Potential Impacts', *China International Studies*, 63, p. 120.

Johnson, R. and Onwuegbuzie, A. (2004) 'Mixed Methods Research: A Research Paradigm Whose Time Has Come', *Educational researcher*, 33, p. 14. Available at: <https://doi.org/10.3102/0013189X033007014>.

Kandel, A. *et al.* (2025) 'Empowering Rural Communities through Social Innovations: Social Innovation as a Design Tool in the Extension Approaches for Sustainable Agricultural Development in Nepal', *International Journal of Research and Innovation in Applied Science*, X(II), pp. 433–441. Available at: <https://doi.org/10.51584/IJRIAS.2025.10020039>.

Kasumaningrum, Y. *et al.* (2024) 'Investigating the Impact of Social Capital, Cross-Sector Collaboration, and Leadership on Social Innovation in Rural Social Enterprises', *Journal of Human, Earth, and Future*, 5(1), pp. 111–130. Available at: <https://doi.org/10.28991/HEF-2024-05-01-09>.

Kim, L. and Nelson, R.R. (2000) *Technology, Learning, and Innovation: Experiences of Newly Industrializing Economies*. Cambridge University Press.

Kim, Y. (2010) 'The Pilot Study in Qualitative Inquiry', *Qualitative Social Work*, 10(2), pp. 190–206. Available at: <https://doi.org/10.1177/1473325010362001>.

Kirby, N., Stasiak, D. and von Schneidmesser, D. (2025) 'Community resilience through bottom–up

participation: when civil society drives urban transformation processes', *Community Development Journal*, 60(3), pp. 528–547. Available at: <https://doi.org/10.1093/cdj/bsae031>.

Klemens, K. *et al.* (2023) 'ENABLING INNOVATION IN RURAL DEVELOPMENT TO ACHIEVE SUSTAINABLE DEVELOPMENT GOALS', *Management of Sustainable Development*, 15(2), pp. 67–72. Available at: <https://doi.org/10.54989/msd-2023-0017>.

Klurvánková, T. *et al.* (2021) 'Social innovation for sustainability transformation and its diverging development paths in marginalised rural areas', *Sociologia ruralis*, 61(2), pp. 344–371. Available at: <https://doi.org/10.1111/soru.12337>.

Kopoteva, I. and Nikula, J. (2014) 'From social Innovation to Innovation System: leader in European and Russian rural areas', *Мир России. Социология. Этнология*, 23(3), pp. 95–123.

Kramer, M.R. and Pfitzer, M.W. (2016) 'THE ECOSYSTEM OF SHARED VALUE', *Harvard Business Review*, p. 11.

Krauss, S. (2015) 'Research Paradigms and Meaning Making: A Primer', *The Qualitative Report* [Preprint]. Available at: <https://doi.org/10.46743/2160-3715/2005.1831>.

Kristinsdóttir, S.G., Hrafnisdóttir, S. and Hulgård, L. (2025) 'User-Led Social Innovation – Emerging Ecosystems and Policy Frameworks', *Icelandic Review of Politics & Administration*, 21(2), pp. 259–279. Available at: <https://doi.org/10.13177/irpa.a.2025.21.2.8>.

Kuhlmann, S. (2018) 'Introduction to discussion paper on “Three Frames for Innovation Policy: R&D, Systems of Innovation and Transformative Change”', *Research Policy*, 47(9), p. 1553. Available at: <https://doi.org/10.1016/j.respol.2018.08.010>.

Kumari, R. *et al.* (2025) 'Flying High with Entrepreneurial Ecosystems—A Systematic Literature Review to Determine the Factors of Entrepreneurial Ecosystem Development', *Business Strategy and the Environment*, n/a(n/a). Available at: <https://doi.org/10.1002/bse.70140>.

Landa, I. (2024) 'Joint mechanism of institutions of higher education for the creation of a Social Innovation Ecosystem in Istmo de Tehuantepec, México', *Journal Law and Economy*, 18, pp. 1–0. Available at: <https://doi.org/10.35429/JLE.2024.8.14.2.10>.

Lee, K. (2013) *Schumpeterian Analysis of Economic Catch-up: Knowledge, Path-Creation, and the Middle-Income Trap*. Cambridge University Press.

Leydesdorff, L. (2012a) 'The Triple Helix of University-Industry-Government Relations (February 2012)'. Rochester, NY. Available at: <https://doi.org/10.2139/ssrn.1996760>.

Leydesdorff, L. (2012b) 'The Triple Helix, Quadruple Helix, ..., and an N-Tuple of Helices: Explanatory Models for Analyzing the Knowledge-Based Economy?', *Journal of the Knowledge Economy*, 3(1), pp. 25–35. Available at: <https://doi.org/10.1007/s13132-011-0049-4>.

Leydesdorff, L. and Etzkowitz, H. (1996) 'Emergence of a Triple Helix of university—industry—government relations', *Science and Public Policy*, 23(5), pp. 279–286. Available at: <https://doi.org/10.1093/spp/23.5.279>.

Leydesdorff, L. and Etzkowitz, H. (1998) 'The Triple Helix as a model for innovation studies', p. 9.

Leydesdorff, L. and Meyer, M. (2006) 'Triple Helix indicators of knowledge-based innovation systems: Introduction to the special issue', *Research Policy*, 35(10), pp. 1441–1449. Available at: <https://doi.org/10.1016/j.respol.2006.09.016>.

Leydesdorff, L. and Smith, H.L. (2022) 'Triple, Quadruple, and Higher-Order Helices: Historical Phenomena and (Neo-)Evolutionary Models', *Triple Helix*, 9(1), pp. 6–31. Available at: <https://doi.org/10.1163/21971927-bja10022>.

Leyen, B.P.H. *et al.* (2025) 'Relational governance processes in social entrepreneurship ecosystems: the role of social capital', *Social Enterprise Journal* [Preprint]. Available at: <https://doi.org/10.1108/SEJ-10-2024-0161>.

Li, L. and Duan, L. (2025) 'Human centric innovation at the heart of industry 5.0 – exploring research challenges and opportunities', *International Journal of Production Research*, 0(0), pp. 1–33. Available at: <https://doi.org/10.1080/00207543.2025.2462657>.

Lin, Z. *et al.* (2025) 'Status and prospects of research on new rural communities in China based on CiteSpace analysis', *Journal of Asian Architecture and Building Engineering*, 0(0), pp. 1–16. Available at: <https://doi.org/10.1080/13467581.2025.2454628>.

Lincoln, Y.S. and Guba, E.G. (1985) *Naturalistic Inquiry*. SAGE.

Liodaki, D. and Stockdale, C. (2025) 'If we can make it there, we can make it everywhere: grassroots social innovations for post- capitalistic futures', *Geografiska Annaler: Series B, Human Geography*, 107(4), pp. 473–491. Available at: <https://doi.org/10.1080/04353684.2025.2452990>.

Littlewood, D.C. *et al.* (2026) 'Introduction: social innovation and the Sustainable Development Goals (SDGs)', *The Elgar Companion to Social Innovation and the Sustainable Development Goals*. Edward Elgar Publishing, pp. 1–39. Available at: <https://www.elgaronline.com/edcollchap/book/9781035326044/chapter1.xml> (Accessed: 21 March 2026).

Liu, M. *et al.* (2025) 'Building Rural Resilience Through a Neo-Endogenous Approach in China: Unraveling the Metamorphosis of Jianta Village', *Agriculture*, 15(21). Available at: <https://doi.org/10.3390/agriculture15212251>.

Liu, X. and White, S. (2001) 'Comparing innovation systems: a framework and application to China's transitional context', *Research Policy*, 30(7), pp. 1091–1114. Available at: [https://doi.org/10.1016/S0048-7333\(00\)00132-3](https://doi.org/10.1016/S0048-7333(00)00132-3).

Liu, Y., Fu, W. and Schiller, D. (2024) 'University–industry linkages in China from the agency perspective of university engagement: a systematic literature review', *Science and Public Policy*, 51(3), pp. 435–449. Available at: <https://doi.org/10.1093/scipol/scad080>.

Liu Y., Yang R. and Lin Y. (2022) '中国县域城镇化格局演化与优化路径', *地理学报*, 77(12), p. 2937. Available at: <https://doi.org/10.11821/dlxb202212001>.

Liu, Y., Zang, Y. and Yang, Y. (2020) 'China's rural revitalization and development: Theory, technology and management', *Journal of Geographical Sciences*, 30(12), pp. 1923–1942. Available at: <https://doi.org/10.1007/s11442-020-1819-3>.

Livingstone, R. (2025) 'The metagovernance of power in collaboration innovation: a case study of transforming local systems in the Scottish Highlands', *Public Management Review* [Preprint]. Available at: <https://doi.org/10.1080/14719037.2025.2496992> (Accessed: 20 February 2026).

Lombardi, M. *et al.* (2020) 'NETWORK IMPACT OF SOCIAL INNOVATION INITIATIVES IN MARGINALISED RURAL COMMUNITIES', *Social Networks*, 63, pp. 11–20. Available at: <https://doi.org/10.1016/j.socnet.2020.04.001>.

Long, H. *et al.* (2010) 'Building new countryside in China: A geographical perspective', *Land Use Policy*, 27(2), pp. 457–470. Available at: <https://doi.org/10.1016/j.landusepol.2009.06.006>.

Lorenzo-Afable, D., Lips-Wiersma, M. and Singh, S. (2025) 'A Narrative Synthesis of The Empirical Literature on Social Value Creation in Social Entrepreneurship: Gaps and Opportunities for Future Research and Action', *Journal of Social Entrepreneurship*, 16(2), pp. 503–534. Available at: <https://doi.org/10.1080/19420676.2023.2195868>.

Lowe, P., Murdoch, J. and Ward, N. (1995) 'Networks in rural development: beyond exogenous and endogenous models', *Beyond modernization: the impact of endogenous rural development* [Preprint]. Available at: <https://eprints.ncl.ac.uk> (Accessed: 3 August 2026).

Lu, Z. *et al.* (2025) 'Promotion of rural industrial revitalization through the development of the rural digital economy', *Frontiers in Sustainable Food Systems*, 9. Available at: <https://doi.org/10.3389/fsufs.2025.1598461>.

Lu, Z. *et al.* (2026) 'Rural industrial revitalization and common prosperity: pathways to sustainable development in China's agricultural regions', *Frontiers in Sustainable Food Systems*, 10. Available at: <https://doi.org/10.3389/fsufs.2026.1764885>.

Luck, L., Jackson, D. and Usher, K. (2006) 'Case study: a bridge across the paradigms', *Nursing Inquiry*, 13(2), pp. 103–109. Available at: <https://doi.org/10.1111/j.1440-1800.2006.00309.x>.

Lundvall, B.-Å. and Rikap, C. (2022) 'China's catching-up in artificial intelligence seen as a co-evolution of corporate and national innovation systems', *Research Policy*, 51(1). Available at: <https://doi.org/10.1016/j.respol.2021.104395>.

Luo, Q. and Zhao, X. (2024) 'Intellectual property protection intensity and regional technological innovation structure: Based on the perspective of economic complexity theory', *Heliyon*, 10(21). Available at: <https://doi.org/10.1016/j.heliyon.2024.e39964>.

Ma, W. and Mu, L. (2024) 'China's Rural Revitalization Strategy: Sustainable Development, Welfare, and Poverty Alleviation', *Social Indicators Research*, 174(2), pp. 743–767. Available at: <https://doi.org/10.1007/s11205-024-03410-y>.

Mair, J. and Martí, I. (2006) 'Social entrepreneurship research: A source of explanation, prediction, and delight', *Journal of World Business*, 41(1), pp. 36–44. Available at: <https://doi.org/10.1016/j.jwb.2005.09.002>.

Mair, J. and Marti, I. (2009) 'Entrepreneurship in and around institutional voids: A case study from Bangladesh', *Journal of Business Venturing*, 24(5), pp. 419–435. Available at: <https://doi.org/10.1016/j.jbusvent.2008.04.006>.

Maldonado-Mariscal, K. and Alijew, I. (2023) 'Social innovation and educational innovation: a qualitative review of innovation's evolution', *Innovation: The European Journal of Social Science Research*, 36(3), pp. 381–406. Available at: <https://doi.org/10.1080/13511610.2023.2173152>.

Maldonado-Mariscal, K. and Papageorgiou, K. (2024) 'Integration of Social Innovation Ecosystems in Four European Countries'. SocArXiv. Available at: [https://doi.org/10.31235/osf.io/j4qb3\\_v1](https://doi.org/10.31235/osf.io/j4qb3_v1).

Málovics, G. *et al.* (2025) 'The potential role of university community engagement in supporting transformative social innovation – experiences from Hungary', *Innovation: The European Journal of Social Science Research*, 38(1), pp. 366–396. Available at: <https://doi.org/10.1080/13511610.2024.2399605>.

- Malterud, K., Siersma, V.D. and Guassora, A.D. (2016) 'Sample Size in Qualitative Interview Studies: Guided by Information Power', *Qualitative Health Research*, 26(13), pp. 1753–1760. Available at: <https://doi.org/10.1177/1049732315617444>.
- Marchesani, F. and Ceci, F. (2025) 'A quadruple helix view on smart city: Exploring the effect of internal and external open innovation on public services digitalization', *Technovation*, 139(C). Available at: <https://doi.org/10.1016/j.technovation.2024.103141>.
- Mariani, M. and Dwivedi, Y. (2024) 'Generative artificial intelligence in innovation management: A preview of future research developments. Available at: <https://doi.org/10.1016/j.jbusres.2024.114542>.
- Marini Govigli, V. *et al.* (2020) 'Testing a Framework to Co-Construct Social Innovation Actions: Insights from Seven Marginalized Rural Areas', *Sustainability*, 12(4), p. 1441. Available at: <https://doi.org/10.3390/su12041441>.
- Marsden, T. (1999) 'Rural Futures: The Consumption Countryside and its Regulation', *Sociologia Ruralis*, 39(4), pp. 501–526. Available at: <https://doi.org/10.1111/1467-9523.00121>.
- Mattijssen, T.J.M. *et al.* (2026) 'From local innovation to sustainable urban food systems: lessons on scaling from eleven European cities', *Food Security* [Preprint]. Available at: <https://doi.org/10.1007/s12571-026-01691-4>.
- Matus-Ruiz, M., Saka-Helmhout, A. and Carillo, J. (2025) 'How institutional voids are experienced and enacted through social innovation initiatives by multinationals in emerging markets', *International Business Review*, 34(2), p. 102382. Available at: <https://doi.org/10.1016/j.ibusrev.2024.102382>.
- Melece, L. (2015) 'Social Innovation and its Types in Rural Areas', p. 12.
- Merriam, S.B. (1998) *Qualitative Research and Case Study Applications in Education. Revised and expanded from 'Case Study Research in Education.'* Jossey-Bass Publishers, 350 Sansome St, San Francisco, CA 94104; phone: 415-433-1740; fax: 800-605-2665; World Wide Web: [www](http://www.josseybass.com).
- Millard, J. and Fucci, V. (2023) 'The role of social innovation in tackling global poverty and vulnerability', *Frontiers in Sociology*, 8. Available at: <https://doi.org/10.3389/fsoc.2023.966918>.
- Mirvis, P. *et al.* (2016) 'Corporate social innovation: How firms learn to innovate for the greater good', *Journal of Business Research*, 69(11), pp. 5014–5021. Available at: <https://doi.org/10.1016/j.jbusres.2016.04.073>.
- Mirvis, P. and Googins, B. (2017) 'The New Business of Business': *The Conference Board*, p. 20.
- Montanari, F. (2011) 'Creative Territories as Breeding Ground for Social Innovation Ecosystems', p. 37.
- Moore, J.F. (1993) 'Predators and Prey: A New Ecology of Competition', *Harvard Business Review*, pp. 75–86.
- Morales, D. and Kristensen, I.F. (2026) 'The entrepreneurial region? Evolving regional government roles in bioeconomy governance', *Regional Studies, Regional Science*, 13(1), p. 2615507. Available at: <https://doi.org/10.1080/21681376.2026.2615507>.
- Morawska-Jancelewicz, J. (2021) 'The Role of Universities in Social Innovation Within Quadruple/Quintuple Helix Model: Practical Implications from Polish Experience', *Journal of the Knowledge Economy* [Preprint]. Available at: <https://doi.org/10.1007/s13132-021-00804-y>.

Moulaert, F. *et al.* (2005) 'Towards alternative model(s) of local innovation', *Urban Studies (Routledge)*, 42(11), pp. 1969–1990. Available at: <https://doi.org/10.1080/00420980500279893>.

Moulaert, F., Maccallum, D. and Hillier, J. (2013) 'Social innovation: Intuition, precept, concept, theory and practice', *Social Learning and Transdisciplinary Research*, pp. 13–24. Available at: <https://doi.org/10.4337/9781849809986.00011>.

Moulaert, F. and Sekia, F. (2003) 'Territorial Innovation Models: A Critical Survey', *Regional Studies*, 37(3), p. 289. Available at: <https://doi.org/10.1080/0034340032000065442>.

Moulaert, F., Simmons, L. and Parra, C. (2024) 'Social relations in commoning: towards a socially innovative perspective to Action Research in building Landed Commons', *From Land Ownership to Landed Commons*. Edward Elgar Publishing, pp. 130–157. Available at: <https://www.elgaronline.com/edcollchap/book/9781035319688/book-part-9781035319688-15.xml> (Accessed: 22 February 2026).

Moulaert, F., Simmons, L. and Parra, C. (2025) 'Collective Subjectivation in Socially Innovative Commoning', *International Journal of the Commons*, 19(1). Available at: <https://doi.org/10.5334/ijc.1485>.

Mulgan, G. (2007) *social innovation what it is, why it matters and how it can be accelerated* Geoff. UK: The Young Foundation.

Muñoz-Morales, Á.C., Taboada, J. and Rueda Varón, M. (2024) 'Incidence of the quintuple helix model on social innovation generated in university extension projects from “impact” variable'. Available at: <http://hdl.handle.net/10882/14282> (Accessed: 3 March 2026).

Murdoch, J. (1993) 'Sustainable rural development: towards a research agenda', *Geoforum*, 24(3), pp. 225–241. Available at: [https://doi.org/10.1016/0016-7185\(93\)90018-D](https://doi.org/10.1016/0016-7185(93)90018-D).

Murillo-Luna, J.L. and Hernández-Trasobares, A. (2023) 'Cooperation with the Triple Helix and corporate environmental innovation', *Journal of Cleaner Production*, 384, p. 135479. Available at: <https://doi.org/10.1016/j.jclepro.2022.135479>.

Murray, R., Caulier-Grice, J. and Mulgan, G. (2010) *The Open Book of Social Innovation*.

Nanda, S. *et al.* (2004) 'Emphasis on Validation in Research: A Meta-Analysis', *Scientometrics*, 48(1), pp. 45–64. Available at: <https://doi.org/10.1023/a:1005628301541>.

Natário, M.M., Couto, J.P.A. and Almeida, C.F. (2012) 'The triple helix model and dynamics of innovation: a case study', *Journal of Knowledge-based Innovation in China*, 4(1), pp. 36–54. Available at: <https://doi.org/10.1108/17561411211208758>.

Navarro-Valverde, F. *et al.* (2022) 'Social Innovation in Rural Areas of the European Union Learnings from Neo-Endogenous Development Projects in Italy and Spain', *Sustainability*, 14(11), p. 6439. Available at: <https://doi.org/10.3390/su14116439>.

Nelson, R.R. (1994) 'The Co-evolution of Technology, Industrial Structure, and Supporting Institutions', *Industrial and Corporate Change*, 3(1), pp. 47–63. Available at: <https://doi.org/10.1093/icc/3.1.47>.

Neudert, P., Smolka, M. and Bösch, S. (2024) 'Towards transformative innovation ecosystems: a systemic approach to responsible innovation', *Journal of Responsible Innovation*, 11(1), p. 2414482. Available at: <https://doi.org/10.1080/23299460.2024.2414482>.

Neumeier, S. (2012) 'Why do Social Innovations in Rural Development Matter and Should They be

Considered More Seriously in Rural Development Research? – Proposal for a Stronger Focus on Social Innovations in Rural Development Research’, *Sociologia Ruralis*, 52(1), pp. 48–69. Available at: <https://doi.org/10.1111/j.1467-9523.2011.00553.x>.

Neumeier, S. (2017) ‘Social innovation in rural development: identifying the key factors of success’, *The Geographical Journal*, 183(1), pp. 34–46. Available at: <https://doi.org/10.1111/geoj.12180>.

Nicholls, A. and Murdock, A. (2012) ‘The Nature of Social Innovation’, in A. Nicholls and A. Murdock (eds) *Social Innovation: Blurring Boundaries to Reconfigure Markets*. London: Palgrave Macmillan UK, pp. 1–30. Available at: [https://doi.org/10.1057/9780230367098\\_1](https://doi.org/10.1057/9780230367098_1).

Nicholls, A., Simon, J. and Gabriel, M. (2015a) ‘Introduction: Dimensions of Social Innovation’, in A. Nicholls, J. Simon, and M. Gabriel (eds) *New Frontiers in Social Innovation Research*. London: Palgrave Macmillan UK, pp. 1–26. Available at: [https://doi.org/10.1057/9781137506801\\_1](https://doi.org/10.1057/9781137506801_1).

Nicholls, A., Simon, J. and Gabriel, M. (eds) (2015b) *New Frontiers in Social Innovation Research*. London: Palgrave Macmillan UK. Available at: <https://doi.org/10.1057/9781137506801>.

Noack, A. and Federwisch, T. (2019) ‘Social Innovation in Rural Regions: Urban Impulses and Cross-Border Constellations of Actors’, *Sociologia Ruralis*, 59(1), pp. 92–112. Available at: <https://doi.org/10.1111/soru.12216>.

Noack, A. and Federwisch, T. (2020) ‘Social Innovation in Rural Regions: Older Adults and Creative Community Development\*’, *Rural Sociology*, 85(4), pp. 1021–1044. Available at: <https://doi.org/10.1111/ruso.12333>.

Nordberg, K., Mariussen, Å. and Virkkala, S. (2020) ‘Community-driven social innovation and quadruple helix coordination in rural development. Case study on LEADER group Aktion Österbotten’, *Journal of Rural Studies*, 79, pp. 157–168. Available at: <https://doi.org/10.1016/j.jrurstud.2020.08.001>.

Nowaczyk-Basińska, K. (2025) ‘Digital afterlife leaders: professionalisation as a social innovation in the digital afterlife industry’, *Mortality*, 30(2), pp. 333–354. Available at: <https://doi.org/10.1080/13576275.2025.2449896>.

OECD (2025) ‘Starting, Scaling and Sustaining Social Innovation’, *Local Economic and Employment Development (LEED)* [Preprint]. Available at: <https://doi.org/10.1787/ec1dfb67-en>.

O’Shaughnessy, M., Christmann, G. and Richter, R. (2023) ‘Introduction. Dynamics of social innovations in rural communities’, *Journal of Rural Studies*, 99, pp. 187–192. Available at: <https://doi.org/10.1016/j.jrurstud.2022.09.010>.

Ouyang, Y. *et al.* (2026) ‘Corporate Social Responsibility with Chinese Characteristics: Institutional Embeddedness, Political Logic, and Comparative Theoretical Perspective’, *Societies*, 16(1), p. 19. Available at: <https://doi.org/10.3390/soc16010019>.

Pacheco, D.A. de J. and Iwaszczenko, B. (2024) ‘Unravelling human-centric tensions towards Industry 5.0: Literature review, resolution strategies and research agenda’, *Digital Business*, 4(2). Available at: <https://doi.org/10.1016/j.digbus.2024.100090>.

Pacheco, J.N., Turro, A. and Urbano, D. (2025) ‘Open social innovation: A systematic literature review and future research agenda’, *Technological Forecasting and Social Change*, 216, p. 124160. Available at: <https://doi.org/10.1016/j.techfore.2025.124160>.

Padua, D. (2025) ‘Embedding Social Responsibility in Higher Education Institutions: Towards a Measurable and Impact-Oriented Third Mission’, *Rivista Trimestrale di Scienza dell’Amministrazione*,

73(3), p. 1. Available at: <https://doi.org/10.32049/RTSA.2025.3.05>.

Parjanen, S. and Pässilä, A. (2025) 'Emerging social innovation ecosystems – a case study of urban development in Finland', *European Planning Studies*, 0(0), pp. 1–19. Available at: <https://doi.org/10.1080/09654313.2025.2544961>.

Park, H.W. and Stek, P.E. (2022) 'Measuring Helix Interactions in the Context of Economic Development and Public Policies: From Triple to Quadruple and N-Tuple Helix vs. N-Tuple and Quadruple Helix to Triads', *Triple Helix*, 8(2). Available at: <https://doi.org/10.1163/21971927-bja10026>.

Park, R.E. (1915) 'The City: Suggestions for the Investigation of Human Behavior in the City Environment', *American Journal of Sociology*, 20(5), pp. 577–612. Available at: <https://doi.org/10.1086/212433>.

Păunescu, C. (2014) 'Current trends in social innovation research: social capital, corporate social responsibility, impact measurement', 9(2), p. 14.

Pel, B. *et al.* (2020) 'Towards a theory of transformative social innovation: A relational framework and 12 propositions', *Research Policy*, 49(8), p. 104080. Available at: <https://doi.org/10.1016/j.respol.2020.104080>.

Pellizzoni, L.N. and Nodari, C.H. (2024) 'Propositions for a Social Innovation Ecosystem Predisposed to Co-Creation of Value', *Interações: Sociedade e as novas modernidades*, (46), pp. 73–105. Available at: <https://doi.org/10.31211/interacoes.n46.2024.a4>.

Perikangas, S., Kostilainen, H. and Kainulainen, S. (2024) 'Co-production of social innovations and enabling ecosystems for social enterprises', *International Journal of Public Sector Management*, 37(3), pp. 351–369. Available at: <https://doi.org/10.1108/IJPSM-04-2023-0111>.

Phillips, A., Luo, R. and Wendland-Liu, J. (2024) 'Shifting the paradigm: A critical review of social innovation literature', *International Journal of Innovation Studies*, 8(1), pp. 45–58. Available at: <https://doi.org/10.1016/j.ijis.2023.08.003>.

Phills, J.A., Deiglmeier, K. and Miller, D.T. (2008) 'Rediscovering social innovation', *Stanford Social Innovation Review*, 6(4), pp. 34–43.

Pinto, H. *et al.* (2024) 'The social shaping of innovation: networks and expectations as connecting dynamics in regional innovation systems', *International Review of Sociology*, 31(3), pp. 410–431. Available at: <https://doi.org/10.1080/03906701.2021.2015982>.

Ploeg, J.D. van der and Dijk, G. van (1995) 'Beyond modernization. The impact of endogenous rural development.' Available at: <https://agris.fao.org/search/en/providers/122575/records/6473577c08fd68d5460118e6> (Accessed: 3 August 2026).

Pol, E. and Ville, S. (2009) 'Social innovation: Buzz word or enduring term?', *The Journal of Socio-Economics*, 38(6), pp. 878–885. Available at: <https://doi.org/10.1016/j.socec.2009.02.011>.

Porter, M.E. and Kramer, M.R. (2011) 'Creating Shared Value', *Harvard Business Review* [Preprint].

Qu, M. and Zollet, S. (2023) 'Neo-endogenous revitalisation: Enhancing community resilience through art tourism and rural entrepreneurship', *Journal of Rural Studies*, 97, pp. 105–114. Available at: <https://doi.org/10.1016/j.jrurstud.2022.11.016>.

Rabelo Neto, J. *et al.* (2024) 'Factors for innovation ecosystem frameworks: Comprehensive

organizational aspects for evolution', *Technological Forecasting and Social Change*, 203(C). Available at: <https://EconPapers.repec.org/RePEc:eee:tefoso:v:203:y:2024:i:c:s0040162524001793> (Accessed: 12 November 2025).

Rahi, S. (2017) 'Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development', *International Journal of Economics & Management Sciences*, 06(02). Available at: <https://doi.org/10.4172/2162-6359.1000403>.

RAMI'REZ, R. (1999) 'Value Co-Production: Intellectual Origins and Implications for Practice and Research', *Strategic Management Journal* [Preprint].

Ray, C. (1997) 'Towards a Theory of the Dialectic of Local Rural Development within the European Union', *Sociologia Ruralis*, 37(3), pp. 345–362. Available at: <https://doi.org/10.1111/j.1467-9523.1997.tb00055.x>.

Ray, C. (2006) 'Neo-Endogenous Rural Development in the EU', *The Handbook of Rural Studies*, pp. 278–291. Available at: <https://doi.org/10.4135/9781848608016.n19>.

Repo, P. and Matschoss, K. (2020) 'Social Innovation for Sustainability Challenges', *Sustainability*, 12(1), p. 319. Available at: <https://doi.org/10.3390/su12010319>.

Rho, Wha-Joon (2014) 'Triple Helix for Social Innovation: The Saemaul Undong for Eradicating Poverty', *Journal of Contemporary Eastern Asia*, 13(1), pp. 39–55. Available at: <https://doi.org/10.17477/JCEA.2014.13.1.039>.

Richter, R. and Christmann, G.B. (2021) 'On the role of key players in rural social innovation processes', *Journal of Rural Studies* [Preprint]. Available at: <https://doi.org/10.1016/j.jrurstud.2021.04.010>.

Richter, R. and Christmann, G.B. (2023) 'On the role of key players in rural social innovation processes', *Journal of Rural Studies*, 99, pp. 213–222. Available at: <https://doi.org/10.1016/j.jrurstud.2021.04.010>.

Rodrigo, L. and Palacios, M. (2021) 'What antecedent attitudes motivate actors to commit to the ecosystem of digital social innovation?', *Technological Forecasting and Social Change*, 162, p. 120394. Available at: <https://doi.org/10.1016/j.techfore.2020.120394>.

Rogelja, T. *et al.* (2023) 'Analyzing social innovation as a process in rural areas: Key dimensions and success factors for the revival of the traditional charcoal burning in Slovenia', *Journal of Rural Studies*, 97, pp. 517–533. Available at: <https://doi.org/10.1016/j.jrurstud.2022.12.030>.

Rogers, R. (2018) 'Coding and Writing Analytic Memos on Qualitative Data: A Review of Johnny Saldana's The Coding Manual for Qualitative Researchers', *The Qualitative Report*, 23(4), pp. 889–893.

Rosenberg, J.P. and Yates, P.M. (2007) 'Schematic representation of case study research designs', *Journal of Advanced Nursing*, 60(4), pp. 447–452. Available at: <https://doi.org/10.1111/j.1365-2648.2007.04385.x>.

Rösing Agostini, M. *et al.* (2017) 'An Overview on Social Innovation Research: Guiding Future Studies'.

Rossoni, A.L., de Vasconcellos, E.P.G. and de Castilho Rossoni, R.L. (2024) 'Barriers and facilitators of university-industry collaboration for research, development and innovation: a systematic review', *Management Review Quarterly*, 74(3), pp. 1841–1877. Available at: <https://doi.org/10.1007/s11301-023-00349-1>.

Rover, O.J., De Gennaro, B.C. and Roselli, L. (2017) 'Social Innovation and Sustainable Rural Development: The Case of a Brazilian Agroecology Network', *Sustainability*, 9(1), p. 3. Available at: <https://doi.org/10.3390/su9010003>.

Sarfo, I. *et al.* (2025) 'A bibliometric analysis of China's rural revitalization paradox: opportunities for collaboration, social innovation and global development', *Environment, Development and Sustainability*, 27, pp. 9629–9671. Available at: <https://doi.org/10.1007/s10668-023-04302-w>.

Sarkki, S. *et al.* (2024) 'Women-Led Social Innovation Initiatives Contribute to Gender Equality in Rural Areas: Grounded Theory on Five Initiatives from Three Continents', *European Countryside*, 16(4), pp. 534–562. Available at: <https://doi.org/10.2478/euco-2024-0028>.

Satalkina, L. and Steiner, G. (2022) 'Social Innovation: A Retrospective Perspective', *Minerva*, 60(4), pp. 567–591. Available at: <https://doi.org/10.1007/s11024-022-09471-y>.

Scaffidi, F., Micelli, E. and Nash, M. (2025) 'The role of the social entrepreneur for sustainable heritage-led urban regeneration', *Cities*, 158, p. 105670. Available at: <https://doi.org/10.1016/j.cities.2024.105670>.

Scheidgen, K. *et al.* (2021) 'Crises and entrepreneurial opportunities: Digital social innovation in response to physical distancing', *Journal of Business Venturing Insights*, 15, p. e00222. Available at: <https://doi.org/10.1016/j.jbvi.2020.e00222>.

Schot, J. and Steinmueller, W.E. (2018) 'Three frames for innovation policy: R&D, systems of innovation and transformative change', *Research Policy*, 47(9), pp. 1554–1567. Available at: <https://doi.org/10.1016/j.respol.2018.08.011>. Schumpeter, J.A. (1942) *Capitalism, socialism and democracy*. London New York: Routledge. Available at: <https://doi.org/10.4324/9780203202050>.

Secundo, G. *et al.* (2025) 'The transformative power of artificial intelligence within innovation ecosystems: a review and a conceptual framework', *Review of Managerial Science*, 19(9), pp. 2697–2728. Available at: <https://doi.org/10.1007/s11846-024-00828-z>.

Shortall, S. (2008) 'Are rural development programmes socially inclusive? Social inclusion, civic engagement, participation, and social capital: Exploring the differences', *Journal of Rural Studies*, 24(4), pp. 450–457. Available at: <https://doi.org/10.1016/j.jrurstud.2008.01.001>.

Sirolli, M.V. *et al.* (2025) 'Applying open innovation practices to social innovation initiatives: building the coalescence innovation framework for urban regeneration'. Available at: <https://doi.org/10.1016/j.sfr.2025.100949>.

Sivarajah, R. (2023) 'Promoting sustainable and human-centric industry 5.0: a thematic analysis of emerging research topics and opportunities', *Journal of Business and Socio-economic Development*, 4, pp. 111–126. Available at: <https://doi.org/10.1108/JBSED-10-2022-0116>.

Slee, B., Lukesch, R. and Ravazzoli, E. (2022) 'Social Innovation: The Promise and the Reality in Marginalised Rural Areas in Europe', *World*, 3(2), pp. 237–259. Available at: <https://doi.org/10.3390/world3020013>.

Slitine, R., Chabaud, D. and Richez-Battesti, N. (2024) 'Towards local sustainability: How intermediation fosters social innovation', *Technological Forecasting and Social Change*, 209. Available at: <https://doi.org/10.1016/j.techfore.2024.123790>.

Smith, K.M. *et al.* (2025) 'A multiple-stakeholder view of open and user innovation: Systematic review and future research agenda', *Journal of the Academy of Marketing Science*, 53(6), pp. 1527–1549. Available at: <https://doi.org/10.1007/s11747-025-01092-7>.

Solar, V. del and Vanessa, M. (2025) 'Navigating Institutional Complexity: Social Enterprises as Embedded Agents of Systemic Change'. Available at: <https://repositorio.comillas.edu/xmlui/handle/11531/107994> (Accessed: 21 February 2026).

Solis-Navarrete, J.A. (2025) 'Innovations in response to the COVID-19 pandemic: The role of non-profit and public institutions', *World Patent Information*, 80, p. 102340. Available at: <https://doi.org/10.1016/j.wpi.2025.102340>.

Sottini, A., Zupic, I. and Giudici, A. (2025) 'Social entrepreneurship and social innovation: A bibliometric review and research agenda', *European Management Journal*, 43(2), pp. 182–193. Available at: <https://doi.org/10.1016/j.emj.2024.03.006>.

Stake, R.E. (1995) *The Art of Case Study Research*. SAGE.

Steiner, A., Calò, F. and Shucksmith, M. (2023) 'Rurality and social innovation processes and outcomes: A realist evaluation of rural social enterprise activities', *Journal of Rural Studies*, 99, pp. 284–292. Available at: <https://doi.org/10.1016/j.jrurstud.2021.04.006>.

Sun, J., Zhang, C. and Wang, B. (2025) 'Consolidating poverty alleviation and rural revitalization from the perspective of industrial assistance: China', *Frontiers in Sustainable Food Systems*, 9. Available at: <https://doi.org/10.3389/fsufs.2025.1419410>.

Sun, Y. (2002) 'China's National Innovation System in Transition', *Eurasian Geography and Economics*, 43(6), pp. 476–492. Available at: <https://doi.org/10.2747/1538-7216.43.6.476>.

*Sustainable Development Goals* (2015) UNDP. Available at: <https://www.undp.org/sustainable-development-goals> (Accessed: 4 February 2026).

Tabares, S., Dionisio, M. and Parida, V. (2025a) 'Leveraging corporate social innovation by hybrid organizations: A strategic perspective from B Corps in Latin America', *Journal of Business Research*, 186(C). Available at: <https://doi.org/10.1016/j.jbusres.2024.114945>.

Tabares, S., Dionisio, M. and Parida, V. (2025b) 'Leveraging corporate social innovation by hybrid organizations: A strategic perspective from B Corps in Latin America', *Journal of Business Research*, 186, p. 114945. Available at: <https://doi.org/10.1016/j.jbusres.2024.114945>.

Temple, B. and Young, A. (2004) 'Qualitative Research and Translation Dilemmas', *Qualitative Research*, 4(2), pp. 161–178. Available at: <https://doi.org/10.1177/1468794104044430>.

Terry, G. *et al.* (2017) 'Thematic analysis', *The SAGE handbook of qualitative research in psychology*, 2(17–37), p. 25. Available at: <https://doi.org/10.4135/9781526405555.n2>.

Terstriep, J. *et al.* (2015) 'Comparative Report on Social Innovation across Europe'.

Terstriep, J., Rehfeld, D. and Kleverbeck, M. (2020) 'Favourable social innovation ecosystem(s)? – An explorative approach', *European Planning Studies*, 28(5), pp. 881–905. Available at: <https://doi.org/10.1080/09654313.2019.1708868>.

Terstriep, J., Rehfeld, D. and Kleverbeck, M. (2022) 'Favourable social innovation ecosystem(s)? – An explorative approach', *The Economics of Social Innovation*. Routledge.

Thomas, L.D.W. and Autio, E. (2019) 'Innovation Ecosystems'. Rochester, NY. Available at: <https://doi.org/10.2139/ssrn.3476925>.

Tisdell, E.J., Merriam, S.B. and Stuckey-Peyrot, H.L. (2025) *Qualitative Research: A Guide to Design*

*and Implementation*. John Wiley & Sons.

Tran, D.V. *et al.* (2024) ‘Determining the antecedents of digital transformation and performance: the roles of social capital, open social innovation, absorptive capacity and government support’, *European Journal of Innovation Management*, 28(8), pp. 4202–4224. Available at: <https://doi.org/10.1108/EJIM-08-2024-0917>.

Troisi, O., Visvizi, A. and Grimaldi, M. (2024) ‘Rethinking innovation through industry and society 5.0 paradigms: a multileveled approach for management and policymaking’, *European Journal of Innovation Management*, 27(9), pp. 22–51. Available at: <https://doi.org/10.1108/EJIM-08-2023-0659>.

Tse, C.H. *et al.* (2024) ‘Evolution of MNE strategies amid China’s changing institutions: a thematic review’, *Journal of International Business Studies*, 55(6), pp. 657–675. Available at: <https://doi.org/10.1057/s41267-024-00715-5>.

Tu, S. and Long, H. (2017) ‘Rural restructuring in China: Theory, approaches and research prospect’, *Journal of Geographical Sciences*, 27(10), pp. 1169–1184. Available at: <https://doi.org/10.1007/s11442-017-1429-x>.

Unceta, A. *et al.* (2019) ‘Social Innovation Regime: an integrated approach to measure social innovation’, *The Economics of Social Innovation*. Routledge.

Unceta, A., Castro-Spila, J. and García Fronti, J. (2016) ‘Social innovation indicators’, *Innovation: The European Journal of Social Science Research*, 29(2), pp. 192–204. Available at: <https://doi.org/10.1080/13511610.2015.1127137>.

Vercher, N. (2022) ‘The Role of Actors in Social Innovation in Rural Areas’, *Land*, 11(5), p. 710. Available at: <https://doi.org/10.3390/land11050710>.

Vercher, N., Bosworth, G. and Esparcia, J. (2022) ‘Developing a framework for radical and incremental social innovation in rural areas’, *Journal of Rural Studies* [Preprint]. Available at: <https://doi.org/10.1016/j.jrurstud.2022.01.007>.

Walrave, B. *et al.* (2018) ‘A multi-level perspective on innovation ecosystems for path-breaking innovation’, *Technological Forecasting and Social Change*, 136, pp. 103–113. Available at: <https://doi.org/10.1016/j.techfore.2017.04.011>.

Wang, H. and Rodriguez-Pose, A. (2025) ‘Institutional reform, path development and firm creation: evidence from China’, *Cambridge Journal of Regions, Economy and Society* [Preprint]. Available at: <https://doi.org/10.1093/cjres/rsaf039>.

Wang, H. and Xie, X. (2025) ‘Revealing the impact of technological niche on value co-creation: the moderating role of the open innovation ecosystem structure’, *The Journal of Technology Transfer* [Preprint]. Available at: <https://doi.org/10.1007/s10961-025-10290-y>.

Weerawardena, J. and Mort, G.S. (2006) ‘Investigating social entrepreneurship: A multidimensional model’, *Journal of World Business*, 41(1), pp. 21–35. Available at: <https://doi.org/10.1016/j.jwb.2005.09.001>.

Wei, T. and Wan, Q. (2024) ‘Filling institutional voids: interactions between digital and individual intermediaries in facilitating corporate social entrepreneurs for building inclusive markets’, *Chinese Management Studies*, 19(2), pp. 416–439. Available at: <https://doi.org/10.1108/CMS-06-2022-0225>.

Wertz, R.J. (2014) ‘Johnny Saldana. The Coding Manual for Qualitative Researchers’, *Journal of Communications Media Studies*, 6(1), pp. 128–130.

Westley, F.R. and McConnell, J.W. (2010) 'Making a Difference Strategies for Scaling Social Innovation for Greater Impact'.

van Wijk, J. *et al.* (2019) 'Social Innovation: Integrating Micro, Meso, and Macro Level Insights from Institutional Theory', *Business & Society*, 58(5), pp. 887–918. Available at: <https://doi.org/10.1177/0007650318789104>.

Wittmayer, J.M. *et al.* (2019) 'Narratives of change: How social innovation initiatives construct societal transformation', *Futures*, 112, p. 102433. Available at: <https://doi.org/10.1016/j.futures.2019.06.005>.

World Economic Forum, W.E.F. (2025) *The Future is Collective: Advancing Collective Social Innovation to Address Society's Biggest Challenges 2025*, World Economic Forum. Available at: <https://www.weforum.org/publications/the-future-is-collective-advancing-collective-social-innovation-to-address-societys-biggest-challenges/> (Accessed: 23 October 2025).

Xin, S. (2026) 'State-driven social innovation: Can neo-exogenous development address rural marginalization? A tale of two villages in China', *Journal of Rural Studies*, 121, p. 103922. Available at: <https://doi.org/10.1016/j.jrurstud.2025.103922>.

Xu, L., Tanamee, D. and Romprasert, S. (2025) 'Does Digital Village Construction Promote Agricultural Green Total Factor Productivity? An Empirical Study Based on China's Provincial Panel Data', *Economies*, 13(4), p. 85. Available at: <https://doi.org/10.3390/economies13040085>.

Yang, Y. *et al.* (2019) 'Dynamics of triple helix relations in the development of cleaner technologies: case of a Chinese power equipment manufacturer', *Innovation and Development*, 9(1), pp. 65–84. Available at: <https://doi.org/10.1080/2157930X.2018.1463095>.

Yang, Y. *et al.* (2021) 'Measurement of urban-rural integration level and its spatial differentiation in China in the new century', *Habitat International*, 117, p. 102420. Available at: <https://doi.org/10.1016/j.habitatint.2021.102420>.

Ye, W. and Wang, Y. (2019) 'Exploring the Triple Helix Synergy in Chinese National System of Innovation', *Sustainability*, 11(23), pp. 1–17. Available at: <https://doi.org/10.3390/su11236678>.

Yin, R.K. (2009) *Case study research: Design and methods*. 5th edn. Sage.

Yin, R.K. (2011) *Qualitative research from start to finish*. New York: Guilford Press.

Yin, X., Chen, J. and Li, J. (2022) 'Rural innovation system: Revitalize the countryside for a sustainable development', *Journal of Rural Studies*, 93, pp. 471–478. Available at: <https://doi.org/10.1016/j.jrurstud.2019.10.014>.

Ying, Z. *et al.* (2025) 'Does innovation policy drive rural revitalization in China? - An empirical study based on Chinese rural areas', *PLOS ONE*, 20(4), p. e0311462. Available at: <https://doi.org/10.1371/journal.pone.0311462>.

Yip, G.S. and McKern, B. (2016) *China's Next Strategic Advantage: From Imitation to Innovation*. MIT Press.

Yoon, S. and Ho, J.-Y. (2025) 'Delivering sustainable development via social innovation: Cases of social entrepreneurship in South Korea and Singapore', *Sustainable Development*, 33(1), pp. 416–430. Available at: <https://doi.org/10.1002/sd.3127>.

Yordanova, Z. *et al.* (2025) 'The Social Third Mission of Universities: Towards a Unified Framework', *Economic Alternatives*, 31(2), pp. 563–593. Available at: <https://doi.org/10.37075/EA.2025.2.13>.

Zadegan, M.G., Ghazinoory, S. and Nasri, S. (2025) 'The Triple Helix Model of Innovation and Sustainable Development Goals: A Literature Review', *Sustainable Development*, n/a(n/a). Available at: <https://doi.org/10.1002/sd.70041>.

Zahra, S.A. *et al.* (2009) 'A typology of social entrepreneurs: Motives, search processes and ethical challenges', *Journal of Business Venturing*, 24(5), pp. 519–532. Available at: <https://doi.org/10.1016/j.jbusvent.2008.04.007>.

Zahra, S.A. (2020) 'International entrepreneurship in the post Covid world', *Journal of World Business*, p. 101143. Available at: <https://doi.org/10.1016/j.jwb.2020.101143>.

Zakaria, H. *et al.* (2025) 'The Triple, Quadruple, and Quintuple Helix Models: A Bibliometric Analysis and Research Agenda', *Journal of the Knowledge Economy*, 16(4), pp. 15491–15539. Available at: <https://doi.org/10.1007/s13132-024-02554-z>.

Zang, Y. *et al.* (2023) 'Entrepreneurship and the formation mechanism of Taobao Villages: Implications for sustainable development in rural areas', *Journal of Rural Studies*, 100, p. 103030. Available at: <https://doi.org/10.1016/j.jrurstud.2023.103030>.

Zhang, C., Auricchio, V. and Selloni, D. (2025) 'A Failed Social Innovation Experiment in Rural China', *ServDes Conference Series* [Preprint]. Available at: <https://dl.designresearchsociety.org/servdes/servdes2025/researchpapers/27>.

Zhang, D., Lin, Q. and Mao, S. (2024) 'Addressing Rural Decline: China's Practices in Rural Transformation and Farmers' Income Growth', *Agriculture*, 14(9). Available at: <https://doi.org/10.3390/agriculture14091654>.

Zhang, Q. *et al.* (2023) 'Contextualizing the rural in digital studies: A computational literature review of rural-digital relations', *Technology in Society*, 75, p. 102373. Available at: <https://doi.org/10.1016/j.techsoc.2023.102373>.

Zhang, Y. *et al.* (2023) 'Alleviating Relative Poverty in Rural China through a Diffusion Schema of Returning Farmer Entrepreneurship', *Sustainability*, 15(2), p. 1380. Available at: <https://doi.org/10.3390/su15021380>.

Zhou, J. and Wang, M. (2023) 'The role of government-industry-academia partnership in business incubation: Evidence from new R&D institutions in China', *Technology in Society*, 72, p. 102194. Available at: <https://doi.org/10.1016/j.techsoc.2022.102194>.

# APPENDICES

## APPENDIX I

### PARTICIPANTS INFORMATION SHEET

Dear Participant:

Hello!

Thank you for your willingness to participate in this academic study. This research is conducted by Wang Qihui, a doctoral student at the School of Management of the University of Sunderland (UK). The research topic is: Multi-actor innovation dynamics within social innovation ecosystems under the practice of China's rural revitalization strategy.

Before you decide whether to participate in this study, please read the following information carefully to understand the purpose, process, and your rights regarding this research.

#### 1. Research Purpose

This study aims to explore how multiple participants, namely the government, university, enterprise, and civil society organizations, engage in dynamic synergy and cooperation within the practice of China's rural revitalization. The goal is to jointly promote the development of China's rural revitalization and the resolution of related sustainable development issues. The research results will be used for academic thesis writing and related academic publications.

#### 2. Research Content and Method of Participation

If you agree to participate in this study, you will be invited to take part in an interview:

- Interview Format: In-person/Face-to-face
- Interview Duration: Approximately 30 minutes to 1 hour
- Interview Content: Centered around your identity in participating in rural development, the form of participation, and specific interactions with other organizations
- Audio/Video Recording: This interview will be audio-recorded (used for research analysis only)

#### 3. Risks and Discomfort

This study is a social science research project and involves low risk. However, during the interview process, if you experience slight emotional fluctuations or feel uncomfortable due to recalling certain experiences or questions, you have the right to terminate the interview at any time or refuse to answer any question.

#### 4. Privacy Protection and Data Use

- Your personal information will be kept strictly confidential.
- All data analysis content involving interview responses will be anonymized (e.g., using pseudonyms).
- Interview materials are used only for this research and related academic purposes.
- Without your additional consent, the data will not be used for other purposes.

