

**Ecologizing the Chinese Countryside:
The Rural Fix for Urban Sustainability in the Lower Yangzi Delta**

By

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A Dissertation Submitted in Partial Fulfillment of the
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Abstract

This dissertation examines the phenomenon of ecologization, the proliferating construction of ecological spaces (eco-spaces), which have emerged in densely populated rural areas of the lower Yangzi Delta mega-urban region in response to the sustainable development agenda and Chinese policies of ecological civilization. Drawn from the Chinese word *shengtaihua* (生态化), ecologization is used in this study to conceptualize the various ways ecology is interpreted and implemented in the Chinese context, as it challenges established discourses, practices and roles of spatial design disciplines which seek to address the goals of sustainable development and the ideologies of ecological civilization. The analysis of ecologization also provides a design perspective in understanding rural and urban transformation under strong environmental and cultural governance in China. Based on the interplay between environmental protection and urbanization, the process of ecologization is essentially a form of urbanization, modernization and civilization that radically transforms the spatial and social fabric of rural landscapes in the lower Yangzi Delta. As a national prototype for green and ecologically integrated development, ecologization in the lower Yangzi Delta may soon be widely adopted in the entire country, causing great loss of cultural landscapes, social sustainability and rurality in the Chinese countryside.

Through extensive fieldwork, semi-structured interviews and document analysis, the dissertation illustrates how the interpretation of national environmental and ideological mandates among local planning elites in China has resulted in particular processes and patterns around the development and construction of eco-spaces. Detailed analysis of the ways spatial design disciplines interpret, implement, and govern eco-spaces highlight how ecologization across rural areas of the lower Yangzi Delta has become the fix for challenges of urban sustainability.

A key finding of the research is that to fix urban sustainability statistically and aesthetically, two strategies—eco-metrics and eco-culture aesthetics—were devised by local planning elites to implement environmental and ideological tasks. Eco-metrics were achieved as top-down administrative tasks irrespective of spatial conditions, while eco-culture aesthetics composed new narratives of the rural landscapes as a continuation of culture and tradition. The evidence illustrates how ecologization is detrimental to social and environmental sustainability in rural areas. In the process, genuine social sustainability and pre-existing spatial conditions were largely disregarded, and village rationality, which maintains rurality and rural sustainability in the context of a globalized economy and rural urbanization, was lost. This outcome is inconsistent with the stated goals and rhetoric of indicator-based measurement methods of sustainable development and ecological civilization.

Another key finding highlights strong cultural assertions in ecologization deliberately intended to reinforce the Party's ideological influence, to ensure collective social value towards ecological civilization, and to harmonize conflicts between rural and urban, and local interests and national policies. Moreover, ecologization in the lower Yangzi Delta deployed spatial design disciplines as a tool to legitimize implementation of both environmental and ideological goals in eco-spaces and the surrounding countryside. Such forward-looking outcome-based approaches and the near total disregard of authentic local historical, social and cultural processes, is part of a

spatial design approach that is consistent with the Party-state's intention to wholly restructure spatial and social forms.

The dissertation concludes by arguing that in-depth research and consideration of historical, contextual, and social processes must be undertaken to ensure spatial design disciplines can make meaningful contributions to genuine sustainability. Such sustainable planning and design should also be integrated into policy-making processes and be independent from administrative hierarchy and local power dynamics. The strategies and implications of ecologization in other parts of China, or in other cultural and political contexts could be further examined in comparative research.

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List of Abbreviations

CPC	Communist Party of China
MDGs	Millennium Development Goals
MOHURD	Ministry of Housing and Urban-Rural Development
NDRC	National Development and Reform Commission
PRC	People's Republic of China
SDGs	Sustainable Development Goals
UNSD	United Nations Statistics Division
WI	Worldwatch Institute
YRD	the lower Yangzi River Delta

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Dedication

This dissertation is dedicated to my parents who have supported me unconditionally.

Chapter 1: Introduction

1.1 Introduction

This study examines the phenomenon of *ecologization*, i.e. the proliferating construction of ecological and green spaces (hereafter referred to as *eco-spaces*) observed in the densely populated rural areas of the lower Yangzi River Delta mega-urban region. Adapted from the Chinese term *shengtaihua* (生态化), ecologization is used in this dissertation to conceptualize the various ways ecology is interpreted and implemented in the transformation of the Chinese countryside. The dissertation provides a design perspective to understand landscape transformation in the Chinese countryside where state-led urbanization is largely carried out through spatial planning and design practices.

The rural areas examined in this study have been reclassified as urban due to administrative annexation (more on this in Section 1.2.2), although they remain largely rural in character. For the purposes of this dissertation, the idea of urbanization refers to processes in the countryside that have driven transformation of rural landscapes based on local interpretation of environmental and ideological mandates. In this way, rural areas have become the fix for urban sustainability issues for the entire administratively expanded urban territory. The concept of “fix” in this dissertation refers to local remedial measures to meet the statistical criteria and state-led aesthetic norms of sustainable development and ecological civilization in the Chinese countryside. “Fix” as it is used in this research differs from the concepts of “urban sustainability fix” (While et al., 2004), “socio-ecological fix” (Ekers & Prudham, 2015, 2017), and “ecological fix” (Castree & Christophers, 2016; F. Zhang & Wu, 2022), all of which originated from the

concept of “spatial fix” (Harvey, 1982) in response to the crisis of capitalist accumulation and the resulting environmental crisis associated with conventional city-based entrepreneurialism.

The study area (Figure 1.1), which sits at the intersection of Shanghai Municipality, Jiangsu Province, and Zhejiang Province in the lower Yangzi River Delta (hereafter referred to as the *YRD region*), is one of the most intensively and extensively developed mega-urban regions in China, with its urban area increasing 1150% over the past four decades from 757 km² in 1984 to 9466 km² in 2021 (Ministry of Housing and Urban-Rural Development, 2021; K. Yang et al., 2018). During the same period, the population has grown from 111.3 million in 1982 to 174.2 million in 2020 with an increase of 56.5% in the past four decades (National Bureau of Statistics, 2001, 2021). In 2022, the broadly defined YRD region, which occupies only 2% of the national land area, accounted for over 24% of China’s national annual GDP. Urbanization and rural industrialization processes shaped the formation of the YRD mega-urban region, including several interdependent metropolitan regions and densely populated rural areas in between large cities and towns (Marton & Mcgee, 2017). In 2019, the state council officially approved designation of the core area of the YRD region as a Green and Ecologically Integrated Development Demonstration Area (长三角生态绿色一体化发展示范区), which meant that it became a national prototype for implementing ecological civilization (生态文明, a key political

ideology of the Party-State in China) (State Council, 2019).

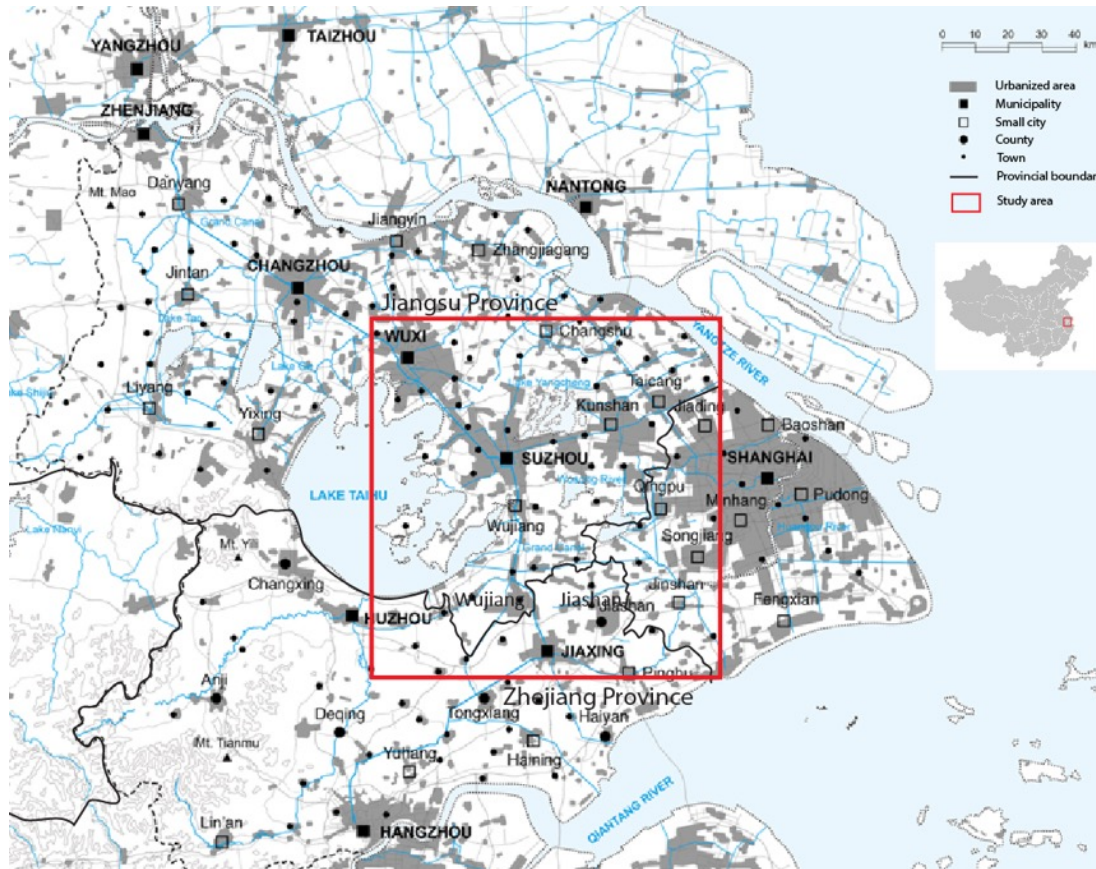


Figure 1.1 Location of study area

Note. Source of base map (Y. Xie, 2017, p. 79). Adapted by the author.

Through extensive fieldwork in the YRD region during 2020–2021, including semi-structured interviews with planners/designers, remote sensing technicians, and landscape ecologists, and through an analysis of planning and policy documents and political discourse, field notes and academic literature, this dissertation examines the phenomenon of ecologization, and analyzes it in relation to a constellation of forces that aimed to achieve sustainable development and ecological civilization in the region. This dissertation critically examines how ecology has been interpreted and implemented, how ecological policies have been implemented

under environmental and ideological mandates, the impact of ecologization on rural landscapes, and what strategies are adopted in spatial planning practices to achieve national goals and accommodate local interests.

Ecological civilization became a central ideology in Chinese political discourse in 2012 and was later added into the *Constitution of the People's Republic of China* in 2018. The ideology of ecological civilization was intended to move China away from the focus on industrial civilization in both the mode of production and way of life (more on ecological civilization in Section 1.2.1.1). Since 1949, the economic policies in China transitioned from a socialist command economy under Mao to the market economy following the Reform and Opening Up policy under the leadership of Deng Xiaoping. For over four decades, economic success has brought about tremendous changes in the socioeconomic conditions in China, but it was also accompanied with significant social issues and environmental deterioration (refer to Section 1.2.3). The central government recognized that “the real question with regard to the future of China ... is more ecological than economic.” (Wen et al., 2012, p. 30). While an extensive body of literature on Chinese urban development has discussed ecological urban planning and development as sustainable urban prototypes in urban settings, such as eco-cities, low-carbon cities, and greenway projects (Caprotti et al., 2015; Chang et al., 2016; G. C. S. Lin & Kao, 2020; C. P. Pow, 2018; Sze, 2015; F. Wu, 2012; L. Xie et al., 2019), rural eco-spaces conceived and formulated by local governments in densely populated rural areas remain under-researched. As a national prototype for green and ecologically integrated development for ecological civilization, ecologization in the YRD region may soon be applied across the entire country.

China has been a predominantly agrarian society for centuries, until large-scale industrialization, modernization, and urbanization began in 1978, with the beginning of the

Reform and Opening policy. In terms of rural sustainability, Wen et al. (2012) argue that Chinese people survived 6000 years of natural disasters because of irrigated agriculture and its village rationality, which relies largely on local environmental knowledge arising from specific climates and environments, and which maintained sustainable independent rural cultures and livelihoods. Village resiliency allows natural disasters or external risks to be absorbed through institutional and environmental mechanisms within the village.

The cultural landscapes of the YRD region are an example of how village resiliency was maintained through village rationality and local environmental knowledge. Historically, the spatial patterns, economic progress and social structures of the region were directly connected with the shifting deltaic landscapes and networked waterways that functioned as irrigation, flood drainage and transportation. Due to geomorphological processes, the lower Yangzi Delta and Lake Tai water basin is saucer-shaped with a higher elevation near the coast and dipping slightly towards the around Lake Tai. The dense lake and canal system operates as the delta's major flood corridor which regulates and stores water flow from upstream Lake Tai to drain eastward to downstream Wusong and the Huangpu River. The vegetation in the YRD region is comprised mostly of cultivated land with sparse forests only on the hills along the south and west of the delta (Yi et al., 2003). The study area situates within the lowland area with an average elevation around 2m above sea level and polders elevated at around 3-4m above sea level (S. Xie, 2015).

Some historians have emphasized the crucial role of the delta ecosystem in forming the agricultural production methods, settlement patterns, transportation, and forms of social structures and social control in the YRD region (P. C. Huang, 1990; J. Wu, 2016; S. Xie, 2015). Specifically, the production and commercialization of rice, silk and cotton (largely based on the hydraulic engineering of delta land and canal systems) contributed to the dramatic growth of

towns, cities and population in the YRD starting in late Ming Dynasty (1368-1644) (P. C. Huang, 1990; S. Xie, 2015). The economic development and urban systems formed during this time laid the foundation for large-scale industrialization and urbanization in the 20th century. The social structures and control, and economic expansion in the region were maintained through water control. For example, polder and dike administrators were appointed to coordinate and mobilize landowners and tenants for water control to ensure agricultural production and trading (Elvin, 1977). This kind of social control method and local environmental knowledge in response to local environmental conditions assisted in village resiliency against natural disasters and resource constraints for hundreds of years in Chinese irrigated agriculture (more on this in Chapter 2) (Wen et al., 2012).

Even rural industrialization—which reconstructed rural spaces for industrial production—was not able to erase local institutional system and land-based economic practices, and some scholars believe that rurality persists even in a rural space where rural landscapes and functions no longer exist, as long as rural villagers’ everyday activities are still associated with rural rationality. This rationality includes collective institutional systems, land-based economies, and local social relations (Chung, 2013; G. Lin et al., 2016; Lv & Lin, 2017). However, rural environmental and social sustainability maintained by village rationality was confronted with mainstream sustainable development goals, which were based exclusively on measurable metrics and aesthetic norms.

In fact, to provide the world with a green image, China has exerted great efforts to reach environmental goals (Y. Li & Shapiro, 2020). According to *China’s Progress Report on Implementation of the 2030 Agenda for Sustainable Development*, environmental statistics proved that “the environment has been significantly improved” in China (Center for International

Knowledge on Development, 2021, p. 4). During the first five years (2016-2020) of implementing the 2030 Agenda (which coincided with the period of China's 13th Five-year Plan), "...the size of newly increased vegetation areas in China accounts for a quarter of the global total, and the net restored land in China accounts for about one fifth of the global total." (Center for International Knowledge on Development, 2021, p. 6). In the report, statistics are adopted to further explain how significantly the environment in China has improved:

During the 13th Five-year Plan period, 270,000 mu (180 km²) of cultivated land was returned to wetland, with 15 new wetlands of international importance and 29 new wetlands of national importance, bringing the number of wetlands of international importance to 64; 201 national wetland parks were established, with a total of 899 national wetland parks ... The number of protected natural areas increased by over 700, covering over 25 million hectares and bringing the total to nearly 10,000 ... Among them, there are 474 national nature reserves, 906 national forest parks, 899 national wetland parks, 244 national scenic and historic sites, 281 national geological parks, 67 national marine parks and 125 national desert parks (Center for International Knowledge on Development, 2021, p. 138, 142)

In the whole report, numbers, charts, and tables are used to represent and compare notable growth according to each of the 17 Sustainable Development Goals (SDGs). It is also the case in all levels of domestic governmental reports that environmental statistics are extensively adopted to communicate successful achievement of environmental goals assigned from the top-down.

While the statistics stated above appear to indicate significant improvements to both the environment and China's sustainability goals, extensive field research in various sites across the YRD suggests a more complex and nuanced story. It is a story which revolves around implementing sustainability indicators, transforming spatial and social order, visualizing a green

imaginary, and urbanizing rural landscapes that do not necessarily achieve genuine environmental and social sustainability. Three experiences between 2015 and 2021 illustrate some of my first encounters with ecologization.

On New Year's Day 2015, as a field assistant, I accompanied a friend for field research at Qiandeng Town in Kunshan Municipality, in Suzhou City. We took a 20 min high speed train from Shanghai to Kunshan, then got on a bus to the Qiandeng Town Kunshan coach station. We mistakenly got off a couple of stops before our destination and decided to walk. On the side of the main road, an old man was picking bricks from what seemed like a demolished village house, with several other demolished houses behind. When we approached to speak with him we learned that it used to be his house. "Oh, I'm recycling the bricks, even though we can't actually use these bricks where we live now in the buildings." "Do you know what will be built here?", I asked. "Did you see the pocket park on your way here? Right by the main road? It used to be our neighboring village. Our village will be built with something like that— a green belt or a pocket park." He replied. The fact that a greening space will be built on top of a demolished traditional rural village really took me by surprise. Based on rural industrialization that has been going on in the YRD since the 1980s, my first guess as to the new use of this land would have been for industry. It was far from a random case, but the beginning of an ecologization phenomenon that became prevalent in the coming years.

Fast forward to the fieldwork conducted for this dissertation in 2020 and 2021, when a more widespread construction of various types of green and ecological spaces was identified in the YRD rural landscapes, ranging from ecological conservation areas, eco-villages, parks, forests, green development areas, and eco-tourism projects, among others. I visited the Tongli National Wetland Park in Tongli Town, Suzhou City, which, according to the park website and

tourist guide, is one of the major natural habitats in Jiangsu Province for more than 200 species of birds (Suzhou Municipal Government, 2022). The tract of land where the wetland habitat was located on a map was a vast construction site (Figure 1.2). Not only were the native reeds completely gone, but the dark deltaic soil was dug up and exposed. In the distance, two excavating machines were still working, digging up the soil and dumping it to one side. Of course, no water birds could be seen anywhere near the construction site. Both the supposedly natural habitat, and the park site that contained it, were entirely designed and constructed, despite their portrayal in the tourist brochure as authentic cultural landscapes formed by generations of local ecological wisdom (Tongli National Wetland Park, 2021). The local environmental history was almost entirely disrupted to match the green image. Even the large tract of forests planted on site were a late addition to the landscape, as forests were planted as a remedy to serious waterlogging issues that caused schistosomiasis disease (snail fever) which killed the majority of local villagers in the 1960s (more on this in Chapter 4). After visiting the Tongli wetland park, it became clear that both the sustainability and authenticity of eco-spaces should be critically examined beyond numbers and aesthetics of ecology.



Figure 1.2 A digging machine working in the middle of the wetland construction site in Tongli National Wetland Park (photo taken by the author).

In another encounter, in November 2020, the whole of Donglian Village was undergoing re-construction as part of *The Beautiful Village Clusters* project—a key beautiful countryside project surrounding Yuandang Lake. Not only were the village houses under renovation and decorated with local architectural elements, but various purposefully designed ornaments were arranged in the village public space. Sculptures of windmills (Figure 1.3) and other pieces extolling socialist values (Figure 1.4) were positioned along paths, even in the middle of fields. Village house walls were painted with nostalgia-themed poems and paintings, stressing ecological wisdom and culture. A prominent stone sign erected in the middle of the village read in Chinese characters “Lucid waters and lush mountains are invaluable assets (绿水青山就是金

山银山)”—the ecological civilization slogan put forward by President Xi Jinping. Another sign in the village read “rallying the masses, guiding the masses, cultivating people and habits (凝聚群众、引导群众、以文化人、成风化俗)” and further asserted the need for ideological guidance in achieving ecological civilization (more on this in Chapter 4).



Figure 1.3 Red windmills in the middle of rural farmland (photo taken by the author).



Figure 1.4 Core socialist values inscribed on a sculpture and installed on the side of a village path (photo taken by the author).

These three experiences were representative of the ecologization phenomenon occurring in the YRD. Emerging from these, and other case studies of ecologization, the field research identified five main issues. First, these eco-spaces were emerging primarily in previously densely populated rural areas that have already been administratively converted into urban territories. Second, the successful implementation and measurement of eco-spaces is part of local officials' annual performance evaluation (more on this in Chapter 5). The emergence of eco-spaces is a result of achieving environmental tasks assigned from the top-down. Third, there have been strong ideological and cultural implications in the aesthetics of eco-spaces. Propaganda slogans, traditional ecological philosophies and cultural landscapes are some of the design elements extensively adopted in constructing eco-spaces to legitimize governmental decisions on rural reconstruction (more on this in Chapter 4). Fourth, there have been varying interpretations of

ecology, for example eco-metrics, political discourse of ecology, and aesthetics of ecology, taken up in the policies, strategies, and representations of eco-spaces. Fifth, local villagers' everyday lives and economic activities are not associated with eco-spaces.

To critically address these issues, the next section of this chapter will first contextualize the emergence of ecologization in local political practice in China by discussing the strong environmental and cultural governance model under ecological civilization, the policies that enforced administrative and spatial rural-urban conversion, and the role of spatial planning as a policy instrument to implement ecological civilization by local governments. Thereafter, this chapter will put forward the research questions, and finally, provide an outline of the dissertation.

1.2 Contextualizing Ecologization

1.2.1 Implementing Ecological Civilization Under Environmental and Cultural Governance

1.2.1.1 Ecological Civilization

In China, modernization was accompanied by significant cultural, economic, political, and social changes. Between 1960-2023, the Chinese population doubled from 658 million to 1.4 billion (Worldometer, 2023). Between 1960 and 2022, the percentage of China's population living in urban area more than quadrupled from 16% to 64% (World Bank, 2022). China's economy has also witnessed significant growth in the past 40 years, with the GDP growth rate at approximately 10% per year (World Bank, 2018). Modernization has allowed China to become industrialized and urbanized in a much shorter time and on a much larger scale than Western countries (McGee, 2008), but this change has also caused serious ecological and social consequences. Most recently, in 2021, Chinese-Style Modernization was vigorously promoted as

the path towards national rejuvenation. Not only is it hailed as the most scientific and progressive mode of modernization, but it is also depicted as deeply rooted in Chinese traditional culture, which further legitimizes the Party's development path, and asserts uniqueness and superiority when juxtaposed with the Western development model (People's Daily, 2021; Qiushi, 2023).

To address the deteriorating environmental conditions in China, *ecological civilization* was introduced from the former Soviet Union (more on this in Chapter 4). The term "ecological civilization" was first introduced to China by the Chinese agricultural economist Ye Qianji during the National Eco-agriculture Conference in 1987. Ye emphasized that it is a must to construct ecological civilization, because:

humanity can both benefit from nature, and also act in the interest of nature: while humanity has a transforming effect on nature, humanity also has to protect nature, since this is the only way for man and nature to maintain a harmonious and unified relationship (Marinelli, 2018, p. 373).

Ye believed that rethinking the correct relationship between humanity and nature is crucial, as it will improve economic development and reconstruct society into a high-quality civilization (Yu, 2012). His definition of ecological civilization brings together the Western science of ecology and traditional Chinese ecological philosophy, which later became one of the main arguments in political discourse to legitimize decisions for building ecological civilization as deeply rooted in traditional Chinese ecological philosophy (more on this in Section 1.2.1.3). To transition to ecological civilization, some prominent scholars have called for institutional restructuring that will usher in a fundamental change in the production model (J. Pan, 2016), going beyond the logic of GDP to a more environmentally and socially conscious model

(Marinelli, 2018), and following traditional village rationality based on local environmental knowledge for rural rejuvenation (Wen et al., 2012).

However, the idea of ecological civilization has been taken over by the political regime as it recognized the idea as a national ideology that can further advance and serve political goals. In the 17th National Congress in 2007, ecological civilization was first mentioned in the official party report in order to achieve a “well-off society (小康社会)”. Ecological civilization became a central ideology in Chinese political discourse when it appeared in the final report by then President Hu Jintao in the 18th National Congress in 2012. Ecological civilization appeared in the section titled *making great efforts to promote ecological progress* (大力推进生态文明建设). Hu emphasized that “we must give high priority to making ecological progress and incorporate it into all aspects and the whole process of advancing economic, political, cultural, and social progress” (J. Hu, 2012, sec. VIII). In this report, the official English translation for *sheng tai wen ming* was still “ecological progress”, not “ecological civilization”.

In the 19th National Congress in 2017, President Xi Jinping further stressed that the construction of an ecological civilization should be the core strategy for the coming millennium and should be realized with “building a beautiful China” (建设美丽中国). In 2018, ecological civilization was added into the *Constitution of the People’s Republic of China*, together with material civilization, political civilization, spiritual civilization, and social civilization, as one of the ideological civilizations that constitute a “great modern socialist country that is prosperous, powerful, democratic, civilized, harmonious, and beautiful” (Xinhuanet, 2018). In addition, the construction of ecological civilization was also added as one of the State Council’s duties, which

included “[to] direct and administer economic affairs, urban and rural development, and ecological civilization construction” (Xinhuanet, 2018).

Ecological civilization is generally considered as the Chinese equivalent to sustainable development with political and ideological implications. In fact, when China’s Agenda 21 report was issued in 1994, sustainable development was designated as China’s framework for dealing with environmental issues before ecological civilization became the national political ideology. Since ecological civilization was put forward, it further promoted the implementation of sustainable development tasks. It not only incorporated the basic concepts and principles of sustainable development, but was also generally consistent with the UN’s *Sustainable Development Goals (SDGs)*, which adopted a scientific, objective, and measurable approach towards the assessment of sustainability (Boer et al., 2020). It is also evident in China’s *Environmental Protection Law* that the promotion and implementation of ecological civilization advocates for sustainable development: “This law is formulated for the purpose of protecting and improving the environment, preventing and controlling pollution and other public hazards, safeguarding public health, promoting improvement of ecological civilization, and facilitating sustainable economic and social development.” (Environmental Protection Law of the People’s Republic of China, 2015, art. 1).

However, ecological civilization goes far beyond sustainability of the environment, society and economy, and is “inextricably linked to the political and ideological ambitions of the state” (Y. Li & Shapiro, 2020, p. 5). It renders the Communist Party’s rule as both historical and visionary (rooted in traditional culture and at the same time advanced) (Y. Li & Shapiro, 2020), and is rendered as a continuation of the Party’s path from agricultural civilization and material civilization to ecological civilization. Its discourse and practices are also depicted as the

rejuvenation and continuation of traditional Chinese ecological philosophy. At the same time, the ambition and determination of ecological civilization places China at the center stage of the world's effort to combat environmental deterioration and climate change and invokes a strong nationalistic confidence domestically. As a result, both environmental and cultural governance are employed in the service of ecological civilization, which will be discussed more in detail in the next sections.

1.2.1.2 Environmental Governance

China's approach towards the environment is closely linked to social and political control and modes of production. It is proposed that China's mode of environmental governance is based on two apparently contradictory realities. The first is authoritarian environmental governance, in which the central government imposes environmental policies and mandates without meaningful participation or consultation from the general public or sub-national governments. The second sees China as highly decentralized, in which the local state is largely self-governed and out of the reach of the central state for environmental implementation.

Understanding environmental governance in China requires addressing the significant implementation gap between the state and local governments in many areas. Scholars have identified this gap, which characterizes environmental governance in China as regionally decentralized authoritarianism or fragmented authoritarianism, which generally describes a combination of political centralization and economic and administrative decentralization (Brødsgaard, 2016; Mertha, 2008; Xu, 2014). While the state holds highly centralized political and cadre governance power and manages state ideology and the mass media, "sub-national governments (provinces, municipalities, and counties) ... initiate, negotiate, implement, divert,

and resist reforms, policies, rules, and laws” (Xu, 2014, p. 516). The following section will further explore these two realities to highlight their interrelated effects on China’s environmental governance.

1.2.1.2.1 Authoritarian Environmental Governance

Authoritarian environmental governance, or authoritarian environmentalism, refers to a top-down non-participatory approach to environmental policy-making when facing severe environmental challenges (Gilley, 2012). As opposed to democratic environmentalism, the most notable feature of authoritarian environmentalism is its non-participatory nature. In China, public participation in the different levels of environmental knowledge formation, environmental policy formulation, assessment, or implementation are either “nonexistent” or “downstream and low-level” (Gilley, 2012, p. 291). According to Gilley (2012):

Official policy statements and documents define public participation only in terms of citizens internalising state-produced knowledge and complying with state policies. Citizen participation is limited to learning and obeying state policies ... China’s NGOs must abide by the political conditions of China and focus on cooperating with the government and companies and educating the public about climate change (p. 219).

The state, then, formulates environmental policies, and provincial governments are in charge of implementation. Provincial governments in turn delegate decision-making power and mitigation strategies to local governments.

Under authoritarian environmental governance, China has demonstrated great ambition and determination in responding to various environmental issues and has provided a green vision. For example, in 2020, President Xi updated the national target which “... aims to have CO₂

emissions peak before 2030 and achieve carbon neutrality before 2060”, intending to complete the most dramatic carbon emission reduction in the shortest time in history to achieve carbon neutrality from carbon peaking (Xinhuanet, 2021a). China was estimated to be the largest contributor to the world’s greenhouse gas emissions, accounting for 27% of global emissions, followed by the United States at 11% and India at 7% (Rhodium Group, 2022). But according to the Working Guideline for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy issued by the Chinese State Council in 2021, by 2025, energy consumption per unit of GDP will be lowered by 13.5% from 2020, carbon dioxide per unit of GDP will be lowered by 18% compared from 2020, and the rate of non-fossil fuel consumption will reach 24.1% (State Council, 2021).

In fact, for decades, China has been ambitious in combating environmental deterioration. Since 1978, China initiated the *Three-North Shelterbelt Project*, also known as the *Great Green Wall*, which plants millions of trees along the northern border with Mongolia to stop the encroaching desert. By the time the project will be completed in 2050, it will form a 8000 km long and 400-700 km wide shelterbelt covering 42.4% of the country’s total area (National Forestry and Grassland Administration, 2018). In the 2022 World Economic Forum, China announced that it accounts for more than 25% of the world's newly planted green areas, and aims to plant and conserve 70 billion trees in the next 10 years (World Economic Forum, 2022). Moreover, seven key ecological restoration and protection projects are currently ongoing across the country, aiming to improve the ecological system services and reach the goal of 26% forest coverage, and designate 18% of the country’s territory as natural protected areas by 2035 among other ecological restoration goals (National Development and Reform Commission & Ministry of Natural Resources, 2020). Meanwhile, the 20th CPC Congress in 2022 announced that, by 2035,

China will build the largest National Park system in the world, covering 1.1 million km², approximately 10.3% of the country's territory, in which 49 national parks, including 5 existing national parks, are already planned and are soon to be established (Guangming Daily, 2023).

Institutionally, environmental protection tasks in China were undertaken by the Ministry of Rural-Urban Development before the Environmental Protection Bureau was formed in 1988. In 2008, the Bureau was promoted to become the Ministry of Ecology and Environment. And later in 2018, the ministry was granted with expanded and centralized responsibilities (Y. Li & Shapiro, 2020). The Environmental Protection Law of the People's Republic of China was amended for the first time in 25 years in 2014. Not only various loopholes removed, responsibility systems and court procedures were strengthened, and a comprehensive law enforcement bureau was formed to enforce the compulsory environmental implementation and investigate major violations (Ecology and Environment Law Enforcement Bureau, 2023; People's Daily, 2014). In addition, to strengthen weak environmental implementation at the local level, environmental protection criteria were incorporated into the annual cadre performance evaluation system (干部考核制度), which employed punishment measures and legal consequences for local cadres who failed to implement environmental directives. In other words, even though the authoritarian environmental governance is non-participatory and non-democratic in nature which is in contrast to the market-oriented democracies approach in the West (Beeson, 2016), but recent greening and institutional restructuring efforts in China has presented unprecedented determination to manage the natural environment.

1.2.1.2.2 Decentralized Environmental Governance

The ambition and determination of national environmental goals largely depends on the implementation of environmental policies, laws, regulations, and practices at the local level. While China is politically and ideologically centralized, it is also economically and administratively decentralized. In fact, it is considered one of the most decentralized countries in the world (Ran, 2017; Shen & Jin, 2012). Fiscal decentralization refers to the transfer of a certain level of fiscal power and responsibility from the state to sub-national governments, which has been fundamental in China's transition from a planned economy to a market-driven economy.

Starting in the 1980s, fiscal decentralization policies allowed sub-national governments to manage their revenues and expenditure and hold authority over the economy within their administrative jurisdictions. It granted local governments enough decision-making autonomy and power to maximize economic benefits. These steps have been effective in promoting growth-oriented development, since local governments were evaluated according to their ability to bring about economic performance, which meant that GDP growth was a major objective for local officials. Meanwhile, according to the PRC's Environmental Protection Law, "the local people's governments at all levels shall be responsible for the environmental quality within their respective administrative regions" (Environmental Protection Law of the People's Republic of China, 2015, art. 6). Therefore, environmental responsibilities were also delegated to local governments, forming China's decentralized environmental governance structure.

It is generally believed that decentralization has exacerbated local environmental conditions in two ways: First, in pursuit of local economic development, decentralization has caused serious environmental pollution and social crisis due to the conflict of interests between local and central governments (Kostka & Mol, 2013). With reduced state control and lack of

spatial planning, decentralization triggered spatial fragmentation and an environmental crisis. Even though environmental criteria were introduced into local official's performance evaluations in 2007, requiring them to sort out their interests and priorities at the local level, it was not effective for environmentally responsible development, since measurable environmental criteria were easily manipulated (Nickum, 2010).

Second, decentralization has also caused intense competition between local governments and discouraged regional collaboration, which has led to fragmented environmental practices across regional administrative boundaries. Horizontal links between local governments are crucial for environmental protection and ecosystem management, as ecological systems are not bounded by physical and administrative boundaries. In China, the political and social control of the state has historically extended to the local level through strengthened vertical relations, and there have always been weak horizontal links, i.e. regional links, among local governments, especially in terms of environmental governance and management (P. Huang, 1985; Y. Li & Wu, 2012; Nickum, 2010).

Others have suggested that decentralized environmental governance also ensures that environmental policy makers, i.e. the state, avoid being blamed for poor environmental implementation. Through the hierarchical power structure, higher level policy makers shift all the blame to lower-level local officials and point to their responsibilities to implement environmental goals. Meanwhile, the central government is taking credit for its environmentally friendly discourse, policies and imaginary (Ran, 2017). In this way, accusations regarding poor environmental conditions are delegated down to responsible environmental departments and local officials, while the central government, especially central party leaders, maintain a green image due to their determination and attention to environmental issues internationally and

domestically. In other words, this form of regionally decentralized authoritarian environmental governance, characterized by an implementation gap and by complex power dynamics between local and central governments, sets the scene for ecologization, in which both environmental and ideological goals are interpreted and implemented at the local level.

1.2.1.3 Cultural Governance

In recent years, the intensification of cultural and ideological factors in governance has added complexity to the dynamics of environmental governance and urban development at the local level. To consolidate its power and political authority, the Chinese state has relied largely on cultural governance to affirm its right to rule by blending culturalist and nationalist claims in its propaganda operations (Perry, 2017). The representation of political ideologies and policies has constantly been associated with Chinese traditions and China's 5000-year civilization. In former president Hu Jintao's report to the 18th National Congress, he made several references to the revival of traditional Chinese culture on the path of "Developing a Strong Socialist Culture in China" (J. Hu, 2012, sec. VI). President Xi further sought to advance the great rejuvenation of the Chinese nation with a Chinese-style of modernization. He stated that "The integration of Marxism with China's fine traditional culture will create a new type of culture that fits within Chinese modernization, and it will expand the cultural foundation of the path of socialism with Chinese characteristics" (Xinhua, 2023a). Furthermore, he claimed, China's development path is "...rooted in the historical continuity of its culture", so that the inheritance of traditional Chinese culture is instrumental to building the modern Chinese civilization (Shi, 2023).

Such discourse indicates the unique characteristics of the Chinese political system in which the ideologies, propaganda slogans, and governance structure are culturally congruent with

Chinese tradition. By claiming traditional culture as the foundation for the current development path, Chinese leaders not only rendered the Party's rule as both historical and visionary, but also further defended the legitimacy of the state's rule in every area of the nation (Y. Li & Shapiro, 2020; Xinhua, 2023a). The adoption of culture as a symbolic resource and a political instrument is often called *cultural governance*, and is seen as the harnessing of culture as a technological apparatus used by the government to achieve desired behaviour by its constituents (Oakes, 2019b; Rose et al., 1999). Schmitt (2011) usefully framed this issue:

If culture is understood as a code, as a reference to overarching sense and meaning relationship in human practices and institutions, then a cultural governance approach would be equivalent to a reconstruction of the social steering of the production of sense and meaning (p. 30).

Discourse that focuses on building an ecological civilization often mentions the significance of a national political ideology for environmental governance. In these conversations, culture is taken up as an indispensable instrument in forming scientific environmental values, ecological awareness, environmentally friendly social customs, and sustainable ways of living and modes of production (Zheng, 2018).

1.2.1.3.1 Building a Culture for Consensus

According to Chinese state media, taking control of socialist ideology and values is extremely important in building a socialist culture, because "... ideology determines the evolution and development of a culture", and "... core socialist values guide culture building " (Xinhua News Journalist, 2022, paras. 7, 26). In turn, achievements borne out of nation building with a strong socialist culture will form widespread cultural pride that will inform the ideological

basis. Such culture building has three immediate goals. First, to ensure that the Party and society are united in thinking and purpose. To consolidate a strong and unanimous political belief, “the Party must ensure its leadership with sound theory and direction as well as appropriate mechanisms to unite the people around common convictions, ideals, values and ethics” (Qiushi, 2020, para. 3; Xinhua News Journalist, 2022). Second, to develop social morality and ethics for a more civilized society. A well-developed civil society does not only mean patriotism and cultural pride, but also requires a sense of social morality, ethics, and civil conduct. Third, culture building generates soft power and international influence over other cultures.

After four decades of economic development, this re-assertion of culture aims to reinstate the Party’s ideological influence over the public. President Xi claimed that “the prosperity and revival of a nation not only requires accumulation of material civilization, but sublimation of spiritual civilization” (Xi, 2019a). Forms of culture building went beyond literature, artistic performances, and cultural events that created an atmosphere and rallied strength, and graduated into a more administratively organized public cultural services system. This system merges culture building strategies with educational, cultural, and health services in urban and rural territories. Public cultural infrastructure, such as public libraries, museums, memorial halls, and cultural centres, which play a part in the dissemination of state ideology, are built and made accessible to the public by local governments. For example, since 2018, a network of New Era Civilization Practice Centers (新时代文明实践中心), led by county-level party secretaries and propaganda chiefs and run by volunteers, was set up in counties, towns/townships and villages, and involved citizens in cultural events, cultural activities, workshops, and lectures that aimed at “propagandizing to the masses, educating the masses, leading the masses, serving the masses”, reinforcing the new socialist ideology and policy, and promoting civilized behaviors in mostly

rural settings (Batke, 2022; Chin, 2022). Similarly, county-level Digital Media Centers (融媒体中心) “integrate local TV, radio, printed press and new media into a comprehensive platform that brings together Party-building and the public, in addition to value-added services” that merge media with propaganda at the grassroots level (Qiushi, 2020, para. 7). The establishment of cultural infrastructures and culture-building laid the foundation to reinstate the national political ideology for environmental governance and to construct the imageries for ecological civilization which will be further elaborated in the next section and in Chapter 4.

1.2.1.3.2 Building State Eco-imaginaries with Culture

Culture is a key element in shaping the imageries of ecological civilization (P. Huang & Westman, 2021). Pan Yue, former Vice Minister of the Ministry of Environmental Protection, was actively involved in the debate on ecological civilization. He emphasized the eco-centric ideas of Chinese ecological philosophy and attempted to build an ecological and social imagery for an ecological civilization (Y. Pan, 2009). Chinese traditional ecological philosophies generally advocate for harmonious and balanced human-nature relationships, which represent social imaginaries of a desirable life and provide a political path in dealing with ecological crises with their relevance to sustainability. Daoism teaches that following the way of nature is the crucial principle in coexisting with the natural world and evolving with heaven and earth. Confucianism advocates for the unity of humans and nature where heaven, earth, and humans complete a system that works as a whole and formulates a balanced and interconnected organism. Buddhism sees all living things as equal with a right to live (Arler, 2018).

Despite these philosophical assertions, an environmental history perspective reveals that ecological philosophies were at odds with periods of massive environmental destruction that took

place throughout Chinese history (Arler, 2018; Hansen et al., 2018). Traditional knowledge and ecological philosophies, such as *fengshui* principles used to reinforce ecological arguments, proved insufficient in regulating the exploitation of the natural world due to population growth and rising commercialization. As argued by some historians, the determining factor in environmental change in Chinese history has never been any prominent philosophical system, but “massive effects of the pursuit of power and profit” (Elvin, 2006, p. 471). That said, the current focus on traditional philosophy is being utilized in a way to build a sense of cultural and national continuity and the imagery of a utopian sustainable future. Furthermore, it is also a way to avoid changes in institutional, economic and policy structures and to maintain governance as it is (Arler, 2018; Hansen et al., 2018). As indicated in the previous section, by claiming traditional ecological philosophy as the foundation for the current path, and portraying it as culturally congruent with Chinese tradition, the focus on traditional philosophy legitimized and maintained existing governance structures in every area of the nation. A key outcome, therefore, is that traditional culture, especially the principle of harmony between humans and nature, has been a prominent factor in materializing ecological civilization in local ecological projects. In the 19th National Congress in 2017, President Xi Jinping claimed that the construction of an ecological civilization should be the core strategy for the coming millennium and should be realized alongside building a beautiful China. Later, state discourse and propaganda associated building a beautiful China with the harmony between human and nature (Ministry of Ecological Environment, 2023).

On the one hand, harmonious human-nature imaginaries are interpreted as primarily aesthetic. Namely, ecological civilization has to be aesthetically appealing. In fact, “beautiful” was added to the national goal of “building a great modern socialist country that is prosperous,

strong, democratic, culturally advanced, harmonious, and beautiful” in the 19th CPC National Congress in 2017 and was written into the 2018 amendment of the Constitution of the People's Republic of China (P. Huang & Westman, 2021; Xinhua, 2018). It asserts the significance of aesthetics in constructing and materializing ecological civilization. On the other hand, harmonious human-nature imaginaries are translated into modern environmental policies which further translate into ecological principles of maintaining a balanced environment (i.e. a functional equilibrium among human, nature and economic development advocated by the state scientists). As will be demonstrated later in this dissertation, the development and implementation of detailed environmental indicators, and the construction and restoration of ecological spaces such as protected areas and national parks, are two key outcomes of these imaginaries.

In summary, the policy context in which ecologization takes place in China includes mandated environmental and cultural governance structures, the implementation gap and power dynamics that exist between local and central governments, the determination to create an internationally recognized green vision, and the assertion of ideological influence to bring societal consensus on ecological values and ecological civilization decisions. The next section will further discuss how rural areas have become the spatial context in which ecologization is employed to achieve urban sustainability.

1.2.2 Rural as Space for Urban Sustainability

Over the past four decades, the significant increase of the urbanization rate in China not only involved the migration of rural populations into urban areas, but also included the expansion of urban space through administrative, legal, and spatial conversion of rural areas into urban

districts. This process of incorporating rural land into urban areas is one of the state's recentralization strategies, aimed to reduce competition between suburban counties and city centers, coordinate development between rural and urban areas, and at the same time strengthen competitiveness between municipalities.

The process of rural-urban conversion is made possible through processes of administrative annexation, urban-rural integration policies, and urban-rural planning. While administrative annexation assisted urban expansion by converting rural counties into urban districts, urban-rural integration policies and the Urban and Rural Planning Law further established the legal status of spatial planning practices on rural land to restructure the physical, cultural, social, and economic organization of rural communities (Urban and Rural Planning Law of the People's Republic of China, 2019). Administrative annexation is a process of metropolitanization that extends central cities to include rural counties (F. Wu, 2016). Initially, counties were assigned under cities as their hinterland for resources and to support the needs of central cities. Since the 1990s, administrative annexation, as part of the nation's recentralization strategies, began converting counties from rural administrative units into urban districts of central cities or county-level cities. Meanwhile, many towns or townships were converted into *jiedao*—a township-level urban administrative units under the jurisdiction of urban districts. In the process, these towns/townships were stripped of their administrative and fiscal autonomy (Kan & Chen, 2022). In this way, municipal governments have gained control over more land for economic and population expansion (Cartier, 2015).

The spatial reconstruction of rural areas started around the mid-1990s when the three concentration policies (三个集中) were issued to solve the “three rural problems” (三农问题), i.e. income and welfare disparities between urban and rural residents resulting in rural migration

to urban areas; the proliferation of rural industrial enterprises resulting in less efficient agricultural production; and the overall economic backwardness in rural areas. Addressing these issues was accompanied by the need to increase and preserve primary farmlands. The concentration strategy focused on consolidating rural industries into industrial zones, compacting rural settlements into more densely populated modernized residential communities, and converting farmland from small farms into large-scale industrial farming—all in order to create more economically and socially efficient rural land uses.

In 2003 (before the first introduction of ecological civilization in the 17th CPC National Congress in 2007), the central government launched the Coordinated Planning of Urban and Rural Development (城乡统筹发展) scheme as one of an array of strategies aimed at balancing regional economic development, natural resource preservation, and ecological environment protection (Bray, 2013). Along with the new socialist countryside policy issued in 2005, coordinated urban and rural planning further promoted economic, social, and spatial restructuring of rural areas, emphasizing the improvement of living conditions and job opportunities while re-planning and reconstructing villages with modernized infrastructure and optimized functional spatial layouts. This also included improving environmental conditions. It should be mentioned that many early ecological projects were constructed in the rural area around this period to improve living conditions. In 2007, to coordinate urban and rural development within a city's jurisdiction, the Urban Planning Law (enacted in 1990) was revised into the Urban and Rural Planning Law (enacted in 2008) and its scope was legally extended to include rural areas for urban and rural integration (城乡一体化) to further reconstruct and reorganize rural areas. Under the Urban and Rural Planning Law, town and village master plans gained legal status. Each town

and village was obligated to compose a 20-year master plan to organize land use and arrange various activities.

The town-level Village Spatial Layout Plan (镇村布局规划) is another key planning mechanism in rural areas that evaluates the economic condition and potential of each village and organizes the distribution and location of natural villages (rural settlements formed by rural communities throughout history, which may or may not have had administrative status) on the town scale. By consolidating or removing villages with less economic growth potential, this scheme aimed to guide urbanization and industrialization within the town jurisdiction by urbanizing the rural with urban infrastructure, public services, and a modern lifestyle, which ultimately aimed to “transform farmers into urban inhabitants” (农民市民化). Later in 2018, under ecological civilization, the rural revitalization strategy further transformed rural spaces by improving environmental conditions and prominent rural cultural elements to develop eco-agricultural tourism while simultaneously promoting intensified patterns of residential, agricultural, and industrial activities.

Progressively, rural areas have been administratively and spatially incorporated into urban territories, and official spatial planning schemes were employed to control overdevelopment, protect farmland, and promote modern living in the countryside (Bray, 2013). At the same time, rural spaces were restructured under urban principles by applying functional zoning approaches and consolidating natural villages into concentrated rural settlements in planning practices. Meanwhile, by modernizing the lifestyle, living conditions and modes of production, and by transforming farmers into urban inhabitants, local farmers have been disconnected from their social and cultural ties with the land. This social, cultural, and physical disconnection with the land will be discussed in relation to rural space, rurality, and village

rationality in China, which will be further conceptualized in Chapter 2. Since many rural spaces have already been administratively and spatially included into urban territories, the next section will discuss how the reconstruction of rural spaces for ecological civilization is carried out through hierarchies and power dynamics in spatial planning practices.

1.2.3 Implementing Ecological Civilization Through Spatial Planning and Design

There are in general two types of planning that cover the entire country: socio-economic planning (the Five-Year Plan, FYP) and spatial planning (including land use planning and urban planning). As a policy instrument, spatial planning in China has always been deployed by various levels of government to develop lasting effects on urban and regional governance and to control territory-based socioeconomic development, as all ideological goals, environmental mandates, and institutional transformation processes are enforced through spatial planning (L. Wang, 2019). Spatial forms in China, especially in cities, are largely planned and built from scratch under state control (Cartier, 2007). So, as a top-down practice, spatial planning in China embodies intricate socio-spatial power relations in the process of spatial reformation (Bray, 2008; Dai, 2022; Immel, 2020). The next section will examine the power relations involved in spatial planning and design for ecological civilization by highlighting the position of eco-space projects in the hierarchy of spatial planning systems in China.

1.2.3.1 Pre-reform (1949-1978)

Under the planned economy, the state played a dominant role in spatial development through political control. At that time, the Five Year Plans integrated economic and spatial planning, which covered industrial distribution and ratios of investment in various industrial

sectors of economic development (L. Wang, 2019). Agricultural production quotas were allocated through regional social organizations in rural areas. Urban planning followed the FYP closely, but only in city centers. During this time, the urbanization level was kept below 20%, with non-spontaneous disruptions by political movements (L. J. C. Ma, 2002).

The Maoist strategy of social and political control aimed at bridging the distance between the formal state and towns and villages at the local level. Townships—the administrative level between counties and villages—were turned into people’s communes to strengthen vertical links between the state and the local. Villages, previously self-governed by village heads, were turned into basic administrative units of brigades controlled under communes. Brigades were further divided into production teams—the lowest level of administrative units—for organizing labour. At that time, rural areas were spatially planned and reconstructed based on ideologically driven principles of agricultural production and territorially divided based on administrative hierarchies and responsibilities.

During this period, China's attitude towards the natural world could be characterized as a “war against nature” (Shapiro, 2001). During the Cultural Revolution (1966-1976), the Learn from Dazhai movement triggered a wave of dogmatic application of the Dazhai model across the country. In 1964, after Dazhai Brigade in Shanxi Province was impacted by natural disasters, the brigade built terrace fields and quickly recovered their agricultural production. Mao called on the whole country to learn about how ideological power and will-power could conquer nature. This model was imitated nation-wide regardless of local topography, climate, soil conditions, rainfall, or local practices. Forests were cut down, slopes were formatted to carve out terraced fields, natural streams were cut off to build artificial canals, local crops were replaced with grain species, lakes and wetlands were filled to reclaim land.

The complete reorganization of spatial forms and ecologically irrational environmental policies coincided with what Scott called “a truly radical break with history and tradition” to form the new hierarchical and collective social order and rule, which ultimately aimed at extending complete political control over the land and society irrespective of local geographical, social, or economic conditions (Scott, 1998, p. 94). The spatial strategies, and agricultural and industrial practices during the Maoist period disregarded scientific principles, and at the same time undermined traditional local knowledge and depleted natural resources (Shapiro, 2001).

1.2.3.2 Reform Era (1978-2019)

Since the adoption of Reform and Opening Up policy in late 1978, spatial transformation in China was mainly driven by marketization, localization, decentralization, and globalization (L. Wang, 2019; J. Zhang & Wu, 2006). With the change from planned to market-oriented economy, the role of the state in planning gradually shifted from commanding to guiding. This shift was reflected in the national FYP. In the 6th FYP (1980-1985), social and environmental components were added to improve living quality and environmental protection. By the 11th FYP (2006-2010), its name changed from the Five Year Plan (*wunian jihua*, indicating a commanding tone and policy) to the Five Year Program (*wunian guihua*, indicating a guiding tone and policy), suggesting less domination from the state. In addition, the FYP further advocated sustainability and gradually shifted its focus from economic development to spatial development. At the same time, because of fiscal and political decentralization, urban planning became more independent from the FYP, and took over local economic planning. Increasingly, local governments engaged in urban planning for their own economic development purposes. In some cases, it was even in

conflict with the FYP, reflecting a conflict of interests between local governments and central state policies.

Also, during this period, there were various kinds of spatial planning, mainly urban planning and land use planning, which sometimes imposed overlapping or conflicting plans formulated by different institutions on the same land, especially on rural territory. Land use planning, under the jurisdiction of the Ministry of Land and Resources aimed since the late 1980s to protect farmland, protect environmental land uses, and regulate urban sprawl from spreading into rural areas by controlling strict top-down allocation of land-use quota through the administrative hierarchy. The emphasis on land use planning is prominent in rural areas, while in urban areas urban planning is more dominant. Urban planning, under the jurisdiction of the Ministry of Housing and Urban-Rural Development (MOHURD), was mainly implemented by local governments to facilitate economic growth. Although local governments rely on land use quotas allocated by land use planning to increase their revenue and competitiveness, they would manipulate land use data to satisfy economic growth. Since urban planning has extended its scope into rural territory and became urban-rural planning in 2008, ongoing conflicts take place between land use planning (farmland protection, environmental land use protection) and urban-rural planning (economic growth) regarding planning for rural areas. Even though land use planning configures rational land use layouts, the more detailed planning, design, and construction is carried out through urban-rural planning. In pursuit of economic growth or environmental achievements for local officials' performance evaluation, urban-rural planning practices would achieve goals by manipulating measurable criteria or coming up with other strategies (more on this in Chapter 5).

As indicated in the diagram below (Figure 1.5), eco-spaces (i.e. landscape planning and design projects) were formulated through special plans or site plans. In the hierarchy of the planning system, the special plans and site plans were made only after the master plan was completed and were therefore must conform to the master plan. Namely, the special plans and site plans do not have decision power over the master plan. Special plans support the master plan in specific topics, such as environmental protection, transportation, natural resources, or tourism and were normally completed by planning institutes or design firms commissioned by local governments. While such special plans provide supplementary information and suggestions to the master plan, they do not have the legal status to enforce changes in the master plan.

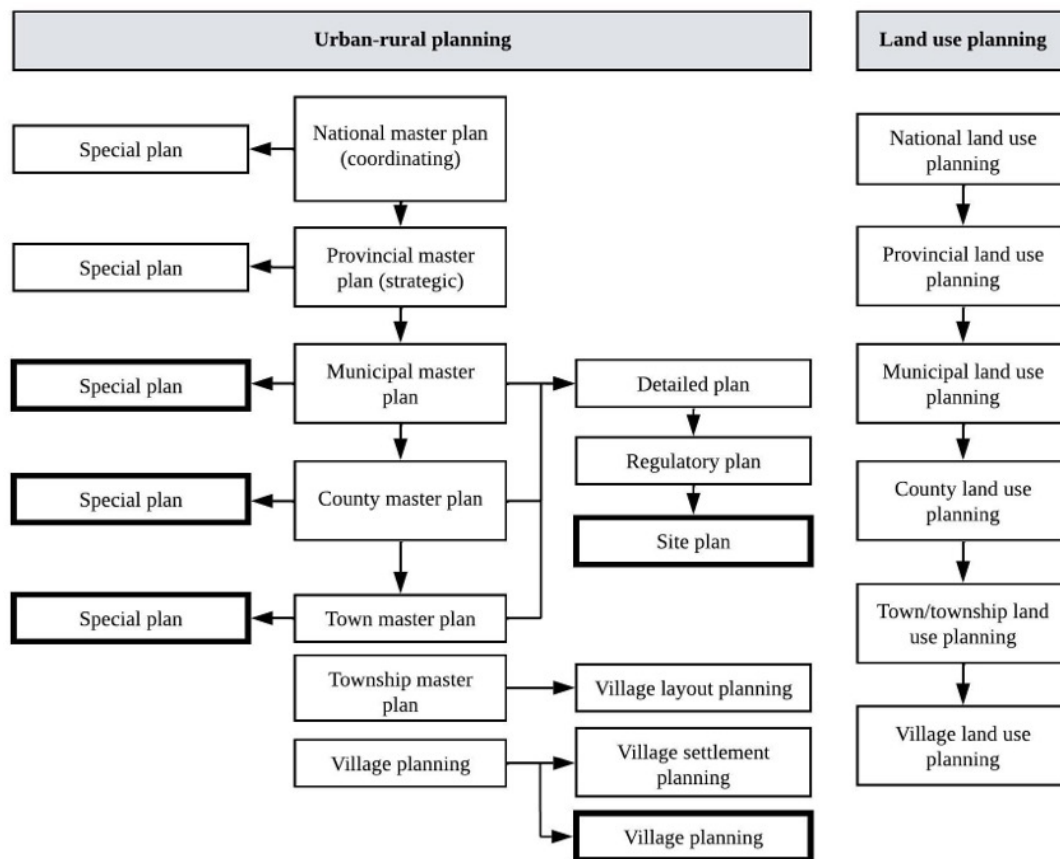


Figure 1.5 China’s urban-rural planning and land use planning system (compiled by the author). Eco-spaces are formulated in the stages highlighted in the diagram.

A site plan (or construction plan) takes effect on the landscape by implementing and constructing higher level strategic plans. As indicated in Figure 1.5, it operates on a detailed and local level guided by the master plan and by the regulatory plan (refers to the controlling of land uses, land use intensity, infrastructure and public facilities etc. of a specific site). A site plan is normally completed by planning institutes or design firms commissioned by local governments or site owners and goes directly into construction without having to be examined or approved by higher-level governments or experts. Since the site plan is at the lowest level of the planning system, it must adapt to a myriad of factors that originate in higher levels in the planning system, such as changes in national policies, socio-economic planning, land uses, local bureaucratic decision making, aesthetic requirements, local funding availability, etc. Furthermore, the top-down drivers of change are not necessarily from the urban planning hierarchies but can also come from higher level policies or bureaucratic decisions, which in turn require site plans to adapt.

Apart from land use planning and urban-rural planning, environmental protection planning and ecological civilization construction planning are drafted every five years under various sections of the FYP that allocate environmental tasks. They are index-based non-spatial plans that set out numerical environmental goals for each province or municipality. Land-based environmental goals from these two planning structures, such as forest coverage, green coverage, and area of wetland, were also achieved through constructing eco-spaces. Even though environmental criteria were added into local officials' performance evaluations in 2007, they were not effective in ensuring environmentally responsible development, as local officials easily manipulated measurable criteria. In other words, the implementation of eco-space projects (as in

special plans and site plans) is embedded in spatial planning hierarchies and local power relations.

1.2.3.3 Territorial Spatial Planning (2019 onwards)

Since 2019, a territorial spatial planning system was put forward to replace the previous spatial planning system by combining multiple spatial planning structures (such as land-use planning and urban-rural planning) into one master plan. It was created to centralize land-based planning, to protect development, and to assert legal jurisdiction over certain jurisdicative territories and it is in charged by the Ministry of Natural Resources. In territorial spatial planning, there are three control lines—ecological conservation redline, permanent basic farmland, and urban growth boundary—that must be adhered to for the overall control and coordination of ecological, agricultural and urban spaces in a jurisdicative territory.

The environmental protection in any jurisdicative territory is mainly executed through two systems, the ecological conservation redline system (生态保护红线, thereafter referred to as *redline*) and the protected area system (自然保护地体系), both supervised by the Ministry of Natural Resources. However, only the redline (one of the three control lines indicated in the previous paragraph) is adhered to in territorial spatial planning. The redline system manages and controls the spatial boundaries of ecologically important and vulnerable areas, such as forests, grassland, wetlands, deserts, etc., and enforces strict land uses and activities inside the boundaries. In April of 2023, the Ministry of Natural Resources declared that delineation of the first nation-wide ecological conservation redline was completed. It included more than 3 million km² which is more than 30% of China's total land area (L. Wang & Zhang, 2023).

Meanwhile, designated protected areas comprise more than 18% of the nation's total land area, and are categorized into national parks (areas with universal value and representative of the national eco-system), nature reserves (concentrated areas of eco-systems and biodiversity), and nature parks (forest parks, geoparks, marine parks, wetland parks, etc.) (General Office of the CPC Central Committee & General Office of the State Council, 2019). Designated redline areas cover most of the designated protected areas. More specifically, redline areas contains all national parks, nature reserves, and ecologically important areas inside nature parks. While protected areas aim primarily at protecting natural resources, landscapes, and biodiversity, the redline areas aim to optimize and coordinate the sustainable spatial layout of the relevant wider territory.

However, even though the restructuring of environmental governance and spatial planning system stressed on environmental concerns, but under the territorial spatial planning system, eco-spaces are still formulated through special plans and site plans (refer to Figure 1.6) which must conform to the requirements of the master plans. They are still placed at the lowest level in the hierarchy of spatial planning system, which means that they conform to and provide supplementary information and suggestions to the master plan on environmental concerns, but do not have power to impose changes to the master plan. Furthermore, special plans and site plans are still formulated by planning institutions or design firms commissioned by local governments. Therefore, the formulation of these plans is still subject to the incentives and interests of local officials.

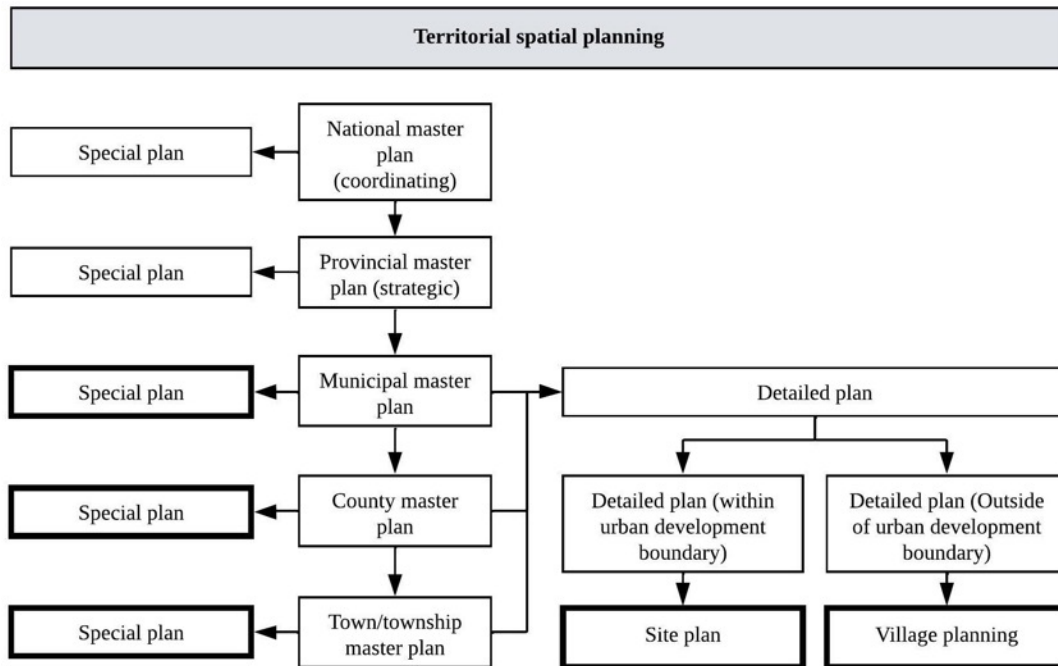


Figure 1.6 China's territorial spatial planning system (compiled by the author). Eco-spaces are formulated in the highlighted stages.

This section has situated the phenomenon of ecologization in its policy context (environmental and cultural governance), spatial context (rural landscapes), and disciplinary context (spatial planning). Ecologization is the result of significant efforts in both environmental and cultural governance. It is implemented predominantly on rural landscapes because of decades of rural-urban conversion, which spatially and administratively converted rural land into urban territory. Spatial planning has been a policy instrument to interpret and implement eco-imaginaries that are subject to power dynamics of administrative hierarchies and spatial planning systems. Based on these contexts, this dissertation will draw from data observed and collected in multiple case studies in the YRD region to discuss the strategies and purposes of ecologization in

China, and implications for the spatial planning system and local implementation of sustainable development.

1.3 Research Questions

This dissertation is guided by a set of questions that investigate the phenomenon of ecologization in China:

- What are the ecological implications in ecological civilization and sustainable development?
- How has the rural become ground for achieving ecological civilization and urban sustainability?
- What are the implications of ecologization on rural spaces and cultures?
- What is the role of spatial planning and design in implementing ecological civilization?

1.4 Structure of the Dissertation

Chapter 2 conceptualizes the emergence of designed eco-spaces in rural China. The chapter first conceptualizes designed spaces in relation to ideas of conceived space and governable space. The chapter analyses how the idea of ecology is evoked to legitimize and give authority to the discourse and operationalization of ecological civilization and sustainable development. The chapter concludes by discussing the multiplicity of rurality and village rationality in maintaining rural sustainability in China.

Chapter 3 introduces the mixed research methods adopted to conduct this research, including analysis of satellite images, document analysis, semi-structured interviews, and field

research, including site visits and collection of relevant documentary evidence. This chapter will analyze how these methods were adapted as the research progressed.

Chapter 4 analyzes the aesthetic approaches of eco-culture that were adopted in the site-level landscape design case studies. The chapter first introduces the idea of eco-culture and its importance in achieving consensus on building ecological civilization. The chapter then presents case studies of site-level landscape design projects as local responses to national ecological and ideological mandates. The analysis reveals the strong cultural and ideological guidance of the party-state in forming collective ecological aesthetics, and in shaping decisions and values.

Through a critical analysis of detailed site-specific case studies, chapter 5 examines the calculative approach of local plans to achieve eco-mandates. The chapter discusses how the environment is governed through numbers in assigning environmental tasks and measuring environmental performance. The case studies demonstrate how eco-spaces are created through such calculative planning approaches.

Chapter 6 analyzes the data collected in this study by specifically addressing the three research questions. The chapter first analyzes the implications of ecology in political ideology and argues that ecology is essentially an ideological and scientific tool aimed to govern, and that land uses and development in China have never been sustainable. The chapter further argues that in the process of ecologization, rural landscapes have been transformed from lived spaces to designed spaces. Moreover, rurality is lost since ecologization has resulted in the disassociation of local communities from the landscape, cultural practices are lost, local history is ignored or explicitly rejected, and the system of collective rural institutions is disrupted. The chapter identifies the political role of spatial planning and the design disciplines, especially landscape architecture, and how its conflicting ways of knowing, disciplinary gaps, lack of legal effect, and

weak position in spatial planning and administrative systems have resulted in its utilitarian deployment to achieve environmental and ideological goals.

Chapter 7 brings together all the discussions in the previous chapters to examine the significance, implications, and limitations of the study, and identifies further research. The chapter argues that ecologization in the YRD is essentially a form of urbanization embedded in distinct Chinese environmental and cultural governance frameworks, which may soon be applied widely across China. Authoritarian environmental governance without democratic participation is characterized as an unsustainable practice. The chapter recommends that spatial planning and design for environmental protection be given policy making power and be independent from administrative hierarchies, local land politics, and territorial spatial planning systems. The chapter concludes by arguing for the development of guidelines for local implementation of SDGs which enables ecological functions and enforces social responsibility and sustainability.

Chapter 2: Conceptualizing Designed Eco-spaces in the Chinese Countryside

2.1 Introduction

The previous chapter has contextualized the emergence of eco-spaces in the Chinese countryside under intensifying environmental and cultural governance. It described the processes of spatial, economic and social restructuring of rural land for urban development, and shed light on the role of spatial planning and design as a policy instrument in developing lasting effects on spatial governance. This chapter provides a framework that helps conceptualize the complexities of designed eco-spaces in rural China, which are produced by an array of internal and external forces and reflects the interests, incentives, strategies, policies, and power dynamics between local and national actors. Specifically, this chapter looks at the implications of designed spaces, ecology and rurality in the process of ecologizing and urbanizing the Chinese countryside.

The chapter is structured in five sections. The following section conceptualizes designed spaces in China based on the idea of conceived space and governable space. The third section reviews the implications of ecology in the discourse, policies and practices of ecological civilization and sustainable development. The fourth section provides a framework for analyzing rural space and the concept of rurality. The final section summarises the chapter and connects it to the broader discussion.

2.2 Conceptualizing Designed Spaces in China

Spatial forms in China are largely planned and built from scratch under state control, transformed by state planning measures, and at the same time reflecting local and cultural formations (Cartier, 2007). To conceptualize the eco-spaces conceived and imposed by local

governments on rural landscapes for achieving state goals and local interests, the framing of designed spaces here is discussed in relation to the idea of conceived space and governable space.

2.2.1 Conceived Space

According to Lefebvre, physical space is socially produced in two ways: *representations of space* (the conceived space) refers to the space conceived by the designers on drawings, or the space materialized in the built environment; *representational space* (the lived space) is experienced and produced by the everyday activities of users. Conceived space is considered “the dominant space in any society” (Lefebvre, 1992, p. 39). It is “the space of scientists, planners, urbanists, technocratic subdividers and social engineers, as of a certain type of artist with a scientific bent—all of whom identify what is lived and what is perceived with what is conceived” (Lefebvre, 1992, pp. 38–39). As envisioned by planners, designers, or scientists, conceived spaces are “not the result of social processes that have occurred overtime, nor do they suggest that form might change significantly if the social profile of the inhabitants changes over time.” (Milgrom, 2002, p. 79). Instead, through spatial imaginations, the passively experienced lived spaces or representational spaces are dominated and appropriated.

In discussing the practices of conceived spaces in urbanism and architecture, Lefebvre stated that social spaces are conceptualized and reduced to mental space and conceived space through a scientific procedure and are then made into models of a society, of a city, and of a “so-called culture” (Lefebvre, 1992, p. 107). He argued that in this case, the practice of simplifying the complexities of social spaces to reduced models is essentially a political and ideological practice that successfully passes off as scientific. Therefore,

reduction and reductionism appear as tools in the service of the state and of power: not as ideologies but as established knowledge; and not in the service of any specific state or government, but rather in the service of the state and power in general (Lefebvre, 1992, p. 106).

Following this argument, conceived space, i.e. designed space, is imposed by elitist ideas of landscape, country, nature, and culture, and in turn influences the transformation and perception of the environment (Olwig, 2002). Landscape, then, is "... intentionally used politically in shaping territories according to ideology and to develop national identities and stimulate nationalism." (Antrop & Eetvelde, 2017, p. 69).

As a scientific tool that simplifies social space, a bird's eye view of space, achieved through technologies such as maps, aerial photography or Google Earth, for example, provides a seemingly objective, accurate and scientific way of perceiving landscape. Since the 1920s, these technologies have become a research and observation tool among social scientists, urban planners and architects, as they made visible the totality of landscapes that could not be seen on the ground: Human geographers used aerial photos to abstract spatial forms and characteristics of people in a particular areas; ethnographers used aerial photos as a scientific method to supplement interviews and photography in studying spatial organization and social organization; aerial photos informed ecologists with a holistic view that uncovers human and geographical patterns and relations in an ecosystem. Planners and architects were inspired by socio-spatial relationships observed from aerial photographs and rationalized planning principles to reorganize urban space (Haffner, 2013).

This mechanical and distanced view has assisted distant observers, i.e. rulers, planners, architects, scientists or social engineers etc., in producing knowledge, experiences,

representations, and imaginations of the geographical space, and therefore is deeply implicated in the political, cultural and social interpretation and production of spaces (Adey et al., 2014; Dorrian & Pousin, 2013; Haffner, 2013). For example, the invention of aerial photography in early the 20th century provided a new perspective on connecting the social with the spatial (Haffner, 2013). Aerial photography technology has revealed that society has an intrinsic spatial pattern shaped by unconscious and lived experiences with the environment, which later contributed to the idea of social space that correlated social order and spatial order. While social scientists adopted this new view-from-above approach to better understand social life and spaces, planners and architects have taken it a step further in attempting to reshape or meet society's needs by restructuring the spatial order. Lefebvre discussed socio-spatial relations by explaining how spaces at various scales reflect social structure, cultural values, and modes of production, and pointed out that the view from above method realized ideological ends, not scientific truths, and that flattened and simplified space depicted in images (such as planning schemes, maps, and satellite images) does not provide a full understanding of society, but normally serves the purpose of state control (Haffner, 2013; Lefebvre, 1992).

Similarly, in the book *Seeing Like a State*, Scott (1998) discusses case studies of state-led high-modernist planning schemes, such as in the Soviet Union, Tanzania and Germany, and analyses how attempts to re-construct and re-engineer society, in ways which simplified and legitimised nature and society on a national scale, had never succeeded. According to Scott, high modernism refers to the ideology that relies on “rational engineering of all aspects of social life in order to improve the human condition” and that “rational thought and scientific laws could provide a single answer to every empirical question” (Scott, 1998, pp. 88, 93). This high modernist belief is not only practiced by socialist or collectivist states, but is shared by “a wide

spectrum of political ideologies” (Scott, 1998, p. 88). For example, both the communist Soviet Union and the capitalistic United States plan gridded spaces in agricultural, industrial and urban territories to produce power and dominate space for their respective political and economic goals since “the organization (and imagination) of space is deeply implicated in the maintenance of existing power structures” (Brown, 2001; Rollison, 1999, p. 7). “Political elites—particularly authoritarian high-modernist elites—typically begin with changes in the formal structure and rules. Such legal and statutory changes are the most accessible and the easiest to rearrange” (Scott, 1998, p. 255). Scott argued that by categorising, mapping and reorganising spatial forms, plans imposed uniformed solutions to complex and diversified social, ecological and geographical conditions, all for political control.

Among these elites are engineers, planners, technocrats, high-level administrators, architects, scientists, and visionaries, who hold decision-making and authoritative power over the reorganization of spatial forms, social orders, and rules. Scott’s case studies cover a wide range of state-led planning initiatives that cover both human and non-human populations. These include the standardized ideal village arrangement in Tanzania, the scientific planning of forestry for optimized production in Germany, collectivization in the Soviet Union, the planned and designed modernist city Brasília to achieve a socio-political vision in Brazil, and the utopian modernist city planning schemes led by architect and planner Le Corbusier, to name but a few. These high modernist projects carry drastic spatial transformations that imply “a truly radical break with history and tradition” in order to restructure the social order (Scott, 1998, p. 93). With techno-scientific planning techniques, these spaces were engineered to an appearance of order, but planners had failed to predict or anticipate social, economic, or ecological factors that may

obstruct projects. The idea of conceived space will be discussed together with governable space in the next section to conceptualize designed space in China.

2.2.2 Governable Space

Rose et al. (1999) introduced the idea of *governable space* from the perspective of governmentality. Governable space highlights the seemingly rationalized governmental strategies, schemes, programmes, devices, and techniques, which seek to shape the conduct of the population so as to achieve certain ends. Through this perspective, the analysis of governable space questions what and why things happened in a space, and what strategies and techniques were adopted by authorities to achieve their objectives. Namely, it focuses on the power relations entangled in the production of a given space, rather than on valuating its quality.

For example, when analysing the roles of designers and architects in creating designed public spaces, Rose questioned the strategies, techniques and intentions that designers and architects employed as experts in the policing of spaces in service of the objectives and outcomes of the government:

Grassed areas are landscaped so that they cannot be used as locations for encampment by street persons; artefacts such as flowerbeds, fountains and street sculpture are both aesthetic objects, designed to manifest and induce civility in those who pass, and control objects, designed to direct people to or from certain locations, to secure against the formation of crowds, to turn them instead into disciplined and well-ordered multiplicities. [in these spaces] activities are regulated, where to walk, where to sit, where to eat and drink, which entrance and exit to take (Rose et al., 1999, p. 252).

In Rose et al.'s analysis, spaces were not simply created out of creativity, but attention was drawn to the designers' and architects' role in the policing of spaces intended by authorities, and how their expertise in reorganizing and realizing the governable space is deployed to achieve this goal. Rose refers to *technologies of government* as strategies and techniques derived from science, knowledge, or expertise, that are adopted to produce governable space. Technologies of government refers to:

... an assemblage of forms of practical knowledge, with modes of perception, practices of calculation, vocabularies, types of authority, forms of judgement, architectural forms, human capacities, non-human objects and devices, inscription techniques and so forth, traversed and transected by aspirations to achieve certain outcomes in terms of the conduct of the governed (Rose et al., 1999, p. 52).

Technologies of government require strong relationships between expertise and politics. Two widely adopted technologies of government, that aim to control governable spaces, are *rendering spaces visible* and *numbers*. Rose et al. argued that governing requires rendering the space over which the government has control visible. Governable space needs to be “represented in maps, charts, pictures, and other inscription devices ... In this process, and from the perspective of its government, salient features are identified and non-salient features rendered invisible” (Rose et al., 1999, p. 36). Oakes confirms that rendering visible is also a technique adopted in the making of public spaces in China, as a way of “modelling space according to certain ideals and conceptions of governing”, and that governable space needs to be rendered visible in order to realize those ideals and conceptions (Oakes, 2016, p. 759). That is to say, policies, ideologies, or goals can only be considered accomplished when they are rendered visible. In a way, mapping, planning, diagramming, archiving, calculating, or what Bruno Latour

called two-dimensional inscriptions (Latour, 1986), are strategies that reduce and simplify spaces, sciences, nature, health, or objects, flat on paper in order for authority to dominate, scale, modify, and combine three-dimensional worlds for certain ends. Authorities do this while making spaces measurable, comparable and manageable (Latour, 1986; Rose et al., 1999).

Meanwhile, numbers hold “unmistakable political power” over the governance of space (Rose et al., 1999, p. 197). First, numbers are political. Numbers not only determine who holds power, whose claims are legitimized, but also indicate “what to measure, how to measure it, how often to measure it and how to present and interpret the results” (Alonso & Starr, 1987, p. 3; Rose et al., 1999). Second, numbers are constituted in the political realm. It is a scientific instrument that represents the numerical realities, and is adopted by governments for calculation, comparison and legitimization of political decisions (Latour, 1988; Rose et al., 1999). Third, numbers are portrayed as apolitical as they are considered objective. Since the objectivity of numbers is associated with science, knowledge and expert techniques, they assist those who hold power to interpret and render decisions as objective, scientific and technical (Rose et al., 1999). Analysis of the eco-metrics developed and used in the lower Yangzi delta discussed in Chapter 5 will critically inspect the claim that numbers are apparently apolitical.

2.2.3 Designed Spaces

The idea of conceived and lived spaces emphasizes the different processes through which space is produced. These differences appear in the production process among the producers of space, technologies, knowledge, perception, experience, human relations, etc. The idea of governable space highlights the governmental logic that rationalizes spatial strategies and techniques in dominating the population and space for certain goals. Conceived space assists in

highlighting differences between the space designed by the governments and the space lived, experienced, and produced by centuries of interactions between villagers, their cultural, social, and productive activities, and local geography. The differences between conceived space and lived space are reflected in the physical space as well as in the processes that produced it.

Both ideas are crucial in conceptualizing designed spaces in rural China. Designed space in rural China signifies the dominance of conceived space, which is not the result of local social processes over time. While the idea of governable space explains spatial transformation by rationalizing governmental strategies and purposes, in the case of designed space in rural China, it not only emphasizes the dominance of conceived spaces over lived spaces in transforming the rural landscapes, but also accentuates the role of local officials and designers in the governance of space. In particular, it highlights how designers' expertise in realizing governable space is employed to achieve certain outcomes intended by the authorities. The case studies of eco-spaces (in Chapters 4 and 5) will be analyzed as designed spaces that are conceived and governed by planning elites.

2.3 Implications of Ecology in Ecological Civilization and Sustainable Development

The Chinese term of ecology (生态 or 生态学) is a modern term adopted from the Japanese language in the early 20th century. In modern Japanese language, adopting foreign words is a common practice in which the phonetic transliteration is normally adopted from western words and the semantic translation is normally adopted from ancient Chinese literature (Luo, 1988). In 1889, Japanese botanist Miyoshi Manabu (1861-1939) transliterated the English word ecology into Katakana (Japanese phonetic alphabet) as エコロジ (pronounced ekoroji), and later translated it semantically into Kanji (a system of Japanese language using Chinese

characters) as 生态学 (shengtaixue), meaning the discipline that studies the condition of living things (Z. Ma et al., 2017).

Since eco-spaces are implemented in response to the sustainable development agenda and ecological civilization policies, this section analyzes the implications of ecology in mainstream sustainable development and ecological civilization discourse. The idea of ecology as it is utilized in China is analyzed in four parts: first, ecology as resource managerialism analyzes the role of ecological sciences in mainstream sustainable development and resource management both internationally and domestically; second, ecology as development provides an explanation for how and why an understanding of economic development as a benefit for the environment was formed in China; third, ecology as ideology discusses how ecology has been adopted as an ideological tool through both the fear of ecological crisis and rendering it as a component of culture; fourth, ecology as authority in planning and design highlights the aesthetics and science of ecology in justifying and legitimizing decisions in the process of implementing local plans.

2.3.1 Ecology as Resource Managerialism

As authoritative bodies, mainstream international institutions hold the power of generating discourse about sustainable development and reinforcing knowledge about nature, namely the sciences of ecology. The idea of dealing with environmental issues was first formally introduced to the global political sphere (including nations and international organizations) in 1972 in the United Nations Conference on the Human Environment. The 1987 *Our Common Future* report by the World Commission on Environment and Development (WCED) further confirmed the worldwide political agenda on sustainable development. The report posed the following question regarding industrialization and the environmental crisis it causes: “How can

such development serve next century's world of twice as many people relying on the same environment?" (WCED, 1987, para. 10). The report defined sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, para. 27). To outline the dynamics between economic growth and the environment in sustainable development, it stated that:

far from requiring the cessation of economic growth, it recognizes that the problems of poverty and underdevelopment cannot be solved unless we have a new era of growth in which developing countries play a large role and reap large benefits. (WCED, 1987, para. 49)

The discourse generally supports the notion that ecologically rational technological development and governance will reduce environmental impacts, and that further modernization will solve environmental problems. The report also pointed out that "no single blueprint of sustainability will be found, as economic and social systems and ecological conditions differ widely among countries. Each nation will have to work out its own concrete policy implications" (WCED, 1987, para. 51). Despite the differences in policies and operative schemes carried out by the different nations, sustainable development should remain a "global objective." This report did not provide any operative scheme other than policy imperatives, which meant that national, regional or local governments were granted the authority to govern their respective environments.

To judge, compare and assess government performance in service of the global objective, sustainable development is normally evaluated using social, economic, and environmental indicators. Agenda 21 (1992-2000) was the first international agenda for sustainable development that was adopted at the United Nations Conference on Environment and Development (also known as the Earth Summit) in 1992. It advocated for sciences in supporting

environmental management and development, and policy formulation, as “the sciences are increasingly being understood as an essential component in the search for feasible pathways towards sustainable development” (Agenda 21, Chapter 35). Following Agenda 21, the Millennium Development Goals (MDGs) were developed, effective from 2000-2015, and the Sustainable Development Goals (SDGs) were promulgated in 2015.

All international agendas emphasize the scientific, objective and measurable nature of the three realms of sustainability: social, economic, and environmental. Social indicators measure the subjective and objective quality of life based on qualitative and quantitative approaches; economic indicators indicate the state of the economy, monitors economic activity and economic cycles; environmental indicators focus on physical conditions and potential human impact on the environment (Pissourios, 2013). These three realms are further classified into themes and topics, and are compiled, represented, and analyzed in statistics, charts, diagrams, maps, and images. Apart from the indicator systems issued by the UN, other international, national organizations, and governments all take up quantifiable indicators to measure, evaluate and compare the natural environment. For example, the United Nations Statistics Division’s (UNSD) Environmental Indicators are in the form of tables, charts, and maps (UNSD, 2015). The Worldwatch Institute (WI), an environmental thinktank whose annual publication, *State of the World (1984-2017)*, is also considered extremely credible to international institutions, national policy makers, industries and academe. Disciplinary knowledge about nature produced by the WI is largely underpinned by the extensive use of statistics, assessments, and visions for the future.

In this context of assessing nature in statistics, charts, diagrams, maps and images, Luke (1995, 2002) argued that “ecology” should be considered as a form of *resource managerialism*. This is because ecology is constructed to manage and balance resources and to decide what

should be sustained and what should not. Ecology has been bureaucratically applied, legally interpreted, and technically supported at a global scale to preserve certain resources while maintaining economic growth. The science of ecology has a role in legitimising and reinforcing the truth about nature. For example, in the WI report, nature is interpreted as a biophysical system that contains four biological systems—forests, grasslands, fisheries, and croplands, and that “...the performance of these systems might be monitored in analytical spreadsheets written in bioeconomic terms, and then judged in equations balancing increased human populations and highly constrained base ecosystem outputs” (Luke, 1995, p. 72). In this way, the eco-knowledge of resource managerialism brings ecological science in line with economic growth. On the one hand, the logic and rationality of economics was brought into environmental studies, and on the other hand, economics is also nuanced with ecological reasoning (Luke, 1995).

Meanwhile, by dismantling, redesigning, and assembling nature into themes and systems, sustainable development indicators, reports, and publications have rendered nature as knowable, predictable and therefore manageable and governable (Rutherford, 2007). These reports and publications have also demonstrated with imagery of a future environmentally sustainable society, intending to fix problems caused by cultural/economic/political systems with technical solutions (The Worldwatch Institute, 2016; The Worldwatch Institute & Assadourian, 2013; Luke, 2002). Therefore, Luke believes that the sustainable development discourse advocated by the mainstream international and national environmental organizations is essentially “about sustaining development as economically rationalized environment rather than the development of a sustaining ecology” (2002, p. 85). In a word, the science of ecology is highly political and fundamental in constructing nature as in need of being governed by experts. Discourse about sustainability implies that unsustainable environments need to be managed and governed

(Rutherford, 2007). The idea of ecology as resource managerialism provides an important part of the framework for examining and understanding ecologization in the lower Yangzi delta.

2.3.2 Ecology as Development

The section above points out that the knowledge and science of ecology plays a key role in the power relations embedded in mainstream sustainable development and resource management. This section analyzes how the emergence of ecology and the emphasis on a scientific approach to economic development in China has led to the idea that development will bring about environmental benefits (The Research Institute for Xi Jinping's Ecological Civilization Thought, 2023). This idea is justified by two main arguments: first, an economically and environmentally rationalized development is on the right trajectory towards ecological civilization. Second, development increases the performance of ecological indicators.

From a historical perspective, some state scientists have advocated for an ecological knowledge and science that proved central to placing ecology in the logic of development in China. For example, Wang Jin, a professor from Renmin University, published several articles in the 1980s advocating for an ecological Marxist vision and the steady-state socialist economic model for China's development. This model was in support of "strict population and resource control, as well as the notion of creating an equilibrium between economic growth and environmental protection" (Rodembiker, 2021, p. 1937), and strong state power and intervention for reorganizing society. This model later became the key characteristic of the state's vision for ecological civilization.

Furthermore, ecologist-turned-state-leader Ma Shijun and his students advocated for the management of human-nature relationships, natural resources, and production based on systemic

scientific principles, such as the management of functional land zoning for human habitation, agricultural and industrial production, and ecosystems. Furthermore, Ma, as an academician at the Chinese Academy of Sciences and an advisor to the State Council Environmental Protection Commission, and as president of the China Ecological Society, and his students later introduced science-based ecological planning and ecological engineering in the form of eco-cities, provinces, towns, and village planning into the construction of rural and urban environments with technical and engineering logics that are still in force today. They believed that “once functional equilibrium is obtained, development will be continuous or sustainable” (Rodenbiker, 2021, p. 1938). Meanwhile, state scientists Ye Qianji—an agricultural economist—and Pan Jiahua—an ecological economist—have proposed a technical and quantifiable approach to achieve ecological civilization. Ye proposed the technical and rational management of agricultural production to increase the efficiency of labor, energy, and capital, and Pan urged to respect the law of nature and consider the ecological carrying capacity in land planning and management, which rationalizes further urbanization and modernization as a path towards ecological civilization (Rodenbiker, 2021).

Ecological knowledge and science are closely tied to the idea of an advanced mode of development on the modernization path towards ecological civilization. In 2007, ecological rationality was introduced in the discourse on modernization in the *China Modernization Report* (中国现代化报告), which is an annual academic report issued by the Modernization Study Center at the Chinese Academy of Sciences. The report provides official discourse, ideology, interpretation, and scientific measures on development progress and nation-building and represents an authoritative and official view of the Chinese modernization progress. In this report, ecological science was considered key to economic development in transitioning China

into an advanced civilization. Illustrated in the development pathways towards ecological modernization, China claimed to have taken a shortcut (pathway 2) to an eco-modernized society by focusing on “accelerated green industrialization and ecologizing the economy towards a knowledge society” (L. Zhang et al., 2007, p. 663). Distinct from pathway 1 (the path taken by highly developed Western countries), pathway 2 bypasses the impact caused by industrial civilization and achieves knowledge (or ecological) civilization through a more ecologically integrated mode of development.

In the same report, the *Yangzi River Model* was highlighted to symbolize the temporal and spatial hierarchies of China’s modernization: from upper reaches “primitive society” to middle reaches “agricultural society” to the Yangzi estuary “knowledge society” (China Modernization Strategy Research Group, 2007, p. 101). Both the development path and the Yangzi River Model represent the dominant thinking of linear modernization in official development discourse that fixated on economic and technological dimensions. The technocratic application of ecological science and engineering that goes hand in hand with the economic modernization process is represented here as the single criteria to the exclusion of any other mode of ecological knowledge or development. Political dimensions, such as new forms of environmental governance or civic participation, are nowhere to be found in the report (L. Zhang et al., 2007).

Since ecological civilization was named as the leading political ideology in the national constitution in 2012, state discourse that aims to build a harmonious human-nature modernization still insists on a scientific worldview and methodology (The Research Institute for Xi Jinping’s Ecological Civilization Thought, 2023). Research for this study suggests that ecological civilization is at the core of the technocratic governance model with the belief that technological

innovation provides the sole linear progress mechanism towards a future that will benefit all of mankind, and this belief is stronger than ever (Y. Li & Shapiro, 2020). From this perspective, green development and ecological restoration are the only means to improving the environment, quality of life, and for ensuring sustained economic growth.

In 2016, the National Development and Reform Commission issued the *Green Development Index System* and the *Ecological Civilization Performance Evaluation System*, which both aimed to measure local progress in green development and performance in implementing ecological civilization. The Green Development Index System (Table 2.1) measures a total of 56 criteria in seven areas, including resource utilization, environmental protection, environmental quality, ecological protection, quality of growth, green lifestyle, and public satisfaction. It is used to indicate, compare, and guide the level of green development in each region. The Ecological Civilization Performance Evaluation System (Table 2.2) covers 23 criteria in five areas, namely resource utilization, ecological environment protection, annual evaluation result (of green development index), public satisfaction, and environmental hazard incidents. It is adopted to evaluate the performances of local governments in implementing ecological civilization.

Table 2.1 Green development index system

Resource utilization	Total energy consumption (10,000 ton, unit of measurement)
	Reduction in energy usage per unit of GDP (%)
	Reduction in CO ₂ emission per unit of GDP (%)
	Share of non-fossil fuels in primary energy consumption (%)
	Total water usage (100 million m ³)
	Reduction in water usage per 10,000 yuan of GDP (%)
	Reduction in water usage per unit of industrial added value (%)
	Productivity coefficient of irrigation

	Amount of cultivated land (100 million mu)
	New construction land (100 million mu)
	Reduction in construction land per unit of GDP (%)
	Output capacity of resources (10,000 yuan per ton)
	Multipurpose utilization rate of non-hazardous industrial solid waste (%)
	Multipurpose utilization rate of crop straw (%)
Environmental protection	Reduction in total chemical oxygen demand (%)
	Reduction in total ammonia nitrogen emission (%)
	Reduction in total sulfur dioxide emission (%)
	Reduction in total nitrogen oxides emission (%)
	Disposal rate of hazardous waste (%)
	Innocuous disposal of household waste (%)
	Wastewater treatment rate (%)
	Investment in environment pollution treatment per unit of GDP (%)
Environment quality	Percentage of good air quality days in a year (of cities at and above the prefectural level) (%)
	Reduction in the concentration of PM2.5 (of cities at and above the prefectural level) (%)
	Percentage of surface water quality better than Class III (%)
	Percentage of surface water quality in Class V (%)
	The up-to-standard rate of the quality of water at water function zones of major rivers and lakes (%)
	Percentage of water quality of drinking water reach or better than Class III (%)
	Percentage of offshore area water quality in Class I & II (%)
	Percentage of contaminated farmland made safe (%)
	Fertilizer usage per unit of farmland (kg/hectare)
	Pesticide usage per unit of farmland (kg/hectare)
Ecological Protection	Forest coverage (%)
	Forest stock volume (100 million m3)
	Comprehensive vegetation coverage of grassland (%)
	Retention rate of natural coastline (%)
	Protection rate of wetland (%)
	Land protected area (10,000 hectare)
	Marine protected area (10,000 hectare)

	New areas of soil erosion control (10,000 hectare)
	Percentage of controllable desertified land (%)
	New area of mine area restoration (hectare)
Quality of growth	Per capita GDP growth (%)
	Per capita disposal income (yuan)
	Percentage of third industry growth in GDP (%)
	Percentage of emerging sectors of strategic importance growth in GDP (%)
	Percentage of research and development spending in GDP (%)
Green lifestyle	Reduction in per capita energy consumption in public institutions (%)
	Market share of green products (%)
	Growth rate of new energy vehicle holdings (%)
	Sustainable transportation (passengers per 10,000 population)
	Percentage of green building in new building construction (%)
	Ratio of green space in urban built-up land (%)
	Rural water supply coverage (%)
	Rural sanitary toilet coverage (%)
Public satisfactory	Public satisfactory to environmental quality (%)

Source: translated by the author from the green development index system (National Development and Reform Commission, 2016a).

Table 2.2 Ecological civilization performance evaluation system

Resource utilization	Reduction in energy usage per unit of GDP
	Reduction in CO ₂ emission per unit of GDP
	Share of non-fossil fuels in primary energy consumption
	Total energy consumption
	Reduction in water usage per 10,000 RMB of GDP
	Total water usage
	Total amount of cultivated land
	New construction land
Ecological environment protection	Percentage of good air quality days in a year (of cities at and above prefectural level)

	Reduction in the concentration of PM2.5 (of cities at and above prefectural level)
	Percentage of surface water quality better than Class III
	Percentage of offshore area water quality in Class I & II
	Percentage of surface water quality in Class V
	Reduction in total chemical oxygen demand
	Reduction in total ammonia nitrogen emission
	Reduction in total sulfur dioxide emission
	Reduction in total nitrogen oxides emission
	Forest coverage
	Forest stock volume
	Comprehensive vegetation coverage of grassland
Annual evaluation result (of green development index)	Annual evaluation of ecological civilization development
Public satisfaction	Public satisfaction to local ecological civilization development and ecological environment improvement
Environmental hazard incidents	Major environmental incidents, other environmental pollution incidents of adverse social impact, critical ecological destruction incidents

Source: translated by the author from the ecological civilization performance evaluation system (National Development and Reform Commission, 2016a).

However, measurable criteria is known to be easily manipulated by local officials in China (Nickum, 2010). For this reason, as long as an increase in the green development or ecological civilization performance criteria is reached, further development or construction may result in an increase in indices which statistically indicate an improved ecological condition despite the fact that development may actually harm the environment. For example, statistics of forest coverage, wetland coverage, green public spaces, water quality, air quality, or public satisfaction could be improved deliberately while constructing urban development projects. As a result, the assessment of environmental conditions based solely on statistics contributed to the discourse that “development is promoted as a way of enhancing the environment” (People’s

Daily, 2023; L. Xie et al., 2019, p. 5). The idea of ecology as development also serves as a crucial framework for examining ecologization, especially the interpretation and implementation numerical environmental goals in Chapter 5.

2.3.3 Ecology as Ideology

Ecology as an ideology that maintains governance is by no means unique in China. Through the fear of environmental disaster and ecological catastrophe, ecology has become a new form of global ideology that ascribes actions while assuring that current institutions and modes of life (governance, capitalism, life) will stay unchanged (Léger, 2016; Swyngedouw, 2009). As mentioned earlier in this chapter, a wide range of measures, initiatives and practices are adopted to deal with global ecological crisis which conform to the sustainability imperative. However, while highly distressed ecological conditions call for radical changes, these measures are taken in order to continue on the capitalist path and maintain governance. Furthermore, the sustainability measures have promised to take care of the fear created in current ecological narratives. In this regard, it is argued that ecology, or the ecology of fear has become “a new opium for the masses replacing the declining religion: it takes over the old religion's fundamental function, that of putting on an unquestionable authority which can impose limits” (Zizek, 2008, p. 47). As a result, ecology has been widely adopted as an ideological tool to legitimize and justify the sustainability measures and to maintain governance.

Similarly, the term *sustainability* shares ecology's ideology and objectivity. The attempts to deal with nature and ecological conditions are embodied in the idea of sustainability. Sustainability is considered a rhetoric that “refers to nothing and everything at the same time”, and that taking up “the gesture to ‘sustainability’ already guarantees that the matter of nature and

the environment is taken seriously, that our fears are taken care of by those in charge, that ‘homeland security’ is in good hands” (Swyngedouw, 2009, p. 310). And so, just like ecology, the mere reference to sustainability, such as discussions on the sustainable city, sustainable planning, sustainable policy etc., already promises a future free of fears and disasters. These approaches to understanding the discourse of ecology and sustainability pre-suppose that either or both are rendered apolitical. It is further suggested that use of these terms is embedded in the largely unquestioned and unchallenged consensus of the authority of technological fixes.

In China, under the authority of ecology and sustainability, ecology is used as an ideological tool domestically and internationally. Efforts in environmental protection and sustainable development are closely associated with the political and ideological ambition of the state, and it is rendered as both historical and visionary (Y. Li & Shapiro, 2020). Ecological civilization is claimed to be a continuation of China’s development path, from agricultural civilization, industrial civilization, and material civilization towards a new and more advanced stage of human civilization. Therefore, ecology is considered a brand-new form of human civilization that is more advanced than the Western mode of modernization because it mediates and strengthens ecological conditions and economic development, leads to a singular direction for the development of human society, and shares the values of all mankind. The discourse portrays the efforts and strategies of green and ecological development as the only path towards “productive development, wealthy life and benign ecological condition” (The Research Institute for Xi Jinping’s Ecological Civilization Thought, 2023, para. 13).

In fact, the Chinese state’s ideology of ecology functions more than a continuation of traditional culture or a vision for the future, but is composed into a narrative of ecological culture (eco-culture), and is carried out by way of building a socialist culture (Qiushi, 2020). In 2016, the

State Forestry Bureau issued the *Chinese Eco-culture Development Outline*, in which the core task of eco-culture was to regulate “the public’s understanding and point of view of ecological civilization”, which may impact the direction and progress of achieving ecological civilization (Development Research Center of the State Council, 2021). Apart from promoting ecological awareness and environmental protection, the main purpose of eco-culture is disseminating propaganda and education to the public on green efforts made by the state. These efforts range from constructing national forest parks, nature reserves, promoting green and high-tech industries, the building of eco-cities and eco-villages, eco-tourism, to media dissemination of ecological civilization ideologies. Media dissemination includes textbooks, TV programs, publications etc. (State Forestry Bureau, 2016). It not only renders the achievement visible and confirms it is the right path for human civilization, but also aims to convince audiences that these efforts are part of Chinese culture. The adoption of eco-culture aesthetics in ecologization will be analyzed in the case studies in Chapter 4.

2.3.4 Ecology as Authority in Planning and Design

Previous sections have discussed the implications of ecology in the discourse of sustainable development and ecological civilization. This section highlights the authority of ecology as it appears as aesthetics and the science of ecology through the practices of spatial planning and design as an implementation tool of sustainable development and ecological civilization. This section discusses how ecology is interpreted in spatial design disciplines to conceive and construct eco-spaces. In particular, the discipline of landscape architecture will be analyzed for the interpretation of ecology in both planning and design projects, since the idea of ecology was initiated and developed in the theories, methods, and practices of landscape

architecture. The discussion on landscape architecture represents all spatial design disciplines because of the blurry boundaries among the disciplines of architecture, landscape architecture, urbanism, urban planning, and urban design. “The more or less accentuated split between what is known as 'architecture' and what is known as 'urbanism' ...has not resulted in an increased diversity.” (Lefebvre, 1992, p. 75). The focus on creating sustainable spaces has resulted in various spatial design disciplines working on similar projects.

Since the discipline of landscape architecture was first established in the late 19th century, the discourse of the discipline has extended from the pictorial (landscape as picture) to the instrumental, strategic and operational (landscape as process). Its focus has also broadened from garden design to large scale landscape plans such as wetland, infrastructure, or regional planning projects in urban or rural areas (Damme et al., 2013; Shannon, 2012). However, as a discipline, landscape architecture draws concepts, theories, and methods from various disciplines, such as ecological science, arts, architecture, horticulture, engineering and social sciences among others. As a result, it contains conflicting ways of knowing and contrasting ideas about human-nature relationships (Spirn, 1997).

On the one hand, landscape architecture (and the garden making practices of the 18th and 19th century) have deep aesthetic historical roots, which are influenced by cultural, socioeconomic, and political contexts (Heyde, 2014). For example, 19th century garden designs resembled the visual qualities of the English countryside. However, according to Heyde, “‘aesthetics’ in landscape architecture is nowadays still predefined as an autonomous category” since the attention of landscape architecture still centres on the physical appearance of places and its effects on the mind, which contributes to the wellbeing of the public (Heyde, 2014, p. 140). However, the fact that aesthetics are sometimes used (often by a professional or political elite) to

transform or disrupt functional, societal, or ecological concerns for the real landscapes, obstructs the development of the discipline and the profession (Blanchon-Caillot et al., 2012; Heyde, 2014; Matthews, 2002).

In some urban or suburban settings, landscapes are designed to simulate urban wilderness or biodiversity to indicate aesthetics of high ecological value (Dagenais, 2004; J. S. Duncan & Duncan, 2001; N. Duncan, 2004; Gandy, 2013). For example, French landscape architect Gilles Clément's design of the Garden of Movement in the Parc André Citroën in Paris has created ecological rhetoric by adopting a variety of natural and wild-looking exotic plants. The designer was attracted to the ornamental effects of certain plants, which were selected by the "attractiveness of foliage, flowers or texture in the landscape" (Dagenais, 2004). Similarly, the high-profile High Line project in New York was designed with a wilderness aesthetics resembling spontaneous vegetation growth and succession aimed to indicate high levels of biodiversity (Gandy, 2013).

Even though these types of gardens "evokes nature more than other types of gardens because of the way it looks", ecologists are critical about these designs, since these landscapes do not respond to ecological processes nor do they correspond to the way plants grow naturally (Dagenais, 2004, p. 318; Howett, 1987). Gandy (2013) termed these designed spaces "constructed ecological simulacrum", which were representations or images of ecological systems, but ones that have to be maintained by modern technological skills. They may have aesthetic representations drawn from local natural or cultural conditions, but they are not necessarily ecologically or culturally sustainable (Dagenais, 2004; Dalton, 1996; Gandy, 2013).

The cultural, historical and ecological authenticity of these designed landscapes are questionable since they are neither historically produced cultural landscapes nor did they

originate from scientific knowledge of ecological dynamics (Gandy, 2013). Moreover, the aesthetics of high ecological value are not only socially, culturally, and materially isolated from their immediate environment, they are often utilized merely to add value to the development of real-estate and, thus, result in gentrification (J. S. Duncan & Duncan, 2001; N. Duncan, 2004; Ghertner, 2010, 2015; C. P. Pow, 2018; C.-P. Pow, 2009). In some other cases, ecological values defined by preconceived eco-aesthetic norms have caused spatial distribution of social inequality and exclusion, since the aesthetics represent a privileged social status (N. Duncan, 2004; Laage-Thomsen & Blok, 2020; C.-P. Pow, 2009; Rutt & Loveless, 2018).

On the other hand, landscape ecology constitutes the scientific principles for landscape planning theories and methods. These principles grew out of the quantitative approach employed in geographical and landscape research during the 1960s and 1970s. Landscape ecology introduced landscape metrics for the analysis of landscape patterns and structures, and contributed to the application of landscape ecology principles in regional and urban planning for environmental purposes (Antrop, 2000). In landscape ecology, landscape patterns are identified as elements of patches, edges, corridors, and mosaics, and are influenced by factors such as size, number, location, scale, shape, time, or connectivity (Dramstad et al., 1996). According to these principles, landscape ecologists suggest that the shape of an ecologically optimum habitat should be large in size, with convoluted shapes, natural ecological boundaries with high vegetative structural diversity, and should be closely connected to other patches to form ecological corridors or networks for flows or movements across the patches (Dramstad et al., 1996).

Therefore, in regional planning, landscape ecology perceives the metropolitan region as an ecological system, and helps to understand land-use changes within its ecological patterns and processes. In turn, the patterns and structures of landscapes could be manipulated by planners

and designers to improve their ecological condition (Steiner, 2011). Landscape ecology indicators also contribute to the assessment and monitoring of landscape quality, such as the measurement of biodiversity, land uses, degradation etc., and serve as a solid scientific and policy base for all levels of decision-making processes (Cassatella & Peano, 2011).

Arising from these differing approaches, conflicting ways of knowing in landscape architecture implies that ecological landscape planning and design would prioritize either the cultural perception of ecology, the aesthetics of ecology, or the science of ecology. Indeed, this brief overview of the discipline suggest there is no agreement or definition on what constitutes a truly ecological landscape approach. Instead, conflicts have resulted in escalating debates over theories, methods, materials, and styles of ecological design, which are ongoing even today. As Spirn describes it:

some advocate the exclusive use of native, as opposed to naturalized, plants. Some urge the eradication of ‘exotic invaders’ and condemn others for planting naturalized, non-native, plants. Some conceal the artifice of their works; others celebrate the human ability to transform the landscape. Some privilege the role of reason in design and promote science as the sole source of truth about nature, while others prefer personal revelation and reject science as a way of knowing. (Spirn, 1997, p. 250)

Despite the lack of agreement on what is a true ecological approach to planning or design, Spirn (1997) points out that some designers consider ecology as the authority that determines the correct way of planning and design, to the extent that it recalls a religious dogma. Some designs are built to resemble natural conditions without examining the underlying meaning, values and history that these resemblances create, while others promote science as the sole determining factor. In a way, ecology has succeeded nature as the new authority to morally define an aesthetic

norm or legitimize a decision, as an authority that can “justify decisions to select some materials or plants and exclude others, to arrange them in particular patterns, and tend the result in certain ways” (Spirn, 1997, p. 249).

Indeed, as will be highlighted later in this dissertation, the practices of planning and design for sustainable, green or ecological values are rarely questioned since they are considered actions of relieving environmental degradation and ecological crisis: “Urban greening projects—as signifiers of nature—appear to be asocial, ahistorical, and universally beneficial, greening projects can be taken to be self-evidentially desirable and, therefore, uniquely hard to critique” (Angelo, 2019, p. 8). Yet, the idea that ecology, green initiatives, or sustainability are universally “good” has to be questioned by exploring the processes and objectives of producing spaces (Angelo, 2019, 2021; Doherty, 2017; Sze, 2020). It coincides with the unquestioned authority of ecology adopted in the discourse and practices of resource management, economic development and ideological promotion discussed earlier in this chapter. The aesthetics and science of ecology in landscape architecture and other spatial design disciplines holds an authoritative and deterministic power that assures the legitimacy and credibility of planning or design decisions, which in turn operate as important instruments in achieving sustainable development and, as will be demonstrated in the analysis of designed spaces in the lower Yangzi delta, the outcomes of ecological civilization.

2.4 Rural Spaces and Rurality in China

This section provides a framework for understanding and analyzing rural spaces and rurality in the context of rural urbanization in China. As discussed in Chapter 1, the most recent decades of urban-biased development, the process of urbanization has caused the loss of

agricultural land, depeasantization (the transition of peasants' livelihood from agricultural to non-agricultural sectors), deteriorating environmental conditions, and increasing social inequality between urban and rural areas (Bai et al., 2014; Hu Z., 2021; Y. Li et al., 2018). In mainstream sustainable development initiatives, sustainability levels in rural areas are measured with the same set of indicators as in urban settings (Goss, 2013; Shi & Yang, 2022). This section first outlines the three main perspectives prevalent in conceptualizations of the rural, then introduces a three-facet model of analyzing rural spaces and the emergence of multiplicity in rurality in the rural transformation from a productive society (agricultural rural society) to a post-productive society (multi-functional rural society). This section will also elaborate on the emerging hybridity of rurality in China under rural restructuring, and the traditional village rationality that historically maintained environmental protection.

2.4.1 Conceptualizing Rural Space

Among the broad literature on the rural-urban debate, three general perspectives on the conceptualization of rural spaces and rurality have been identified (P. Cloke, 2006). First, a functional or descriptive definition of rurality, which identifies rural spaces as functionally and distinctively different from urban spaces, sometimes measured with indicators, such as population, remoteness and land uses (P. J. Cloke, 1977, 1978). This perspective, which originated in the Western context, categorises rural as spaces that are dominated by agricultural land use activities and societies, and are inhabited by small, sparsely populated settlements (P. Cloke, 2006). Not only does it fail to define the Asian countryside outside of metropolitan regions that are characterised by mixed land uses and dense populations, but this function-centric perspective, where it has been adopted by researchers, policy makers or spatial practitioners,

resulted in a rural-urban dichotomy, social and spatial inequality, or the delineation of rural-urban boundaries or gradients on a rural-urban continuum.

Second, a political economy perspective considered rural space as a product of processes and dynamics of the local-global political economy. This perspective believes that urban and rural are processes, not sites (N. Brenner, 2013). In this sense, “cities are dense networks of interwoven socio-spatial processes”, and rural areas should be considered as less dense networks of processes (Kaika, 2005, p. 22). Furthermore, in this approach, some argue that there should be no rural nor urban, but a total urbanization of society or planetary urbanization (N. J. Brenner, 2014; Lefebvre, 2003). This perspective has conceptually blurred rural and urban distinctions by analyzing rural and urban spaces as a consequence of interconnected political and economic processes, in which capitalist production fundamentally alters the built environment. This approach refers to the rural as a mere “analytic distinction” or “rhetoric device” (Copp, 1972, p. 519), and refuses to recognize the distinct localities of rurality in which interaction of political economic processes with local societies is materialized with unique forms of communities, landscapes and culture.

Third, the social construction perspective of rurality considers the rural as socially constructed. It is centered on the role of culture, local social relations, moral, and economic values and practices, in creating distinctive rural spaces, life and society (P. Cloke, 2006). This perspective argues that rural space is shaped by local cultural forces. However, under this perspective, in the global process of depeasantization and deagrarianization, the idea of post-rurality or hybrid rurality was proposed to move away from universal definitions of urban and rural, and focus on the role of power. This approach examines “the ways in which rurality is constructed and deployed in a variety of contexts.” (Lin et al., 2016; Murdoch & Pratt, 1993, p.

411, 423). It is argued that “there is not one but there are many (rurality)” in which rural space is produced and reproduced by various internal and/or external forces which transforms economies, landscapes, and societies under a globalized political economy (Murdoch & Pratt, 1993, p. 425). Yet, the adoption of this multiplicity idea of rurality in policy making or spatial practices may result in a symbolic representation of rurality, which is reflected in the ways the rural idyll is produced in rural tourism, rural organic produce, or rural lifestyle (Bell, 2006; Frisvoll, 2014).

Based on Lefebvre’s spatial triad (introduced earlier in this chapter), Halfacree (2006) has proposed three facets to analyze the totality and diversity of rural space. First, *rural localities* refer to the identified location or rural space that is constantly produced and reproduced by the social processes and activities that are either productive or consumptive. Second, *formal representations of the rural*, namely in the imagination and conception of rural spaces by designers, officials, scientists etc. Third, *everyday lives of the rural* refers to the individual or cultural interpretation and practices which create the lived spaces.

In analyzing the rural transformation from a productivist rural space to a more diverse and multi-functional post-productivist rural space, Halfacree (2007) suggested that the post-productivist space could imply four types of space: first, the spaces of super-productivism, namely the maximization of profit from large-scale commercialized agricultural production; second, the rural idyll space that is solely for consumption, such as recreation and residence; third, the effaced rural space, that is the immaterial memories, nostalgia, literatures of rural space; and fourth, the radical visions of rural space, what he called a *radical rural*, which he argued could go beyond the capitalistic logic and aim for the sustainability of rural space which is characterised by low-impact development of the living space, the holistic relations between people and nature against the idyll rural aesthetics, and empowered everyday lives. A social

construction perspective of rurality is adopted in this study to analyze the transformation of rural spaces and rurality in China which will be further discussed in the next section.

2.4.2 Hybrid Rurality and Village Rationality in China

Rural space in China has gone through tremendous spatial, economic, and social restructuring under strong top-down national policies and strategies, as well as global political economic processes (Long & Liu, 2016). As discussed in Chapter 1, many rural spaces adjacent to metropolitan regions have been administratively and spatially integrated as part of the urban territory. In the process of rural urbanization, some scholars believe that rurality disappears with the loss of traditional rural practices, particularly through rural-urban migration and commercialized or industrialized use of rural land (Guldin, 1997), or that the rural disappears with the demise of physical spaces, rural organizations and social relations (P. Li, 2004).

Others, however, believe that rurality persists in rural China even in cases when “rural landscape and functions have vanished in the village and villagers are no longer involved in agricultural activities”, as long as villagers’ everyday activities are still associated with rural rationality, including collectivist systems, land-based economies, and local social and cultural relations (Chung, 2013, p. 607). In this sense, rurality in China is “defined by social and cultural practices rather than by functions and/or by imagination such as the rural idyll” (Chung, 2013, p. 607). Furthermore, in the context of rural urbanization and the globalized economy, rurality has become hybridized and is everchanging, but it is maintained by the everyday life that engages in both a modernized economy and local cultural traditions (G. Lin et al., 2016; Lv & Lin, 2017).

In terms of environmental protection, Wen et al. (2012) argue that the key for achieving ecological civilization in rural China should be rural reconstruction, which focuses on traditional

local environmental knowledge. China's modernization processes have witnessed transformation from agriculture to industrialization and the loss of local environmental knowledge (traditional knowledge about local resources) based on specific geographical condition. As discussed in Chapter 1, Wen believed that Chinese people survived 6000 years of natural disasters because of irrigated agriculture and its village rationality. Village rationality has historically supported village resiliency against limited resources and natural disasters through small-scale irrigated agricultural practices. In this way, environmental protection has always been maintained by local cultures. Rural China has historically had the heterogeneous and diverse agricultural foundation for ecological civilization. Therefore, rural reconstruction and modernization towards ecological civilization has to respect geographical heterogeneity and develop the rural area based on local and grassroots culture.

In summary, based on the multiplicity of rurality and the three-facet model for analyzing rural space, Halfacree argued for a radical rural in the post-productivist rural society, where low-impact living spaces, holistic planning of relationships between humans and the environment, and empowered everyday lives are conceived as fundamental for the sustainability of the rural space. Meanwhile, the persistence of rurality and environmental protection in rural China under top-down policies and a global political economy could be maintained under village rationality, including collective institutional systems, land-based economies, local social and cultural relations, and local environmental knowledge, even when rural landscapes and their agricultural activities no longer exist.

2.5 Summary

This chapter analyzed designed spaces as both conceived spaces and governable spaces. Designed spaces in China dominate the space lived and experienced by local communities, and such spaces are formulated with specific strategies and purposes as intended by local authorities and the state. The chapter also examined the ambiguous and contested concept of “ecology” as it has been associated with authoritative and unquestioned discourse and operations in the political, economic, ideological, and planning realms. Ecology as resource managerialism analyzes the role of ecological science in maintaining economic growth and resource management in mainstream sustainable development. Ecology as development discusses the technocratic application of ecological science in China, which leads to the belief that development will enhance the environment. Ecology as ideology examines how ecological narratives are created to position it as apolitical, authoritative, and render it as part of Chinese culture to legitimize China’s development path. Finally, Ecology as authority in planning and design reveals the authority of ecological aesthetics and science in legitimizing decisions. The final section conceptualizes the persistence of rurality and rural sustainability as maintained by village rationality, namely the institutional systems, land-based economies, local knowledge, and local social and cultural practices, rather than solely by rural functional landscapes, imagined rural idyll and agricultural activities.

With these theoretical frameworks in mind, emerging eco-spaces in the countryside will be analyzed in this dissertation as designed spaces, which transitioned from lived space to become dominated by conceived space as they are transformed according to the strategies and purposes of designers under the direction of the local state as they respond to national imperatives. In the process, the authority of ecology is adopted in the policies, narratives,

discourse, planning, and design strategies to legitimize decisions made in restructuring rural landscapes. Even though the goal of ecologizing the rural is to achieve ecological civilization and sustainable development, the quality of rurality and sustainability of these rural eco-spaces will be evaluated through the lens of village rationality and rurality.

Chapter 3: Methodology

3.1 Introduction

The previous chapter has identified the implications of ecology in the discourse and policies around sustainable development and ecological civilization, the emerging ecological development and aesthetic governmentality in China, and a framework for understanding constructed eco-spaces as governable space. This chapter explains in detail the methods and processes of collecting and analyzing empirical data, and how these methods were selected to comprehensively understand the emerging phenomenon of constructing eco-spaces in China. Qualitative research methods were adopted to focus on exploring why and what strategies, techniques and practices were used in implementing sustainability discourse through planning and design practices.

For this researcher, trained in both landscape architecture and human geography, the dramatic, sometimes traumatic, transformation of rural landscapes through planning and design practices seemed alarming. From the perspective of spatial design disciplines, the planning and design schemes observed aimed to improve the rural environment and living conditions. However, from the perspective of human geography, rural landscapes have always been produced through lived experiences and local activities instead of being entirely planned and designed. From this perspective, the transformation of rural landscapes implied not only spatial changes, but more importantly, social reordering. Therefore, the research methods and analytical perspective of this dissertation were formulated from knowledge of both the design disciplines and human geography to examine power relations as they were entangled in the production of designed eco-spaces in the Chinese countryside. Critically analysing the role of design

disciplines in these power relations reveals far more than merely evaluating the purported quality and achievements of eco-spaces in the lower Yangzi River Delta.

This study uses various methods to address how emerging ecological mandates have been implemented in the forms of ecological planning and design projects. In order to fully understand the situation on the ground, the research process has been intentionally non-linear. This means, during the course of this study, that several methods were used in parallel, and at other times one particular method was used repeatedly. For example, two fieldwork data collection periods were conducted one year apart to further understand and verify certain landscape changes or to further narrow down selected case studies; planning documents including master plans and statistical data were constantly referred to throughout the process; a couple of follow-up interviews were conducted to confirm some understandings after reviewing planning documents and/or site visits.

The study started by selecting case studies to better understand the recent planning scheme, the *Green and Ecologically Integrated Development Demonstration Area*, in the YRD, especially the types of planning and design projects to be designed and implemented in the area. Case studies were selected through a process of reviewing satellite images, planning documents including master plans and statistics, articles, online news and posts, and through fieldwork and interviews. Reviews of satellite images and master plans were conducted to gain an initial sense the ecologization phenomenon and to identify of a selection of possible case studies. Then, semi-structured interviews were conducted online with three groups of interviewees, including planners/designers, remote sensing technicians and landscape ecologists, who were directly or indirectly involved in the conceiving, planning, measuring, or construction process of ecological spaces to better understand the mechanisms and strategies underlying the roles of these key actors. Meanwhile, extensive fieldwork was conducted in the YRD study area to observe,

document, and verify the prevalence of the ecologization phenomenon and its related policies. Finally, based on the various sources of data collected, contextual analysis approach was used to analyze and discuss an emerging phenomenon of ecologization in the YRD.

During 2020-2021, a total of 38 eco-space sites were visited in the YRD study area which confirmed the emergence of ecologization. During these two years, site visits, data analysis and semi-structured interviews assisted in narrowing down two major themes in the implementation of eco-spaces, namely the strategies to achieve numerical and ideological goals. Once the two themes were identified and confirmed, the relevant sites were narrowed down and visited for a second time to collect further evidence for the analysis and discussion in this dissertation. Finally, the detailed case studies discussed in Chapters 4 and 5 were further selected based on the availability of relevant data which could be collected on site and online, and their suitability as broadly representative examples of ecologization across the wider region. The second section of this chapter will explain the details of each method used, and will show how they assisted in answering the research questions. Finally, the third section will briefly summarise the chapter.

3.2 Data Collection and Analysis

3.2.1 Observation Through Satellite Images

To search for case studies, fieldwork started on Google Earth Pro in early 2020, due to the outbreak of the COVID-19 pandemic. Strict travel restrictions and lockdowns made it difficult to travel to the study area in the YRD region. For months, the only way to explore the study area was by looking at satellite images. Potential case study sites were initially explored by “walking” through almost the entire Lower Yangzi Delta region on Google Earth, zooming in and out at various scales, switching back and forth in between historical and recent imageries to

observe landscape patterns closely and to see how they had transformed over the years. The following images are some of the screenshots taken from Google Earth Pro (Figure 3.1-3.4). This initial observation identified a pattern of designed landscapes in the countryside, which stood out from their surrounding settlements and farmlands: curvy lines and novel shapes that are not naturally formed nor are made through lived experiences, but are drafted manually in computer illustration software such as AutoCAD or Rhino. Observed from the perspective of this researchers expertise and experience as a landscape designer, it was easy to recognize that some lines and shapes were not naturally formed nor designed for functional purposes, but to mimic the shapes of ecology or nature in the rural landscape.



Figure 3.1 and 3.2 Patterns of designed landscapes in the countryside, Site 1 before (2003) and after (2023)

Note. Initial observation identified designed landscapes emerging in rural areas. Screenshot from Google Earth Pro.

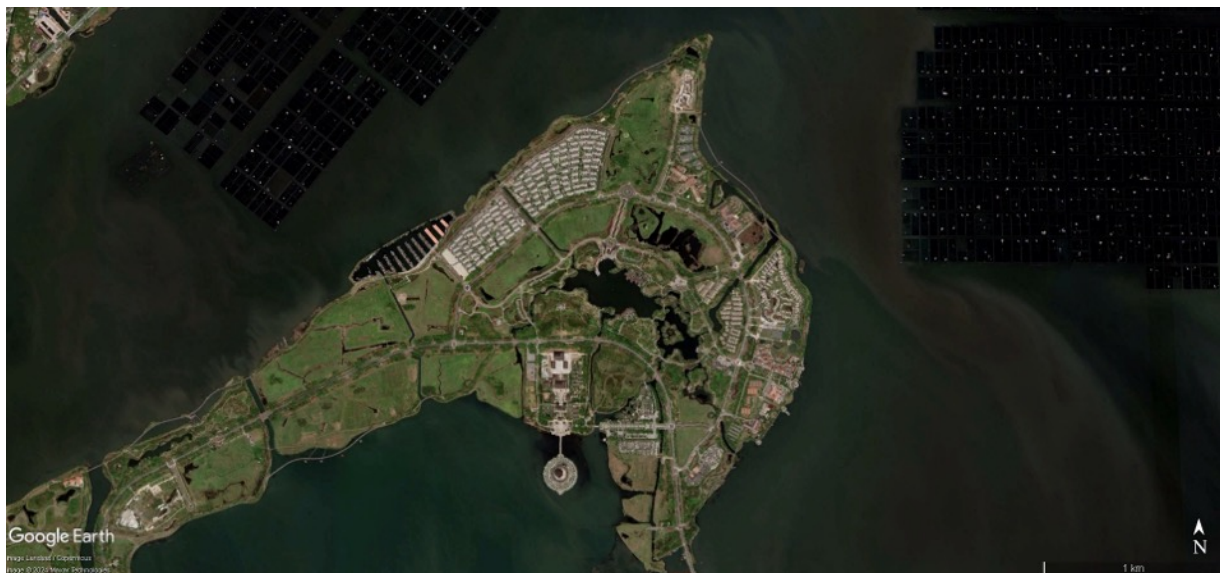


Figure 3.3 and 3.4 Patterns of designed landscapes in the countryside, Site 2 before (2003) and after (2021)

Note. Initial observation identified designed landscapes emerging in rural areas. Screenshot from Google Earth Pro.

Meanwhile, in some other cases, observations identified some high tree coverage areas that also stood out from the surrounding cultivated landscape patterns. The following images are examples of the screen shots captured on Google Earth Pro (Figure 3.5-3.8). As introduced in Chapter 1, the YRD region is characterized by deltaic plains and alluvial lowland, formed by

fluvial and tidal geomorphology and urbanization processes. The vegetation in the YRD is comprised mostly of cultivated land with sparse forests only on the hills along the south and west of the delta (Yi et al., 2003).



Figure 3.5 and 3.6 Patterns of high tree coverage in the countryside, Site 1 before (2008) and after (2023)

Note. Initial observation identified green spaces emerging in the rural landscapes. Screenshot from Google Earth Pro.



Figure 3.7 and 3.8 Patterns of high tree coverage in the countryside, Site 2 before (2003) and after (2023)

Note. Initial observation identified green spaces emerging in the rural landscapes. Screenshot from Google Earth Pro.

3.2.2 Document Analysis

To verify how and why the observed areas were formed, official planning documents, reports, articles, publications, and posts were reviewed for further policy and planning

information. All data was acquired online, since most official reports, documents, or articles can be accessed on governmental websites. Land related and environmental policies, goals and statistics were accessed from the following reports, plans and websites:

- National and Provincial Ecology and Environmental Protection Five-Year Plan
- China's Progress Report on Implementation of the 2030 Agenda for Sustainable Development
- Annual National Ecology and Environment Report
- Annual National Land Greening Report
- National Ecological Civilization Demonstration Area Index
- National Ecological Civilization Demonstration Villages and Towns Index
- Ministry of Ecology and Environment website, <https://www.mee.gov.cn/>
- National Forestry and Grassland Administration website, <http://www.forestry.gov.cn/>;
- Ecological Civilization of China website, <http://www.cecrpa.org.cn/>;
- National Guideline for Ecological Conservation Redline Delimitation
- National Natural Reserve Directory (2017)
- Regulations for National Wetland Parks (2022)

For specific sites and case studies, provincial, municipal, or district level planning documents, reports, goals and statistics were accessed. Since the study area includes parts of Jiangsu Province, Zhejiang Province, and Shanghai Municipality, the following list is an example of information acquired for Jiangsu Province:

- Yangtze Delta Ecological and Green Integrated Development Demonstration Area Territory Spatial Planning (2021-2023)

- Jiangsu Province Ecological Redline Conservation Planning (2013)
- Jiangsu Province Ecological Space Management and Planning (2020)
- Jiangsu Province National-level Ecological Conservation Redline Planning
- Jiangsu Province Garden City Evaluation Criteria
- Municipal Ecological Civilization Construction Planning
- Municipal and district level Ecological Redline Plan
- Municipal Urban and Rural Master Plan
- Town and Village Layout Plan
- Jiangsu Provincial Government website, <http://www.jiangsu.gov.cn/>
- Jiangsu Province ecological civilization website, <http://www.jsecrpa.org.cn/>
- Jiangsu Province Forestry Bureau website, <https://lyj.jiangsu.gov.cn/>
- Bureau of Housing and Urban-Rural Development, Suzhou, <http://zfcjj.suzhou.gov.cn/>
- Bureau of Landscape and Forestry, Suzhou <https://ylj.suzhou.gov.cn/>
- Bureau of Ecological Environment, Suzhou, <https://sthjj.suzhou.gov.cn/>
- Bureau of Natural Resources and Planning, Suzhou, <http://zrzy.jiangsu.gov.cn/sz/>

Reviewing various reports and documents confirmed that the construction of eco-spaces observed from satellite images was a result of land and environmental policies and planning schemes. The criteria for forest city, garden city, or eco-village planning established annual goals to increase green and forest coverage, or increase areas and number of wetlands, national parks, or green spaces. Official reports, such as the *China's Progress Report on Implementation of the 2030 Agenda for Sustainable Development*, for example, documented a country-wide increase of 98 forest cities, 74 garden cities, and 12 national eco-park cities between 2016-2020; and a

29.9% increase in the green area, 10.7% increase in the rate of green space in urban built-up areas, and 2.4 billion cubic meter increase of forest reserves between 2015-2020 (Center for International Knowledge on Development, 2021). As a result, this stage of reviewing official documents confirmed a national trend of greening. Remote sensing scholars have also recorded a greening trend in the periphery of large cities as well as areas of low vegetation coverage in the YRD (Cao et al., 2019).

3.2.3 Semi-structured Interviews

Once confirmed that the emerging green spaces and ecological conservation areas were a result of national policies and mandates, the study then explored how the case studies were implemented, namely what was the process of planning, designing and constructing eco-spaces. The study adopted semi-structured interviews with three groups of interviewees: planners/designers, remote sensing technicians, and landscape architecture and landscape ecology scholars. Participants were selected according to their involvement in eco-space planning and design schemes in the YRD; according to their involvement in current or past planning and design projects in the YRD; and according to their familiarity with the roles of various stakeholders in planning and design projects in China. Each recruited group consisted of three to four participants with the intention of interviews being to acquire information about their roles in the planning process. Therefore, three to four valid participants for each group was deemed sufficient for such information gathering efforts. The first participants in each group were identified through personal contacts, then more participants were reached using the snowball method through these participants. All interviews were conducted online via WeChat

phone call or video call, the most popular Chinese messaging and social media app with over 1.2 billion users in mainland China.

In the planners/designers group, four participants were interviewed, including two practitioners who have been in the role of designers and have been involved in ecological planning or design in China, one former governmental official who was involved in formulating regional planning, and one practitioner-turned-scholar who was involved in both the practices and research of landscape transformation in China. This group were able to explain the mechanisms, dynamics and strategies adopted in ecological planning and design projects in China. The group of remote sensing technicians consisted of three participants from two surveying institutions in Zhejiang Province. The first participant was contacted through a mutual friend, and the other two participants were the first participant's colleagues. The interviews conducted with this group examined the technical mechanisms of measuring environmental goals, as well as the power dynamics and local strategies in response to remote sensing measurement (more on this in Chapter 5). The third group consisted of three landscape ecology scholars. The first participant was contacted through a mutual friend, and the other two were the first participant's former colleague and former classmate. This group of participants were able to elaborate on the different ways and methods landscape ecology could be evaluated, and the key indicators or key qualities to evaluate ecologically valuable landscapes.

Different sets of questions were asked of the three groups regarding their roles and expert knowledge in their respective fields. For interview questions please refer to Appendix B. Notes were taken and labelled for all interviews, and all participants were anonymized. Out of all ten participants, two participants were contacted again after the fieldwork for brief follow-up questions for further clarifications. Overall, the interviews with three groups of participants

provided insights on how different stakeholders involved in the planning process interpreted, implemented, and achieved environmental policies and goals. A certificate of approval for Human Participant Research was granted by the Human Research Ethics Board of the University of Victoria prior to conducting interviews online (Appendix A).

3.2.4 Site Visits

After observing satellite images, reviewing official documents, and conducting interviews, site visits allowed for further in-person observation and documentation of the greening trends in the YRD, as well as data collection and case study selection. Two periods of site visits were conducted for the study, first in November 2020 and later in November 2021. A total of 38 sites were visited during these two years. Initially, the sites were selected following a set of criteria broadly related to the construction of ecological civilization, such as sites of ecological conservation, nature reserves, national parks, wetland parks, forests, urban greening spaces, eco-villages, forest cities, etc. These initially selected sites included those observed through satellite images, identified in planning documents or online posts, or mentioned by interview participants. The geographical scope of the sites was within the study area illustrated in Figure 1.1.

The selected sites were mostly located in the peripheral region of Wuxi and Suzhou Municipality of Jiangsu Province, Jiashan County of Zhejiang Province, and Qingpu District of Shanghai Municipality. The types of sites ranged from national wetland parks, eco-villages, forest parks, ecological conservation areas to green or eco-industrial zones, local planning exhibition halls, and ecology-themed recreational parks. The goal for the first phase of site visits in November 2020 was to acquire a grounded understanding of what kind of projects the

construction of ecological civilization policy implemented, and what implications these projects had on landscape ecology and local communities. The site visits were made possible by renting a car from Wuxi airport and included photo and video documentation, note taking, mapping, local document collection, and informal interviews.

In addition to the semi-structured interviews, two informal interviews were conducted spontaneously on site with a local official and a security guard after being evicted from two planning exhibition halls that were exhibiting the new YRD planning scheme. Information provided by one of the security guards indicated that the exhibition halls were not open to the general public, but were mainly designated for reception of governmental inspections and cadre study tours. “We normally receive up to eight inspection groups a day.” (Security guard, personal communication, November 16, 2021). It was not part of the planned interview permitted by Human Participant Research, and therefore not included as one of the data sources in the discussion. But it is worth mentioning, since the encounter provided important insights into how planning and the representation of planning functions was undertaken in the administrative system. In summary, the first set site visits provided a grounded understanding of the landscape transformation that was going on under the ideologies and mandates of ecological civilization. These visits confirmed that some planned or designed ecological construction sites were replacing traditional villages, and that ecological elements were prominent in representations of the design plans.

The second phase of site visits took place in November 2021, one year after the first. By this time, some more detailed planning and design schemes and construction sites were finalized. Policies and guidelines on how to further transform several demonstration areas for ecological development had also become clearer. For example, construction of Donglian eco-village, a

detailed design scheme for the water village key areas in the demonstration area, a conceptual plan for Jiashan County in the demonstration area, among many others, had been completed over the preceding year. To further understand how ecology was interpreted in design elements, and the cultural, economic, and geographic implications of being “ecological”, the second set of site visits undertook the following:

- Revisited sites that were undergoing construction the year before;
- Verified sites that were incorporated into town and village layout planning;
- Visited more sites that included the word “ecology” in their titles, and;
- Collected more detailed design schemes constructed or to-be-constructed for ecological development.

Through observation, documentation, and preliminary analysis of collected data following the two sets of site visits, it was possible to identify two distinct though connected local strategies for implementing ecological civilization in the countryside. One strategy pivoted on eco-culture aesthetics and design elements in the design of eco-spaces to interpret state eco-ideologies in the public space. The other strategy focused on demarcating the specific areas and numbers (metrics) of eco-spaces. Both strategies were adopted to ensure that the achievement of implementing ecological civilization was either rendered visible and/or measurable. These two strategies and themes will be discussed in chapters 4 and 5.

Due to severe COVID-19 travel restrictions and lockdowns in China, and the conditions imposed in the formal Approval for Human Participant Research at the University of Victoria, no in-person interviews were conducted for this study. As a result, people who were directly involved in the case study sites, such as local villagers, local officials, and designers were not interviewed. However, it was possible to review the opinions some local villagers expressed on

their relocation and compensation on the Baidu discussion forum (百度贴吧), a popular online discussion forum in China. Significant numbers of local villagers were relocated for ecological construction projects, either for conservation areas, industrial parks, or green spaces. Once a planning scheme was issued, people would come onto the forum and discuss what would happen to their land and whether they would be relocated or compensated. Even though these opinions were far from comprehensive and representative of all residents in the area, these provided a glimpse of the considerations, expectations or attitudes held by some in the local communities towards relocation and ecological construction and will be referred to in the findings discussed in the following chapters. Interpretation of environmental policies and criteria by local officials and designers, meanwhile, were analyzed through texts, images, maps, plans in planning and design documents, and through textual or visual elements adopted in the constructed spaces.

3.2.5 Contextual Analysis Approach

The analysis for this research was then conducted based on the evidence collected from previously mentioned research methods, site visits, on-site observation and documentation, document analysis, and semi-structured interviews. The collected data included field notes, interview transcripts, planning and design documents collected on local government websites, relevant state laws, policies and discourse from central government websites and state-controlled media, academic books and journal articles, photo documentation from the sites, and local villagers' opinions collected from online discussion forums. Based on various first-hand and secondary data mentioned above, contextual analysis approach was adopted to explore and interpret the overall phenomenon of ecologization, especially through the analysis of its driving

forces, implementation strategies and implications on the reorganization of social and spatial forms (Svensson, 2021).

3.3 Summary

This chapter explained the methods and tools adopted for research in the study area. This included observation through satellite images, analysis of official planning documents, reports, and other publications, site visits and interviews to explore governmental strategies and techniques for constructing eco-spaces as a result of planning and design, and the ideologies and mandates of ecological civilization and sustainable development. The progress and use of the research methods was not linear, but followed the research questions in order to develop a comprehensive understanding of the phenomenon of emerging eco-spaces. While the original study area was initially defined as the YRD Green and Ecologically Integrated Development Demonstration Area, the research focussed on specific sites within this larger area where changes in landscape patterns could be identified and visited. Along with reviews and analysis of policies, goals and plans, interviews with relevant actors in the processes of planning, designing, measuring and studying eco-landscapes, this dissertation eventually selected two key case studies for further detailed analysis. The strategies and techniques of implementing eco-spaces are examined in detail in these case studies in the following two chapters.

Chapter 4: Designing the Aesthetics of Ecological Culture

4.1 Introduction

This chapter identifies the ecological culture (eco-culture) aesthetics and strategies adopted in site-level landscape design projects with the goal of materializing ecological civilization. First emerged in the 20th century in the former Soviet Union, the idea of eco-culture has become central to achieving ecological civilization in China. It reflects a society's cultural and ideological values when dealing with natural and social environments. As early as in the 1920s, moving past the logics of capitalism, radical Marxists in the former Soviet Union believed that building a new socialist society required a new culture and a new form of science, which recognized the achievement of a capitalist past while overcoming the cognitive shortcomings of past cultures. This was an attempt to take the best of the culture and science of capitalism, but to allow the masses to redefine their place in nature, their relationships with others, and their own future society (Gare, 2021).

In the discourse of the former Soviet Union, eco-culture was not enforced through a top-down approach, but rather through ecological education, training and the upbringing of young people (Anisimov, 2019; Bakulina et al., 2022; Khetagurova et al., 2016). It was expressed in the code of conduct on environmental issues that was formed by several factors, including ecological knowledge, norms, moral sense, attitudes, worldviews, consciousness etc., on both the societal and individual levels, which then ultimately formed into a cultural and social (national) identity. The individuals, the state, and society as a whole have a collective ecological worldview and ecological awareness towards a sustainable mode of development accompanied by a harmonized social and ecological system.

This idea of eco-culture coincided with the need perceived by the Party-State in China for a new ordering of society which required “a fundamental challenge to the culture of capitalism” by adopting Western science and technology for industrialization and economic growth, while maintaining traditional Chinese cultural values in respect for humans and nature (Gare, 2021, p. 48). Since China’s 18th National People’s Congress in 2012, culture-building and ecology-building, together with society-building and economy-building, have become the most prominent missions on the path to ecological civilization. Eco-culture takes on both culture-building and ecology-building for a collective code of conduct that aims to transform the mode of production and people’s lifestyle, while responding to environmental issues that were caused by industrialization.

As cultural governance and environmental governance have intensified in recent years (discussed in Chapter 1), the re-assertion of cultural aims to reinstate the Party’s ideological influence has also become prominent. In this context, eco-culture with traditional Chinese ecological philosophy, especially human-nature harmony, assists in building an imagery of a materialized ecological civilization. Drawn from ancient ecological wisdom and elements of cultural landscapes, the aesthetics of eco-culture have been widely adopted in various scales and types of landscape design projects to visualize both a physical and ideological image of ecological civilization. In the spatial design disciplines, some Chinese language articles and local design practices regarding eco-culture have even come up with design strategies to interpret and conform to policies without critically examining the role and impact of design in reshaping landscapes for cultural governance (C. Zhang & Wang, 2014; X. Zhang et al., 2018). In rural areas, this resulted in many ecological design and construction projects that conform to eco-culture aesthetics in response to nation-wide eco-mandates.

This chapter is organized in five sections. Following the introduction, the second section details how eco-culture assists in reaching societal consensus on ecological civilization. The third section provides case studies observed and documented from extensive fieldwork conducted in 2020-2021. The case studies illustrate how eco-culture discourse and aesthetics are interpreted, designed, and constructed in ecological conservation areas, green industrial spaces, and rural villages. The fourth section analyses three ways eco-culture aesthetics are normally applied, namely: to adapt narratives of history and culture; to simulate spatial patterns of cultural landscape; and to guide the code of conduct of the public. The fifth section summarizes the chapter by suggesting that eco-culture aesthetics are essentially guided by ideologies and visualized to render local officials' achievements.

4.2 Building Eco-culture for Consensus on Ecological Civilization

In the 2018 National Ecological Environmental Protection Convention, President Xi Jinping stressed the importance of speeding up the construction of ecological civilization. An ecological culture system, together with four other systems—ecological economy system, achievement responsibility system, ecological civilization regime system, and ecological security systems—should work in tandem to guarantee the construction of a “beautiful China”, and to achieve a human-nature harmonious modernization. In this discourse, ecological culture is considered the “foundation”, “core content”, “soul”, “intellectual impetus”, “intellectual support”, and “core socialist value” in building ecological civilization (J. Pan et al., 2018; Ren, 2018; Zheng, 2018). The power of culture has been identified as a crucial factor that would ideologically and physically speed up the construction of a beautiful China and ecological civilization.

Guangming Daily, a major state-owned media outlet, listed four key points elaborating how the power of eco-culture would assist in building a society with scientific ecological values, a life style, a mode of production, and social conventions that will be environmentally friendly (Zheng, 2018):

- First, eco-culture strengthens society's consensus on building a beautiful China. In order to secure constant motivation for building an ecological civilization, the whole society should agree on common strategies, and have a strong urge to build a beautiful homeland.
- Second, eco-culture promotes the ecological civilization value system. The scientific and integrated value system requires an awareness and respecting for nature, a desire to protect it, and a balanced human-nature relationship that values sustainable and long-term goals over short-term gains.
- Third, eco-culture enhances citizens' environmental literacy (including public environmental awareness, environmental knowledge, environmentally friendly behaviours, green lifestyle, and conscious participation in environmental protection). Ecological environment is a major political and social issue that relates to the PRC's mission and purpose, as well as to the people's wellbeing. Through an intensive educational campaign, the public's environmental literacy would lead to full participation in building an ecological civilization.
- Fourth, it speeds up the cultural construction of contemporary ecological civilization by enhancing the environmental knowledge dispersion, forming collective opinions, and creating a cultural phenomenon around ecological civilization. Additionally, eco-culture incorporates ecological civilization into all aspects of public life by building spaces for the public to enjoy the achievement of ecological civilization.

The discourse confirms that the building of eco-culture is essentially done to strengthen society's compliance with state ideologies, policies, and decisions regarding ecological civilization. Also, as stated in Chapter 1, the Building a Beautiful China strategy asserts the significance of aesthetics in constructing and materializing ecological civilization. The state discourse asserts that eco-culture could be extracted from China's centuries of ecological and cultural tradition, while interpretation of eco-culture is left for local officials to decipher and put into practice. As explained in Chapter 1, due to fiscal and administrative decentralization, there has been a significant implementation gap between the state and local governments in many areas. To strengthen local implementation of national policies, the cadre performance evaluation system enforced the compliance of local officials. As a result, this form of regionally decentralized authoritarianism (politically centralized but economically and administratively decentralized governance) has led to local implementation that is strategized to fulfil both national goals and local interests. In the next section, the case studies observed on-site exemplify how the discourse about eco-culture has been interpreted by local officials and designers in achieving both environmental and ideological tasks assigned from the top-down.

4.3 Eco-culture Aesthetics in Landscape Design Projects as a Response to National Eco-mandates

In 2015, “Lucid Waters and Lush Mountains are Invaluable Assets” became the core guiding principle for building ecological civilization. Stressing the importance of turning ecological resources into advantages in an ecological economy—such as eco-agriculture, eco-industry, or eco-tourism—while preserving them (National Development and Reform Commission, 2021). The YRD was selected as the site for a national pilot project of green and

ecologically integrated development, not only for the region's leading economic power in the country, but also for its preferable ecological conditions.

The master plan for the YRD's green and ecologically integrated development demonstration area issued by the National Development and Reform Commission (NDRC) makes constant reference to the importance of the "ecological foundation" of the YRD region, and the significance of placing regional development in a reconfigured ecological environment (National Development and Reform Commission, 2019). For instance, the master plan stipulates that development should follow the basic principles of "anchoring in the ecological foundation, growing from ecological advantages, developing ecological economy, and highlighting the natural beauty of the Jiangnan water town", and that a more "dynamic, sustainable, and high quality economic development will be achieved by restructuring the spatial functions, improving development qualities, and injecting new functions in the enjoyable wetland sceneries and water town context" (National Development and Reform Commission, 2019, p. 3). Ecological, economic and residential spaces should be planned as a whole to improve ecological conditions, develop ecologically friendly economies, and building a harmonious human-nature living environment.

What aesthetic principles have been adopted to resemble the collective ecological, cultural, and social imaginations? And in what ways have eco-culture aesthetics assisted in producing unanimous, undisputed opinions on ecological civilization strategies? To answer these questions, the next section will detail case studies that are site-scale landscape design projects documented during fieldwork in the YRD between 2020-2021. The three case studies below, including ecological, economic, and residential spaces, illustrate how eco-culture aesthetics were interpreted in different types of local eco-spaces, and how these interpretations helped imagine

and materialize ecological civilization, while legitimizing environmental, developmental, and ideological goals and decisions.

4.3.1 Constructing Ecological Conservation as Eco-culture Demonstration

Tongli National Wetland Park is an ecological conservation in Xiaodianhu Village in Tongli Town, 15 km east to the center of Wujiang District in Suzhou City, and 7 km to the western border of Shanghai. It is also considered a pilot project demonstrating the resources, preservation, and restoration of natural wetlands. It was declared a forest park in 1998, and a provincial wetland park in 2009. To achieve the National Wetland Park title, which it achieved in 2020, construction began in 2013 after its master plan was approved by the provincial government. The construction of Tongli National Wetland Park followed a national trend of protecting, restoring, and building wetlands as countermeasures against rapid expansion of urbanization.

The wetland park was divided into smaller sites and contracted out to various design and construction companies. As shown in Figure 4.1 below, it is a typical artificial wetland, and its layout combines various types of wetland features in a spatial sequence that allows water to flow through and be purified. Woody, herbal, and aquatic plant habitats are placed to represent different aesthetic qualities of the wetland. The pedestrian and boat routes are also designed according to the spatial sequence in which this site should be toured. Walking through the site, the aesthetic effects and texts on the tourist brochure convinces visitors that this is “...a historical creation by generations of traditional wisdom, human-nature harmony, and has witnessed historical land transformation for centuries...” and is “...a place to explore the wetland

ecosystems, be away from city noises and troubles, be secluded from the world and experience pure nature like it's back in time..." (Tongli National Wetland Park, 2021).

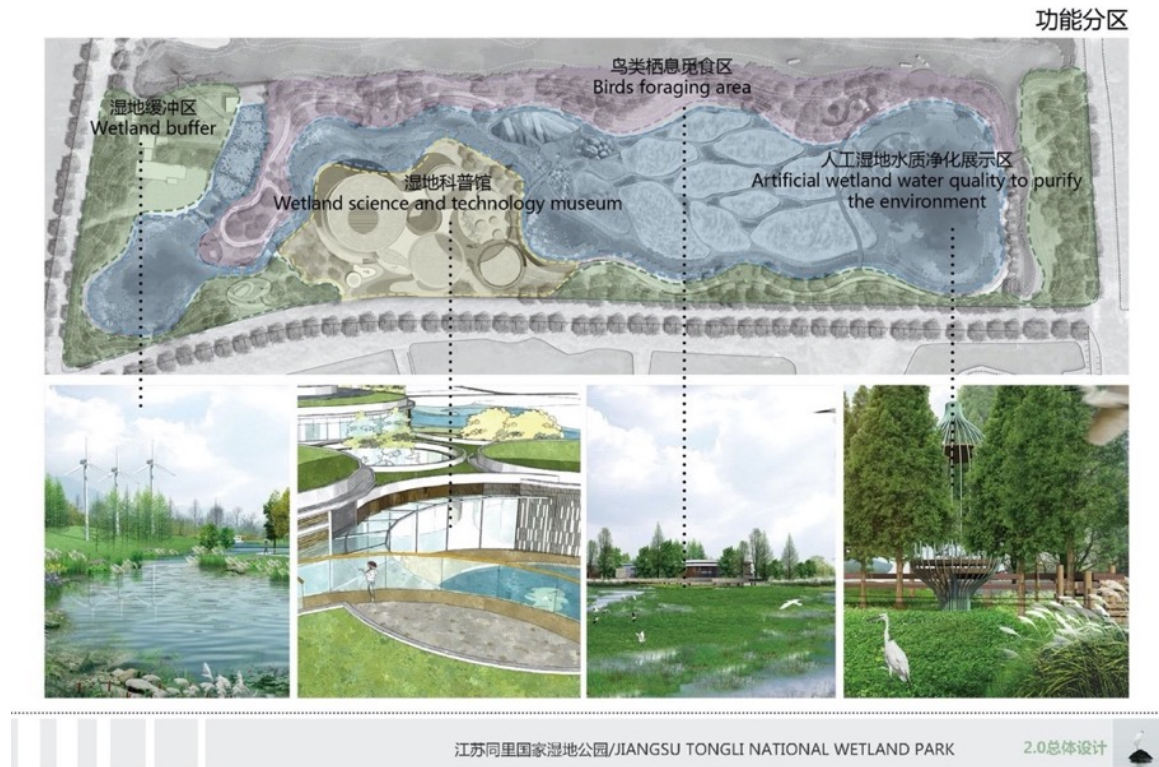


Figure 4.1 Landscape design scheme of Tongli National Wetland Park

Note. Even though it is an artificially constructed wetland, the aesthetics invoked in the descriptions attempt to convince visitors that it is created by generations of traditional wisdom and culture and that walking in the park is like going back in history. From Garden Landscape Architecture Design Company website

(<http://www.gardenones.com/project/post/1651782/>).

However, historical narratives, romanticized in the tourist brochure and aestheticized in the landscape design scheme, were not even close to the actual history of the landscape. Instead of being the creation of generations past who employed wisdom and lived in harmony with nature, this wetland was historically transformed from reed marshes to forests because of the

fatal diseases the reed marshes caused. Because of the marshy deltaic landscape and poor drainage, by the late 1960s, this site was one of the most severely infected areas in China by schistosomiasis, also known as snail fever, a parasitic disease carried by freshwater snails. It infected more than 70% of the local population, and killed or caused long term impairment (the urinary system or genital lesion that normally leads to cancer) to more than half of the population. In 1969 and 1970, the then Tuncun and Zhouzhuang Commune deployed 3500-4000 labourers to dam and drain the Xiaodianhu Lake to cut off the snails' water sources. Because more than half of the local population was killed, the two communes dispatched villagers from nine surrounding villages to settle here, and planted mulberry trees, orchards, and bamboo, which later formed the largest forest in the YRD region (Ling, 2020). For its natural-looking landscapes and unique features of a forest-wetland eco-system, the Tongli Wetland Park was considered the eco-kidney and green lung of the region, and awarded multiple prominent titles such as a National Forest Village, a National Eco-Culture Village, a Provincial Eco-Village, and Most Beautiful Countryside in Wujiang. The history of land reclamation and infectious diseases, however, was never part of any of the contemporary narratives in the new park.

During the visit, as one of the scenarios described in the introduction of this dissertation, the natural bird habitat was undergoing a process of profound reconstruction, where the soil was dug up and natural vegetation coverage and habitat was completely destroyed by excavations (See Figure 1.2). The construction, according to park staff, was to create a constructed natural habitat aesthetically appealing and fit for the cultural expectation of the public. Gandy (2013) used the term “ecological simulacrum” to refer to spaces such as this, designed with aesthetics of ecology, but neither historically produced nor originating from scientific knowledge of

ecological dynamics. The cultural, historical, and ecological authenticity of these aesthetically created landscapes are seriously questionable.

4.3.2 Rendering Development as an Integral Part of Cultural Landscape

The design of green economy spaces attempts to interpret and materialize an ecologically integrated development model. Industries such as eco-tourism, agricultural biotechnology, green finances, clean energies, and research and innovation are considered desirable green economies that are less polluting, low-carbon, and add high value. As demonstration of green economies, ecological restoration and protection should be a part of the transition from traditional industries, such as silk production, manufacturing, optical communication, and electronic information, to more advanced manufacturing, such as service industries and innovative high-tech industries, so that industrial spaces and ecological spaces are spatially and functionally integrated and mutually beneficial. Economists warn that traditional industries should not be eliminated or replaced abruptly, as they are vital for the current structure of the national economy, since they provide stability and create employment. Their transformation and upgrading may lead to the upgrading of the whole industrial chain; they support new industries, and maintain the integrity of the whole industrial system within a country (Jiang, 2023).

However, as was observed throughout the field work period of 2020-2021, large industrial areas were being torn down in order to make room for green economic ventures. This method of replacing old industries is known as *vacating the cage and changing the birds* (腾笼换鸟), and is a common strategy of regional economic integration and restructuring for ecologically-integrated development in the YRD (Xinhua, 2019). This term generally means an active industrial restructuring and upgrading strategy to eliminate low-end industries (such as

high pollution, high energy consumption, high emission industries) with high-end industries (such as hi-tech, digital economy, innovative industries) – a strategy that was first adopted in the Pearl River Delta in the early 2000s.

To integrate economic, residential, and ecological spaces for a more sustainable mode of regional economic development, the winning design scheme of the YRD core area envisioned a world-level model of civilized water-town habitat. The design scheme, developed by a joint team of the Shanghai Urban Construction Design & Research Institute and the Earthasia Design Group (EADG), formulated five main functions for the area to conform with the state’s vision of the YRD’s integration: water-town ecological landscapes, demonstration of Jiangnan culture, integration of the transportation system, demonstration of a good life, and innovative development services (EADG, 2022). The design team extracted a design concept of “landscape genes”, which in fact is a spatial pattern of cultural landscape that is specific to this part of the YRD (Figure 4.2).

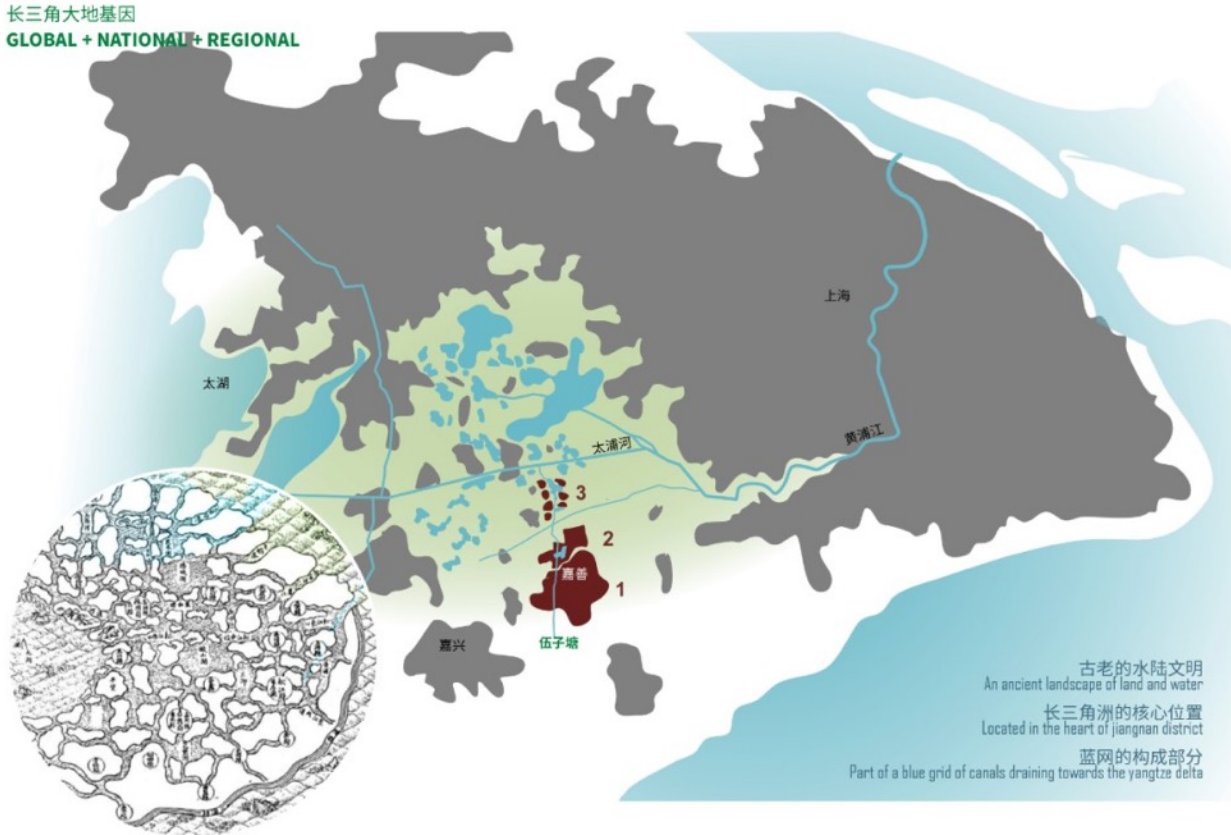


Figure 4.2 The extraction of YRD “landscape genes” as design elements

Note. From *Living With Water*, by EADG, 2022

(http://mp.weixin.qq.com/s?__biz=MzA4NzA1ODU3Ng==&mid=2649626102&idx=1&sn=9e884b5c26cc994ad573528e8d4162c8&chksm=88258409bf520d1f2fa1960ce79422d2bffe47ec40d55c069bb7f8e079a5cdd50d2d367c8335#rd)

While the winning scheme was announced at the end of September in 2021, the core area (located at number 3 on Figure 4.2 above), “Jiangnan Everglades”—also known as the Xiangfu Lake Science and Technology Innovation Green Valley (hereafter referred to as *Green Valley*)—was already under construction as observed during fieldwork in November 2020. At the time, field observations on the construction site included a visit to a temporary exhibition hall

displaying detailed design schemes of the project (Figure 4.3 was one of the boards on display). After being asked to leave (the exhibition hall was not open for the public, but was reserved exclusively to report on the progress and achievements of the project to higher level officials), there was an opportunity to speak informally with a local official off-site. He confirmed that there haven't been any high-tech companies or green industries settling in the Green Valley, "...these are just regular companies like elsewhere." He added that the reason was that "...it is almost impossible to compete with Shanghai and Suzhou to attract investments and talents. You see companies like Huawei would never come here" (Field notes). At the time, Huawei was building a Research and Development Center in the neighbouring town of Jinze in Qingpu District in Shanghai.

Even though the prospect of green industries on site was highly questionable, design strategies persisted in focusing heavily on aesthetic representations to illustrate how industrial areas were to be embedded in the local cultural landscape. In the design scheme, industrial areas were formed into "water village units", which resembled spatial patterns of pre-existing water villages. For example, in Figure 4.3, the water village units are actually industrial zones, such as the innovative industry zone, the digital intelligence industry zone, and the cultural and creative industry zone.



Figure 4.3 Spatial layout of Green Valley

Note. The spatial layout resembles the spatial patterns of water villages, and industrial areas are termed water village units (photo taken and translated by the author).

However, pre-existing water villages have not been represented in any design documents of the Green Valley (Figure 4.4), nor do they play a part in the narratives or scenarios that demonstrate local ecology, culture, history, or a balanced human-nature relationship (the removal of villages for optimal and efficient land uses will be discussed in Chapter 5). In fact, the actual geographical context was not shown in the master plan (Figure 4.3), nor in the aerial view rendering (Figure 4.5). The deltaic landscapes in both figures are represented as green blocks in which rural villages do not exist and do not belong to a world-class civilized and sustainable

habitat. Not only were the designed spaces not historically produced, but they were conceived out of the pure speculation and imagination of local officials and designers as ecologically integrated development and sustainable eco-spaces.



Figure 4.4 Satellite image of Green Valley site and its surrounding area (screenshot from Google Earth Pro)



Figure 4.5 Aerial view rendering of Green Valley site.

Note. Surrounding villages are eliminated and represented as green blocks. From *Living With Water*, by EDGA, 2022

(http://mp.weixin.qq.com/s?__biz=MzA4NzA1ODU3Ng==&mid=2649626102&idx=1&sn=9e884b5c26cc994ad573528e8d4162c8&chksm=88258409bf520d1f2fa1960cc79422d2bffe47ec40d55c069bb7f8e079a5cdd50d2d367c8335#rd)

Even in reality, villages surrounding the four-lane boulevard leading up to the Green Valley construction site are tucked away behind the meticulously managed flower beds and street trees, not to be seen as a part of this imagined sustainable habitat (Figure 4.6). In this case, designers and officials extracted elements of the cultural landscape from the design, and conceived eco-culture with an imaginary of ecologically integrated development and ecological

civilization, but without the actual context in which this area existed in reality. Ultimately, this isolated the site geographically, socially, and culturally from rest of the region, and created spatial and social inequality in the relocation and exclusion of local communities. Again, similar to the previous case study, the authenticity of these designed landscapes based on eco-culture aesthetics is questionable.



Figure 4.6 The boulevard leading up to Green Valley site

Note. Villages are tucked away behind the meticulously managed landscape (photo taken by the author).

4.3.3 Designing Eco-culture as Code of Conduct

The third case study—Donglian Village—is located at the intersection of Shanghai, Kunshan and Suzhou City. Due to its location at the heart of the YRD core area, Donglian

Village was selected as one of the garden village pilot projects converting cultural and ecological advantages into tourism and economic benefits. Eco-culture is a major part of the reconstruction and main strategy of rural revitalization in Donglian Village. When first visited in November 2020, the whole village was under construction for a complete face-lift based on aesthetics of local culture and ecology. Observed in the second visit in November 2021, the construction was completed, and the village has since welcomed numerous tourists.

As shown in Figure 4.7, the Jiangnan style elements (Jiangnan refers to the geographic, cultural and economic area to the south of the lower reaches of the YRD) are widely used in the village design to symbolize the cultural and historical tradition of the YRD. For example, the lattice windows, black tiles, and white walls resemble traditional Jiangnan-style buildings, while the wooden planks, wooden bridge, and wetland plants simulate a deltaic pond. To further portray the beautiful rural life, and the improvement in both the quality of the environment and the quality of life, front gardens and public spaces in the village are decorated with flowers and ornaments. Vegetable gardens maintained and consumed by villagers are part of the aesthetic demonstration of a beautiful rural life.



Figure 4.7 Jiangnan-style building elements and aestheticized gardens in Donglian Village (photo taken by the author)

In the middle of the fields, European style windmills and sculptures of animals and vegetables, and bamboo fences render elements of rurality (Figure 4.8). However, careful examination would reveal that none of these decorations is relevant to the local historical, ecological, or aesthetics of the YRD landscape. The red miniature windmill, irrational and absurd as it is (since windmills were created as part of the water management system that drained water in the polder landscapes in the Netherlands as early as the 1200s), reflects a dogmatic and literal interpretation of the image of rurality and cultural landscape without examining its actual

meaning in relation to the local culture, ecology or history—a prevailing trait of landscape architecture and the spatial design disciplines in general (Spirn, 1997). But this aesthetic interpretation appears to have been accepted by tourists as well as by higher-level officials, since Donglian Village has become a popular eco-tourism destination and was awarded several related titles.



Figure 4.8 Red windmills and sculpture of snails in the middle of the farmland (photo taken by the author)

Nostalgia has also been adopted as an eco-culture and aesthetic concept that links local landscapes, local accents, local food, and farming activities to memories of the past, evoking sentiments of folk culture, meanwhile demonstrating ecological civilization as a continuation of culture and history. In Donglian Village, nostalgia-themed wall art, sculptures, and poems are distributed throughout the village (Figure 4.9). Indeed, a nostalgia museum opened to the public

in early 2022, with the goal of promoting and demonstrating local culture and history. These efforts build narratives that associate local culture, landscape transformation, and economic development with a sense of nostalgia and historical inheritance. They suggest that a sense of nostalgia is embedded in the process of the village’s rural revitalization, economic development, and reconstruction, and demonstrate that “Donglian’s culture of nostalgia is a continuation in history, and it encourages people to gain cultural pride and power from the culture of nostalgia, to remember the history and to create the future” (Mao, 2022).



Figure 4.9 Nostalgia-themed wall paintings and poems (photo taken by the author)

Meanwhile, embedded in the aesthetics of eco-culture are the underlining messages suggesting a beautiful, harmonious, and sustainable environment that ecological civilization brings. As documented in the pictures below (Figures 4.10 & 4.11), the code of conduct,

ideologies, and slogans are inscribed all around the village. Core socialist values, inscribed in the sculpture in Figure 4.10, seek to educate the public on a code of conduct for civilized behaviour, while reassuring residents and visitors that village reconstruction has been achieved with core socialist values. These core socialist values are the core ideology first mentioned in the 18th National People's Congress in 2012. It includes national-level values: prosperity, democracy, civilization, and harmony; society-level values: freedom, equality, justice, rule of law; and individual-level values: patriotism, dedication, integrity and good will. The education and application of these core socialist values takes up the highest weight in the calculation of local officials' performance evaluation. Therefore, propaganda associated with these values is displayed on all sorts of media in every part of the country.



Figure 4.10 The sculpture inscribed with core socialist values (photo taken by the author)



Figure 4.11 “Lucid waters and lush mountains are invaluable assets” inscribed on the stone (photo taken by the author)

Apart from these values, the key environmental concept formulated by Xi Jinping, “lucid waters and lush mountains are invaluable assets” is also inscribed on a stone in front of the village (Figure 4.11), emphasizing the significance of both ecological protection and economic development in ecological civilization. Meanwhile, Figure 4.12, shows a map painted on the wall of a village house in Donglian Village identifying the locations of New Era Civilization Practice Centers (refer to cultural governance in Chapter 1) which further confirms that the village is purposely designed as a part of the national cultural infrastructure network that reinforces party ideology and promotes civilized behavior in the countryside. Building eco-culture is thus presented to “internalize building beautiful Donglian into a collective will of all villagers, and

externalize it into their conscious actions” (Agriculture and Rural Affairs Bureau of Suzhou, 2021).



Figure 4.12 Locations of New Era Civilization Practice Centers in Donglian Village (photo taken by the author)

4.4 Design and Governance with Eco-culture Aesthetics

4.4.1 Ecology and Culture as Design Elements

The case studies above revealed three common ways that eco-culture aesthetics were designed and applied, primarily to materialize the aesthetics of ecological civilization, re-write historical and cultural narratives for legitimization, and guide the code of conduct for consensus:

First, ecological and cultural elements were adopted in the design of ecological conservation to illustrate the aesthetics of high ecological values and harmonious human-nature relationship, which assists in readapting the historical, cultural, and ecological narratives, images

and experiences of the landscape. The intention is to legitimise construction of eco-spaces as a continuation of history and tradition without disrupting local culture or the environment. This was also meant to reconnect people with the landscape in the way that authorities intended, while simultaneously linking high ecological values with the achievements of ecological civilization.

Second, to showcase green development, economic spaces were designed and embedded in the spatial pattern of cultural landscapes. While the cultural landscape is shaped by centuries of interactions between humans and the landscape, and represents the social and spatial order of local communities in their everyday lives, visual strategies that render economic spaces as integral parts of the cultural landscape aimed to show that economic development is not only sustainable but is also shaped by a long history of culture and tradition, reinforcing legitimacy of the design by embedding it in local cultural identity.

Third, the design of ecology and culture as elements of traditional architecture, aestheticized landscapes, propaganda slogans, and sentiments of nostalgia visualizes “prosperous industries, preferable ecological conditions, civilized folk culture, effective governance and affluent life” (a slogan displayed at the Donglian Village construction site in 2020 which both confirms a vision of the village and renders the achievement visible). Meanwhile, aestheticized propaganda inscriptions guide the code of conduct, which not only works to legitimise construction and decision-making, but, more importantly, seeks to shape collective will and actions of all villagers and tourists, as intended by the authorities.

4.4.2 The Role of Eco-culture Aesthetics

In all three case studies, the interpretation and design of eco-culture aesthetics plays a crucial role in creating new spatial, cultural, and historical narratives, which deliberately portray

construction of ecological civilization as a continuation of traditional ecological philosophy and cultural landscapes. In the case of Tongli National Wetland Park, the design of the natural wetland habitat depicts it as created by generations past. For Green Valley, the design scheme renders the site as produced by cultural landscapes. Similarly, the elements of local architectural style and theme of nostalgia highlight the traditional culture present in the reconstruction of Donglian Village. The reshaping of narratives purposefully guides and unifies societal perception and values towards the image of ecological civilization.

Eco-culture aesthetics adopted and interpreted by local officials also mediate national and local dynamics. The top-down cultural and environmental governance model from the central state has imposed pressures local officials, since completing environmental and ideological tasks—such as building ecological conservations, developing green economy, and constructing a beautiful countryside—is part of their performance evaluation. Since policies, ideologies, and tasks could only be considered accomplished by rendering visible eco-culture aesthetics and the authority of ecology, the process of design has become a tool for local officials to visualize accomplishments and legitimize decisions for both higher level officials and the general public.

However, in all three cases, the actual local contexts are largely overlooked by the design schemes. In Tongli National Wetland Park, the natural bird habitat was bulldozed and reconstructed; in Green Valley, either in design or in practice, pre-existing villages have been deliberately removed from the imagery of a sustainable world-level habitat; in Donglian Village, the decorations intended to symbolize local culture and rurality were not relevant to the local cultural context. Landscape design in the YRD , implemented as a strong forward-looking practice, facilitated the creation of new narratives and aesthetics that served the purposes laid out by local officials and the state. These designed spaces were neither historically produced cultural

landscapes, nor did they originate from scientific knowledge of ecological dynamics, which provokes further questions on their impact on sustainability and rurality in rural areas.

4.5 Summary

This chapter has documented eco-culture aesthetics that emerged in the design of eco-spaces in the YRD countryside in response to environmental and cultural governance. The three case studies demonstrate three ways eco-culture aesthetics are adopted to materialize ecological civilization. First, the (re)construction of ecological conservation areas as natural habitat created by history and culture; second, using the spatial patterns of cultural landscapes as design concepts to envisage an industrial area as embedded in a cultural landscape; third, the design of aesthetic decorations and political slogans in village spaces to visualize achievements and legitimize decisions.

These practices of eco-culture aesthetics deliberately created new spatial narratives, while largely overlooking or omitting reference to authentic pre-existing rural contexts. It is argued that eco-culture aesthetics are strictly guided by ideologies, which aim to ensure consensus on ecological civilization strategies, strengthens political cohesiveness, and motivates further construction towards ecological civilization. It is also a strategy for local officials to visualize their achievements while legitimizing their decisions. The next chapter will discuss ideological strategies and intentions aimed to transform and design eco-spaces in relation to a calculative approach that reconfigures the rural spatial layout.

Chapter 5: Eco-metrics as Measurement of Sustainability

5.1 Introduction

The previous chapter argued that site-level landscape designs that aimed to achieve ecological civilization adopted ecology and culture as design elements—namely eco-culture aesthetics—to reconstruct landscapes and to recreate narratives of local culture and history. In doing so, landscape designs imposed environmental and cultural governance, and guided the conduct of the population according to authorities' intentions. This chapter identifies the goal-oriented practices of turning villages and rural landscapes into eco-spaces in pursuit of measurable eco-metrics that operate within the hierarchies of the Chinese administrative system. These two findings chapters, when analyzed together, provide an overview of the spatial strategies and logics of the phenomenon of ecologization (the proliferating construction of eco-spaces) in the Chinese countryside.

As discussed in Chapter 2, as a political tool, numbers hold “unmistakable political power”, since they determine who holds power, how and what to measure, and how to present results (Rose et al., 1999, p. 197). Creating numerical realities helps calculate, compare, and legitimize political decisions. Furthermore, as intended by the authorities, these approaches seek to present political decisions as apolitical by turning them into supposedly objective facts (Rose et al., 1999). In China, environmental reports—whether they detail international sustainable development goals or various levels of ecological civilization goals—use statistics to measure and present governmental success and performance.

A careful examination of the “avalanche of printed numbers”—a term used by Ian Hacking in 1987 to note the exponential increase in the printing of numbers between 1820-1840

as a political strategy in Europe and the USA—provokes questions on what the numbers pertaining to large areas of greening imply on the ground, and whether a numerical achievement is indeed environmentally and socially sustainable (Hacking, 2015). Through case studies documented from the field, this chapter reveals how quantitative goals and sustainability metrics are achieved on the ground, and how these metrics operate within the hierarchies of administrative and spatial planning systems in the YRD.

This chapter is organized in four sections. Following the introduction, the second section demonstrates how numbers are widely adopted for their perceived objectivity, their ability to legitimize political decisions, and their ability to represent China's sustainable development achievements in international, national, and local environmental reports. In these reports, the quantities, total areas, and land percentages are some of the most frequently used metrics that represent substantial increases in China's eco-spaces. This section links the Chinese target-based responsibility system—the cadre performance management system (干部考核制度)—with the pressure experienced by local officials to achieve policy goals. As a result, manipulative strategies within technological and administrative mechanisms have been adopted to reach intended goals. The third section shows through three case studies undertaken during field work that the implementation of ecological civilization is based on a goal-oriented approach for achieving eco-metrics, instead of a planning method informed by landscape ecology. The fourth section discusses and summarises the chapter.

5.2 Mechanisms of Measuring Environmental Goals

5.2.1 Numbers as Measurement of Success

As shown at the beginning of Chapter 1, the achievements of sustainable development are represented in numbers in China's progress report, titled the *2030 Agenda for Sustainable Development*. In this report, statistics sum up major greening achievements and demonstrate the significant improvement of the environment taken place between 2016-2020, which is also part of the 13th National Five-Year Plan (FYP). Not only do statistics show the total areas and numbers of protected natural areas (including national nature reserves, forest parks, wetland parks, scenic and historic sites, geological parks, marine parks, and desert parks), but also suggest significant improvements in green city parks and green spaces in urban areas:

China has vigorously built green city parks and green spaces ... By the end of 2020, the green area and the rate of green space in urban built-up areas had amounted to 2.40 million hectares and 38.24%, up 25.6% and 1.88 percentage points over 2015 respectively. The green area of city parks had reached 797,900 hectares with a per capita area of 14.78 square meters, an increase of 29.9% and 10.7% respectively over 2015 (Center for International Knowledge on Development, 2021, p. 104).

Since the 13th FYP, "...the determination, intensity, and achievement to push forward the construction of ecological civilization is unprecedented. Blue skies are back, the rivers are clearer, greenery is expanding" (China Development Observation, 2018). In the 13th FYP of Jiangsu Province, for example, the goal was to restore 20,000 hectares (200 km²) of wetlands, to protect at least 2.82 million hectares (28,200 km²) of wetland, to plant 80,000 hectares (800 km²) of new forests, and to build three forest cities by 2020 (Department of Ecology and Environment of Jiangsu Province, 2017). In 2021, the 14th FYP affirmed the total accomplishment of goals set

in the 13th FYP. In Jiangsu Province, over the five years, the goal of reaching 24% of forest coverage, 58.9% of natural wetland protection rate, building 22 ecological civilization demonstration districts (counties), and 21 eco-industrial parks, have all been accomplished (General Office of Jiangsu Province Government, 2021). The 14th national, provincial, and local FYP had all set out new set of goals for ecological development. For instance, the new national goal aims to increase the national forest coverage from 23.2% in 2019 to 24.1% in 2025—that is 3.6 million hectares of new planted forests per year—and raise wetland protection rate to 55% (Xinhuanet, 2021b).

This form of administrative operation and communication through statistics, i.e. setting environmental goals, assigning tasks through an administrative hierarchy, and implementing tasks on the ground, resembles China's mode of economic development in which the FYP sets out economic development goals every five years for lower-level governments to achieve. Up until 2007, local GDP was the major incentive outlined in the FYP, and performance evaluation criteria pressured local officials to reach assigned economic goals. In 2007, however, environmental criteria were added into local official's performance evaluation.

In 2016, the green development index system and ecological civilization performance evaluation system (refer to Chapter 2) were introduced to further advance the institutionalization of ecological civilization, and they have become the main criteria for performance evaluations, rewards, punishments, appointments, and removal of local cadres. The green development index system comprehensively evaluates the level of green development of a certain district by weighing the indices of environmental protection, resource utilization, environment quality, growth quality, green living, environmental governance, and public satisfaction. The ecological civilization performance evaluation system mainly evaluates the achievement of measurable

goals set in the FYP for environmental protection and resource utilization, such as area of cultivated land, forest coverage, forest stock, total emission of nitrogen oxides etc. Both index systems translate the goals into evaluation scores that are assessed annually and every five years (National Development and Reform Commission, 2016b).

On the one hand, quantified measurements do not inform ecological processes and functions, since environmental goals that are assigned and delivered through administrative reports require no spatial conditions. According to the analysis of landscape ecology provided in Chapter 2, and informed by landscape ecologists interviewed for this dissertation, even though the quantity of greening (such as total area, total coverage) is the most straight-forward index that could indicate basic environmental condition, it is not enough. Rather, the measurement of ecological functions should refer to indices of landscape patterns and structures, such as diversity, connectivity, fragmentation, and, most importantly, the realization of intended ecological processes, which cannot be found in measurements such as total area or total coverage. In other words, an ecologically optimum habitat should be large in size, but large overall size as reported in the key metrics does not necessarily mean optimal habitat.

On the other hand, the effectiveness of implementing the green index and environmental criteria is also questionable since the quantifiable and measurable criteria can be easily manipulated to show that administrative tasks have apparently been achieved. Local officials' decades old pressure to implement state policy comes from the target-based responsibility system—the cadre performance management system in China that enforces the implementation of state policies by linking local officials' career prospects to their achievement of assigned goals (Cai, 2000; Gao, 2015; Heberer & Trappel, 2013). While, to some extent, it has been successful in keeping local officials in compliance with the mandates of the central party-state, this system

has resulted in “the deliberate manipulation of performance measures to secure strategic advantage in evaluation” (Gao, 2015, p. 619). Since the introduction of the target-based responsibility system in the 1980s, the phenomenon of gaming the system, such as data fabrication and output distortion, and the unintended consequences which resulted from local implementation of state policies, have been prevalent (Gao, 2015).

5.2.2 Successful Measurement of Numbers

Some examples of data manipulation were mentioned by informants who work in surveying and remote sensing institutions in Zhejiang Province. The measurement and assessment of some important sustainability criteria, such as forest coverage, green space coverage, the ratio of urban green spaces in urban built-up areas etc., are normally commissioned by county-level governments, who hire provincial or municipal level surveying institutes for this purpose. These surveying institutes used to be units of government administration, but were transformed into state-owned enterprises in July 2020, which means that they are responsible for their own profits and losses, and therefore must acquire projects by participating in the tendering process. Despite this change, most of their staff and their remuneration remained unchanged (Xiao, personal communication, August 15, 2020). This meant the institutes must secure enough projects for sufficient profits. In a way, not only are surveying institute staff well acquainted with local officials who used to be their colleagues, but they are also largely subject to the satisfaction of their government clients for securing projects and profits.

The measurement and assessment process is normally completed by remote sensing technologies and confirmed by field verification. For instance, the assessment of coverage and land uses of green spaces is accomplished in three stages: machine learning, remote sensing, and

field verification. First, software developers program computers to learn about instructions and data in order to identify the wavebands and parameters of certain vegetation. Then, remote sensing professionals import the remote sensing images to be interpreted by the software. The results go through both computer interpretation and manual visual interpretation. Finally, the surveying staff will verify the land coverage and land uses of sample plots in the studied area and finalize the evaluation using drones (Liu, personal communication, August 18, 2020; Guo, personal communication, September 3, 2020).

When asked “what happens if the goals are not achieved?”, one of the informants burst out laughing, “I’ve never heard of not reaching the goals!” She then explained to me why local governments can always accomplish the assigned tasks. The surveying institutes in China, even though they are no longer a part of the administrative system, are still state-owned enterprises. Meanwhile, the surveying projects are commissioned by local governments. Therefore, it is always assured that all data would be up to the standard before reporting to higher level governments. Also, the requested annual increase of green area is calculable based on last year’s data. So, the amount of greening can always be completed before surveying, or the surveying will only start after greening is completed. In this way, even though the operation process has been manipulated, the objectivity of remote sensing technology reinforces the credibility of local governments’ apparent accomplishments (Liu, personal communication, August 18, 2020).

In other cases, strategies of disguise are adopted by local enterprises, individuals, or institutions in response to either remote sensing technologies or in-person inspections. For example, when searching the term “anti-aerial inspection (防航拍)” on Taobao—an online shopping platform widely used in China—hundreds of camouflage nets or faux grass products pages pop up. Advertisements claim that these nets or faux grass are suitable for masking illegal

buildings, construction sites, and barren mountains and illustrate how these nets can be used in real scenarios (Figure 5.1). The advertisements demonstrate and guarantee that the products would assist in passing inspection (Figure 5.2).



Figure 5.1: Camouflage nets and faux grass products

Note. From Taobao website, an online shopping platform in China

(https://s.taobao.com/search?commend=all&ie=utf8&initiative_id=tbindexz_20170306&q=%E9%98%B2%E8%88%AA%E6%8B%8D&search_type=item&sourceId=tb.index&spm=a21bo.jianhua.201856-taobao-item.2&ssid=s5-e)

效果逼真 隐于自然



Figure 5.2: Before and after applying camouflage nets demonstrated in advertisements on Taobao

Note. From a product page on Taobao website

(<https://item.taobao.com/item.htm?spm=a21n57.1.0.0.3642523c265Ty8&id=725175222308&ns=1&abbucket=3#detail>)

Similarly, other informal strategies to cope with inspections include spray painting mountains, grass, planting plastic trees, and planting vegetables on cement. These are temporary tactics, only meant to cope with surveying and inspections to avoid penalty (Arora, 2022; Mankad, 2007). Some experts have pointed out that without near infrared coating, which is used mostly for military purposes, the cheaper nets and faux grass sold online would not work for either the drone or satellite based aerial inspections.

In summary, in official environmental reports, numbers or statistics have been crucial in presenting the achievements of sustainable development and ecological civilization objectives. Because of the target-based responsibility system in cadre performance measurement, local officials' career prospects are closely associated with their achievement of assigned goals, which creates high pressure for local officials to achieve state-sanctioned policy targets, and results in the phenomenon of gaming the system, which includes data fabrication or output distortion, to ensure that inspections will yield positive results regardless of whether or not goals have actually been achieved.

5.3 Building Green and Ecological Spaces in the Countryside

5.3.1 Calculative Yet Ambiguous Urban Green Planning in the Countryside

In recent years, since rural areas on the periphery of metropolitan regions have been spatially and administratively converted into urban administrative districts (while many areas have been administratively reclassified as urban, large areas within these new boundaries have remained rural in character, refer to Chapter 1), there has been an emergence of urban green planning in response to this change. Urban greening refers to green spaces such as public parks, grassy areas, green belts, and forests in urban areas that mitigate urban heat and pollution, benefit urban residents' physical and mental health, and provide a habitat for local flora and fauna. Primary urban greening indices, such as green space areas, green coverage, green space rate, green space area per person, and public green space per person, are directly related to urban sustainability and residents' well-being (Urban Green Space Classification Standard, 2018). However, to meet the sustainability agenda, urban green spaces, such as country parks, forest

parks, public parks, or ecological parks, have been constructed in the countryside, turning landscapes into designed ecological spaces.

Take Jiashan County's urban greening plan for example. It is formulated based on numerical greening goals assigned by the government, instead of being determined from spatial analysis. Although quantifiable and measurable goals are rather accurate and specific, it can be observed that spatial planning is ambiguous in indicating the spatial layout and specific land uses for green spaces. On the one hand, it guarantees the achievement of assigned goals, but on the other hand, it leaves much room for local officials to manipulate how they achieve intended green space targets.

Jiashan County has recently issued its Green Space Planning 2021-2035 (Figure 5.3) and its Territorial Greening Construction Master Plan 2020-2035 (Figure 5.4). In Figure 5.3, the Green Space Planning identifies public parks that are to be built in the county, including 8 country parks, 14 public parks, 8 specialized parks, 80 community parks, and one provincial level wetland park. Apart from a few existing parks in the county seat, all the other parks will be constructed by 2035. And even though the total number of parks is specified in numerical terms and illustrated in the plans as dots, there is no further information regarding each park site, such as location, current condition, land uses, etc. The Territorial Greening Construction Master Plan has also been ambiguous in spatializing the layout of all major greening projects (Jiashan County Natural Resources and Planning Bureau, 2021). For instance, in Figure 5.4, the green polygons are major ecological areas that will be forested for regional ecological security and image promotion purposes. The green lines represent green buffer areas along major highways. The thick dotted lines and the blue wavy line are the ecological corridors that will be intensively forested. The yellow stars are the villages that will be built with ecological recreation spaces,

such as village parks, wetland parks, and village forests that raise greening coverage in the villages.

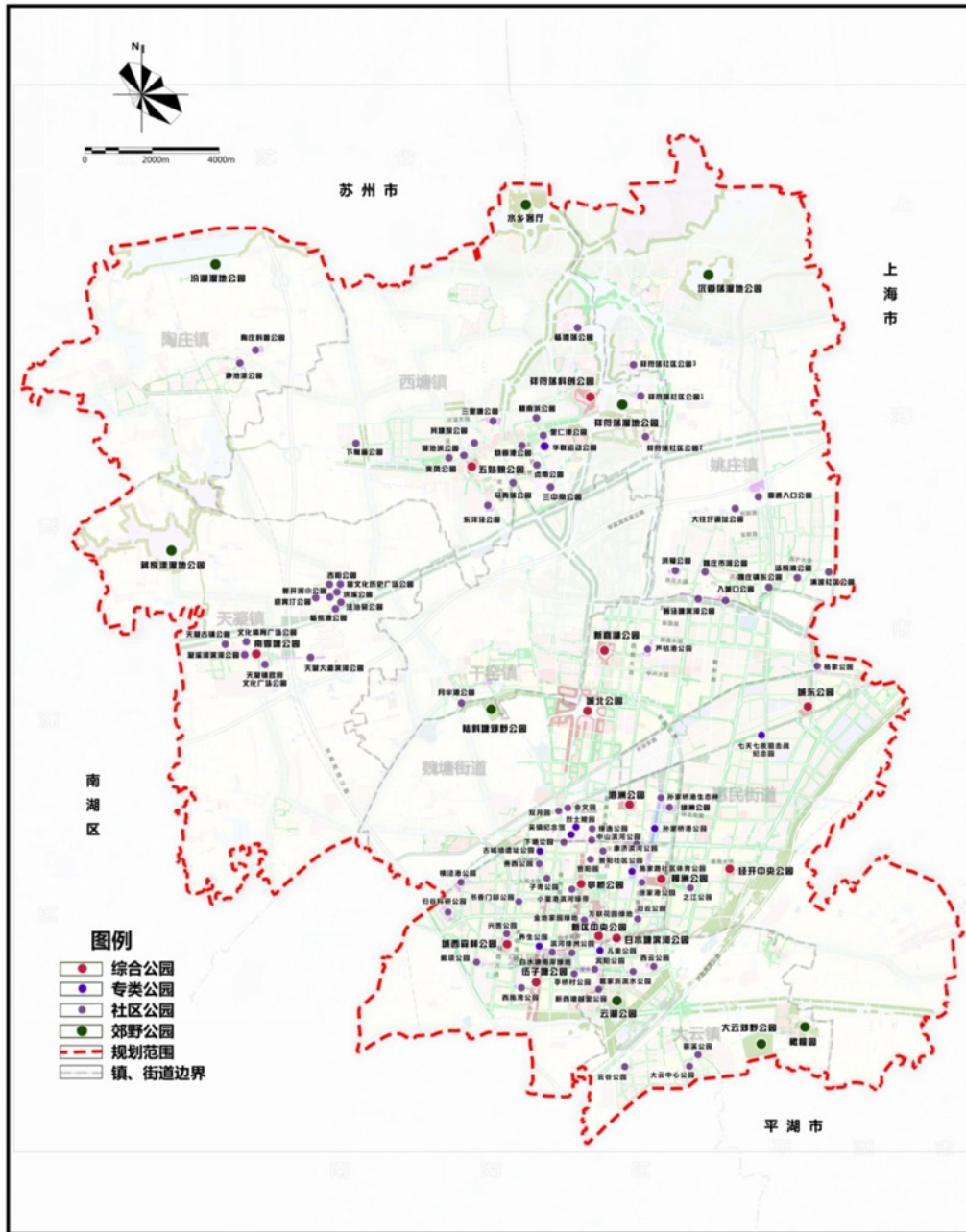


Figure 5.3 Locations of public parks and green spaces in Jiashan County

Note. From Green Space Planning by Jiashan County Construction Bureau, 2019.

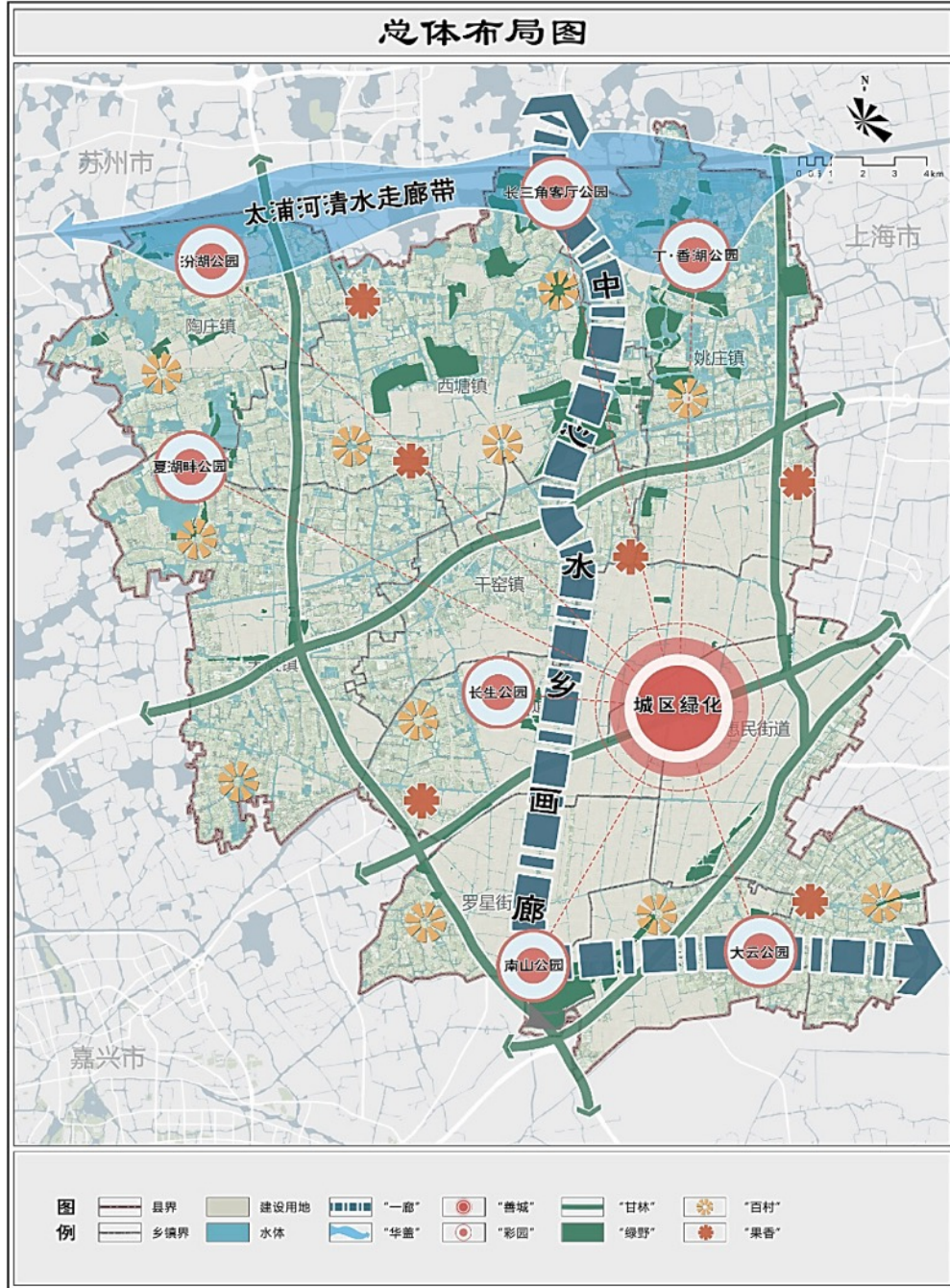


Figure 5.4 Urban greening layout plan of Jiashan County

Note. From Jiashan County Territorial Greening Construction Master Plan, by Jiashan County Natural Resources and Planning Bureau, 2021.

It could be inferred from these diagrammatic forms of planning and the goal-oriented statistics in the planning documents that these measurable goals are not formulated based on local conditions or capacities but are based on top-down assigned numerical goals, which were then arbitrarily imposed on existing rural landscapes. First, numerical goals for greening have been allocated to each town or jiedao (Table 5.1). As indicated in the planning document, Jiashan County has forest coverage of merely 6.57% (4.36% if excluding economic forests) and aims to reach 18% by 2035. This means that 87,000 mu (58 km²) of new forests will be planted, including urban forests, ecological corridors (scenic roadside trees, or 40 m-wide forest belts along the lakes), eco-forests, and village greening (Jiashan County Natural Resources and Planning Bureau, 2021). Furthermore, the plans aim for 30% green coverage, including village parks, along village roads and rivers, and field shelterbelts. This raises questions such as how will green polygons, dots, and lines, be implemented into 58 km² of new forests, and how will implementation impact pre-existing residents or ecosystems.

This phenomenon of imposing environmental tasks irrespective of spatial conditions is highlighted and examined in the case study of the Lianghong National Wetland Park, discussed in the following section, where ecological conservation was imposed on top of pre-existing rural communities and caused dislocation and loss of cultural landscapes. Eco-spaces exemplify environmental governance at a distance when they are represented in tables, charts and maps (flattened and simplified space as images), which do not provide a full understanding of local society, but serve the purpose of state control and of the realization of administrative and ideological ends (Haffner, 2013; Lefebvre, 1992).

Town/Jiedao	Total (mu)	Village greening		Village street greening (mu)	Riverbank greening (mu)	Farmland greening (mu)
		Area of greening (mu)	Area of village parks (mu)			
Total	16000	5760	1600	3190	4550	2500
Weitang Jiedao	780	460	100	20	200	100
Luoxing Jiedao	490	150	50	90	150	100
Huimin Jiedao	1450	650	240	100	400	300
Dayun Town	730	250	130	30	300	150
Xitang Town	3400	1000	200	1000	900	500
Ganyao Town	1400	450	150	300	450	200
Taozhuang Town	1850	750	280	350	500	250
Yaozhuang Town	2150	650	150	300	800	400
Tianning Town	3750	1400	300	1000	850	500

Table 5.1 Jiashan County rural greening tasks allocated by town/jiedao

Note. From Jiashan County Territorial Greening Construction Master Plan, by Jiashan County Natural Resources and Planning Bureau, 2021. Translated by the author.

Second, some of the local environmental goals are based on qualifying criteria for the National Forest City, National Ecological Village, or National Forest Village titles, instead of being based on local conditions or capacities. For example, Jiashan’s village public green space per person is planned to be 12m² for villages near tourist spots (the standard to qualify as a National Garden City), and 9 m² for other common villages (the standard to qualify as a Forest Village). The urban greening layout plan also stresses that “2.6 km of greenway per 10,000 people is planned, that is more than five times the National Forest City assessment standard” (Jiashan County Natural Resources and Planning Bureau, 2021, p. 44), making a clear link between the implementation of ecological civilization goals and the desire to be recognized and acknowledged for their accomplishments.

Third, the greening plan was not spatially analyzed using the science of landscape ecology, and the pre-existing condition of the rural landscape were not taken into consideration. As shown in Figure 5.4, for example, the dots outlining locations of public parks and green polygons as major ecological areas are imposed on top of pre-existing land uses of settlements and farmlands without further explanation. Furthermore, the spatial pattern and structure of the greening process does not indicate the spatial logics or spatial relations that were analyzed through the science of landscape ecology, such as landscape connectivity, coherence or heterogeneity. In fact, in both urban greening documents, there is no mention of landscape ecology or spatial analysis of any sort, but there are long lists of statistics and tables specifying targeted quantities and responsibilities for each jurisdiction under the county, exemplified in the allocation of village greening tasks in Table 5.1 above.

In this section, through an analysis of two greening plans for Jiashan County, it is argued that the greening plans in Jiashan County did not come from spatial analysis of landscape ecology but were an arbitrary imposition of planned and designed spaces on pre-existing rural landscapes, aimed at achieving calculative goals assigned from the top-down. The gap between ambiguous spatial plans and calculative goals leaves much room for local authorities to achieve the numerical goals of eco-space construction without the need to consider pre-existing spatial conditions or landscape ecologies.

5.3.2 Prioritizing Ecological Construction in the Planning Process

As discussed in the previous section, the increase of total number and area of ecological spaces is assigned from the top-down. Ecological protection is mainly executed through two systems: the ecological conservation redline system, and the protected area system (refer to

Chapter 1). Both systems, which take up 30% and 18% of the total national land area respectively, have increased significantly over the past few decades. On the one hand, local governments are pressured to accomplish annual and five-year ecological development goals assigned from the top-down. On the other hand, there has been limited flexibility in the spatial plans (normally in 20-year increments) to create new ecological spaces for short-term goals and tasks (annual and five-year goals). As a result, “building before planning (先建后规划)” has become a common practice in the countryside. Constructing first, then legitimizing it in the next planning document, has become an administrative process that could only be made possible through co-ordination and collaboration between various levels and departments of local governments. The construction of Lianghong National Wetland Park exemplified this building before planning process. In 2016, Lianghong National Wetland Park was officially incorporated into the Wuxi Municipality Xinwu District Hongshan Jiedao Master Plan (2015-2030). However, according to past residents and confirmed by Google Earth historical imagery, the demolition of pre-existing villages and construction of the wetland park started between 2005-2009, and was largely completed around 2011—five years before the master plan was even formulated. The wetland park was also not planned in the previous Wuxi Master Plan (2001-2020), drafted in 2002 and approved by the State Council in 2009.

As a state-level natural protected area, the implementation of the wetland park could only be made possible with the coordination and cooperation of multiple levels of local government departments. Among others, the conversion and transformation of pre-existing villages and arable land uses to a protected area should involve at least the Department of Land and Resources (in charge of changing land uses), the Department of Forestry (in charge of building and managing wetland parks), and the Department of Urban Planning (in charge of incorporating

the site into official planning documents) at both district and municipal levels. Even though the decisions made for site selection cannot be traced in the available official documents, the outcomes on the landscape could be clearly identified in the historical images below (Figure 5.5, 5.6, 5.7) which show that the park was built on top of pre-existing local villages. However, instead of being criticized for displacing local villagers and destroying cultural landscapes, Lianghong National Wetland Park was awarded a major national designation for achieving natural wetland restoration in the title of National Wetland Park in 2011, before it was even officially legitimized in the urban planning document in 2016. It was one of the first batch of twelve wetland parks that were accredited the national-level wetland park title. All this in the context of where building before planning used to be a common practice, which led to the abuse of rural land uses, but which has supposedly become strictly prohibited by the Urban and Rural Planning Law enacted in 2008.

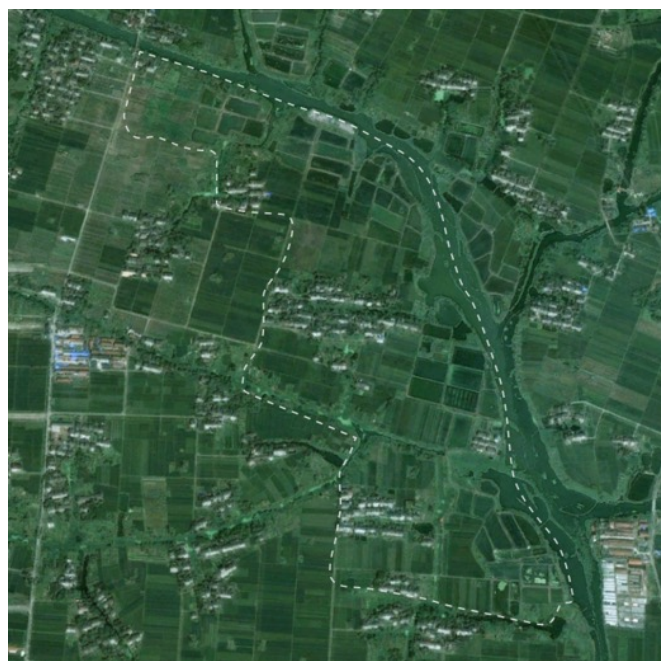


Figure 5.5 Pre-existing villages before the construction of Lianghong Wetland Park started (2005) (From Google Earth Pro)



Figure 5.6: The first stage of Lianghong Wetland Park construction (2009). (From Google Earth Pro)



Figure 5.7 Current extent of Lianghong Wetland Park (2022). (From Google Earth Pro)

In the 2000s, two environmental initiatives facilitated the promotion of ecological construction in Jiangsu Province: the provincial ecological initiatives for constructing an

ecological province issued in 2004; and the first time ecological civilization was put forward in the 17th National Congress in 2007 to further promote the significance of environmental governance (Jiangsu Province Government, 2004; Xinhua, 2007). At that time, the tasks for the next five years for Jiangsu Province included building 10 natural wetland reserves, 5 wetland parks, 5 wetland protection demonstration areas, and adding 3000 hectares (30 km²) of green space to reach 32% of green space (Jiangsu Province Government, 2005). These goals were later added into Jiangsu Province's 11th Five-Year Plan (2006-2010), which set out key ecological construction goals. According to assigned goals, municipal governments were to be inspected and assessed by the end of each year (Jiangsu Province Government General Office, 2007).

Lianghong National Wetland Park was only one of the many ecological construction projects that were constructed during that time. By 2010, Wuxi Municipality invested 2.6 billion yuan to successfully build 17 wetland restoration projects, and in 2011, 1 billion yuan more was invested to build five more wetlands (Yangtse Evening Post, 2011). As a result, Wuxi's natural wetland protection rate has reached 44% by 2014, and 51% by 2017. By the end of 2018, a total of 1.2 million mu (800 km²) of wetland was completed and more are on the way with the ambition to further increase Wuxi's wetland protection rate (Wuxi Municipal Government General Office, 2015, 2018, 2019). Unlike these environmental achievements that can be easily accessed on local government websites, the information of pre-existing villages and their relocation details could not be found.

Under provincial and national ecological initiatives, then, the construction of Lianghong Wetland Park—as an example of many other ecological construction projects—emerged in the process of building before planning and legitimized by the cooperation of various levels of local governmental departments to prioritize environmental tasks and statistics. It was built on top of

pre-existing villages, which resulted in the displacement of local villagers and the removal of pre-existing cultural landscapes.

5.3.3 Optimizing the Rural Regional Layout

The first two case studies reveal the arbitrary imposition of greening and ecological spaces based on statistical goals. This section analyzes the case study of village layout planning in Wujiang District in Suzhou, which either removed or merged rural villages that were considered less economically viable. This radical restructuring of rural spatial and social order aimed to optimize rural regional layouts for urban sustainable development. By removing and merging villages, village layout planning makes room for potential eco-spaces as well as economic development. In a way, it assists in driving up both environmental and economic statistics. According to this logic, the restructuring of rural spatial and social order results in an increase in index, which indicates an improved ecological condition. As a result, it is considered to bring about not only environmental benefits, but also to enhance the environment itself. Regional spatial restructuring leaves much opportunity for local officials to achieve their incentives and interests while achieving national goals.

As a foundation for the advancement of the construction of ecological civilization in rural areas, village layout planning was conceived in the National Rural Revitalization Strategic Plan (State Council, 2018), with the aim of optimizing the regional village layout by providing a more efficient arrangement of land uses, industries, settlements, environmental protection, public infrastructure, facilities, natural resources, and energy (Ministry of Housing and Urban-Rural Development, 2010). Village layout planning is one of the (municipal and county level) special plans in the new territorial spatial planning system (refer to Chapter 1). The planning is

organized by county or district governments and executed by town or township governments. It includes the entire rural territory outside of town/township centers. Compared to spatial planning, village layout planning does not concern land use zoning or spatial structure but optimizes the regional layout of village settlements by conducting comprehensive site surveys that evaluate demographic information, land uses, facilities, economic potential, and geographic conditions among others, and classifies villages into categories, which, based on predetermined evaluation criteria, later determines if villages would be removed, merged, or preserved.

By the end of 2020, every town in Jiangsu Province completed a village layout plan, which meant that the entire rural area of the province was evaluated based on the economic and cultural value of individual villages. Villages were classified into five categories. The first category included villages that were well populated with good economic development potential. These villages were the main subjects for rural revitalization strategies. The second category referred to villages with significant natural, historical, or cultural value, for example traditional villages and tourism villages. These villages would be preserved and developed for their significant value. The third category referred to villages located in the vicinity of urban centers or town centers, which may be urbanized soon. The fourth category included villages that would be relocated for major ecological, engineering, or construction projects, due to the loss of population and lack of economic potential, or they were in places that faced significant natural hazards. Residents from these villages would be relocated and concentrated. The fifth category included villages that were not yet able to be categorized.

Take village layout planning of Wujiang District in Suzhou Municipality for example. Apart from uncategorized villages, Wujiang District villages occupy the highest number among the fourth category—i.e. villages to be removed and merged (represented in magenta triangles in

Figure 5.8 and 5.9). The district was previously a rural county at the periphery of Suzhou Municipality and adjacent to the administrative border with Shanghai. It was promoted as a county-level city in 1992, then annexed into Suzhou as an urban district in 2012. Even though it has been administratively and spatially converted as an urban area, it is still dominated by rural landscapes outside of the district and town centers.

According to the village layout planning, in the short term (2020-2025), 365 villages out of a total of 1954 villages will be removed or merged, while in the long term (2025-2040), 1045 villages—that is 53.48% of all existing villages—will be removed (Wujiang District Natural Resources and Planning Bureau, 2021). These numbers do not include villages that have already been removed or merged in the past decades due to rural industrialization and urbanization (the actual village numbers are not comparable due to constant changes in rural administrative organization systems since 1949). Apart from preserving primary farmland, the land of the removed villages will be used for major ecological, engineering, or construction projects.

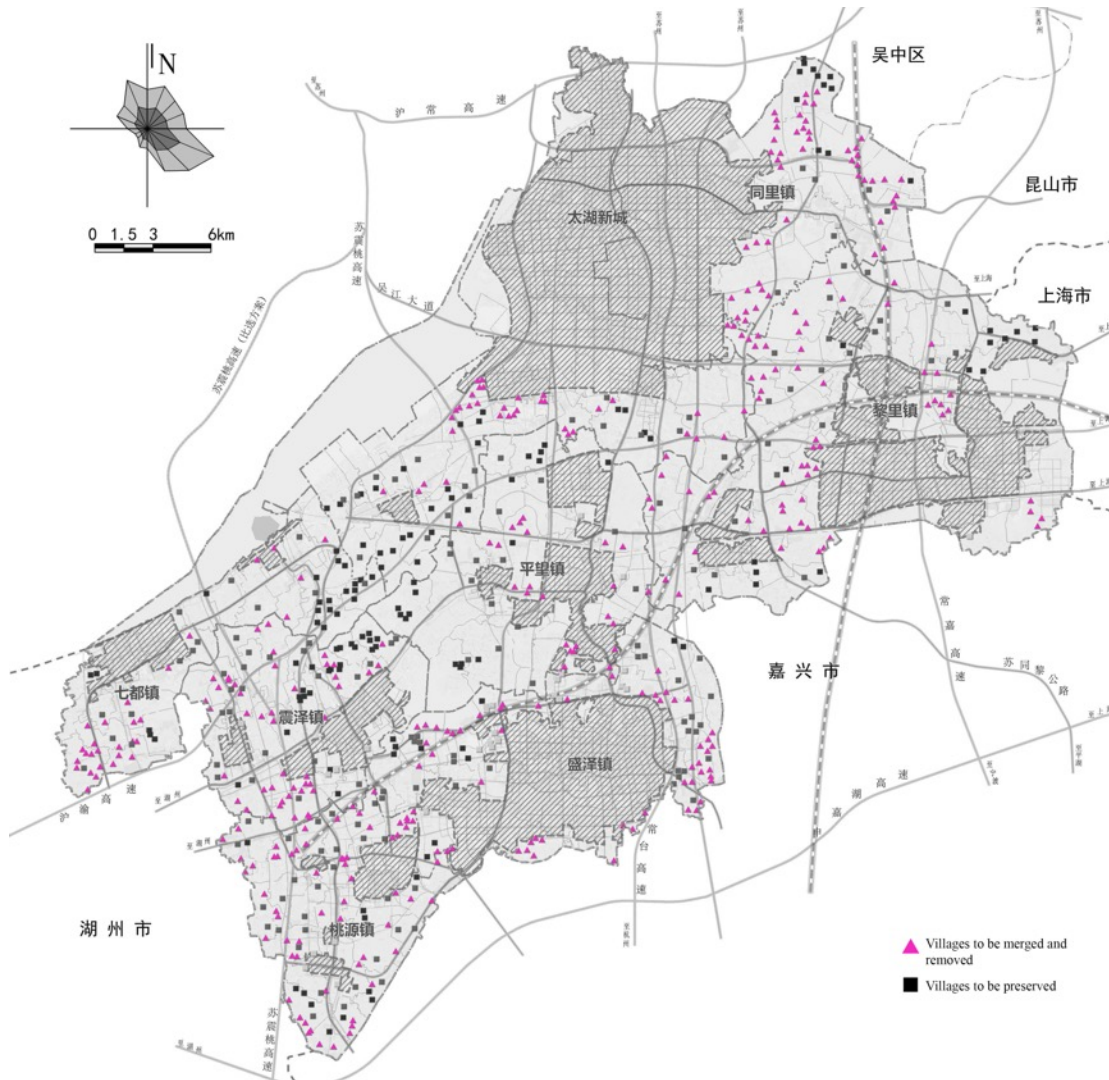


Figure 5.8 Wujiang District village layout planning (2020-2025).

Note. 365 out of 1954 villages will be removed or merged. Adapted by the author from Wujiang District Village Layout Planning (2020), by Wujiang District Natural Resources and Planning Bureau, 2021.

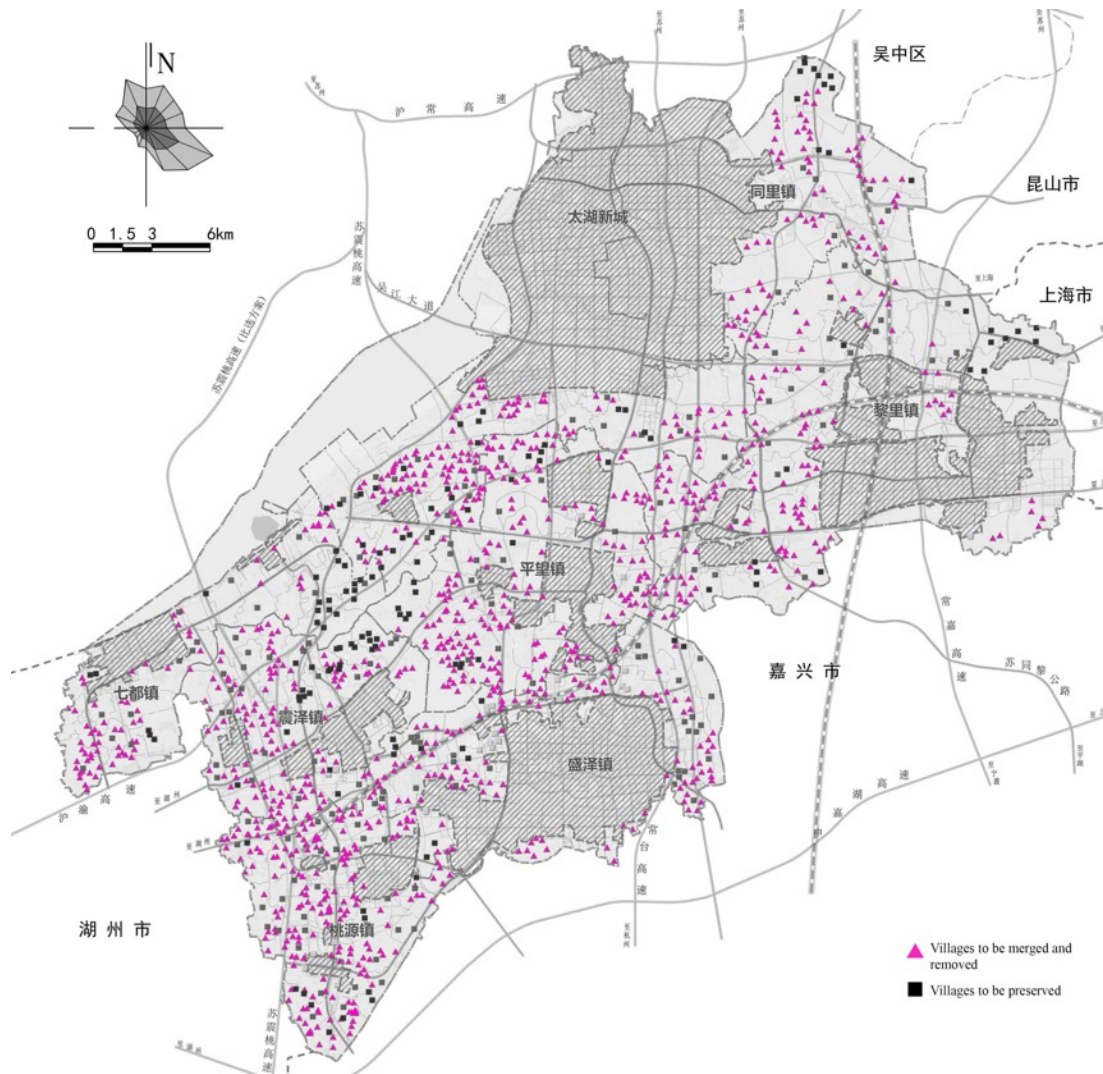


Figure 5.9: Wujiang District village layout planning (2025-2040)

Note. 1045 out of 1954 villages will be removed or merged. Adapted by the author from Wujiang District Village Layout Planning (2020), by Wujiang District Natural Resources and Planning Bureau, 2021.

One of the villages to be preserved (in black squares in Figure 5.9), Daijiagang Village was visited as part of the fieldwork in 2021. In Figure 5.10, the slogan “everywhere is harmonious, everybody is happy (处处和谐, 人人幸福)” and an image of a harmonious settlement habitat is portrayed on the wall of a village house. Meanwhile, in Figure 5.11, a slogan extracted from one of President Xi’s remarks—“blue skies, lucid waters, the environment would be better (天更蓝, 水更清, 生态环境更美好)” —is inscribed on the wall. These examples

further confirm that, since village layout planning drives up environmental statistics, it is considered beneficial to the environment and contributes to the further construction of ecological civilization. Furthermore, it also reflects the ideological strategies that guides the code of conduct and strengthens political cohesiveness discussed in Chapter 4, by proclaiming a beautiful, harmonious, and sustainable environment that ecological civilization brings, and ultimately assists in reaching consensus on the strategies and decisions associated with restructuring rural spaces.



Figure 5.10 The slogan “everywhere is harmonious, everybody is happy” is painted on a village house wall in Daijiagang Village (photo taken by the author).



Figure 5.11 President Xi’s remark “Blue skies, lucid waters, the environment would be better” is inscribed on the wall (photo taken by the author).

5.4 Summary

Instead of adopting ecological planning methods informed by landscape ecology, the case studies demonstrate various ways that local officials prioritized numerical goals through the hierarchies and dynamics of the administrative system. Since mandated environmental goals were assigned from the top down, it is evident that the priority for local officials was to attain and exceed assigned goals in order to pass performance evaluations and ensure future promotion and local economic development, rather than to actually improve ecological and sustainable conditions. Since the evaluation of sustainable development and ecological civilization is based exclusively on indices and metrics, the goal-oriented practices that turn villages and rural

landscapes into eco-spaces pose serious questions for the social, cultural, and environmental sustainability of rural spaces in the entire country. These questions, and the key conceptual and empirical contributions of this research, are discussed in the final two chapters.

Chapter 6: Discussion- Ecology as Aesthetics, Culture and Science

6.1 Introduction

So far, this dissertation has examined the policies, strategies, and practices to ecologize rural landscapes in China. It is evident from this examination that the planning and design strategies deployed to build eco-spaces are far from apolitical, but are, rather, implicated in environmental, spatial, and cultural politics. This chapter discusses the phenomenon of ecologizing the rural landscapes in relation to the research questions: What are the implications of ecology in ecological civilization and sustainable development? How has the rural become the space for achieving ecological civilization and urban sustainability? What is the role of spatial planning and design in implementing ecological civilization? Based on the conceptualization of designed spaces, ecology and rural spaces discussed in Chapter 2, this chapter aims to uncover the complexities and ambiguities inherent in the process of conceiving, designing and implementing eco-spaces.

The following section discusses the role and implications of ecology in Chinese political ideology, more specifically, how ecology has been perceived and interpreted in constructing eco-spaces. The third section discusses the transformation of rural spaces in the process of ecologization. The fourth section examines the role of spatial planning and design in ecologizing rural landscapes, and points to the political purposes behind the deployment of design disciplines.

6.2 Implications of Ecology in Political Ideology

6.2.1 Politicizing Ecology

Ecology was intentionally rendered apolitical by the authorities, for both its ideology and objectivity, to serve the interpretation and implementation of ecological civilization. On one hand, as discussed in Chapter 2, ecology has become a new form of ideology through creating the narratives of environmental disaster and ecological catastrophe. Ecology became the center of world politics since the 1970s when global environmental policies gained increased consideration. However, in political discourse and operation, it has become an ambiguous and rhetorical word, similar to terms such as “green” or “sustainability”, so that even the mere indication of ecology would morally ensure a future free of environmental disasters, and would alleviate fear with the assurance that this challenge is taken care of by those in charge. In this sense, ecology became “a new opium for the masses” (Zizek, 2008, p. 47). For these reasons, as a benign and objective term, ecology should be challenged by planners, designers and geographers, by looking beyond aesthetics and statistics, and by contextualizing, historicizing, and politicizing eco-spaces and the practices of spatial design disciplines (Angelo, 2019, 2021; Doherty, 2017; J. S. Duncan & Duncan, 2001; Gandy, 2013; Laage-Thomsen & Blok, 2020).

In China, ecological civilization imposes the dominant ideological power of ecology. It portrays traditional Chinese culture and ecological worldview as in harmony with nature, and imbues the policies, strategies and visions of ecological civilization as rooted in traditional Chinese culture, to compose narratives of eco-culture that guide and regulate the public’s understanding of ecological civilization. Strong cultural governance, exemplified by efforts to build eco-culture, emphasizes collective ideological and ecological values which contribute to reaching consensus on ecological civilization.

Meanwhile, governance in China since 1949 has been characterized by technocracy. In this technocratic context, ecology is perceived and portrayed as objective since ecological science is considered the truth about nature. Thus, disciplinary knowledge of ecology and environmental indicators, which comes in the form of statistics, assessments, and visions for the future, brings ecology in line with governance and economic growth. The technocratic application of ecological science also leads to the belief that development will not only solve environmental problems, but will enhance the environment, especially in China where environmental governance and management is predominantly measured through eco-metrics. The increase in eco-metrics, instead of actual ecological functions, measures the improvement of the environmental condition. Thus, any initiatives, practices or decisions that drive up eco-metrics are seen as statistically and administratively contributing to the improvement of the environmental condition.

In fact, even though ecology is portrayed as an objective truth, ecology as an idea which underpins ecological civilization is highly political and fundamental in constructing the environment as in need of being governed. In the mainstream political realm, ecology is essentially an ideological and scientific tool that used in support of governance, resource management and economic growth as intended by the authorities and experts. The ideological, unchallengeable and pro-development nature of ecology in environmental policies results in interpretations by local authorities and experts to govern and manage in a certain way.

6.2.2 Perceiving Ecology and Nature

State discourse suggests that the current development path under ecological civilization is deeply rooted in traditional Chinese culture and an ecological worldview, such as being in

harmony with nature or following the course of nature. In fact, the environmental history of China has been shown to be highly exploitative of natural resources mainly due to the pressures of over-population (Elvin, 1993; Osborne, 1989). Despite the romanticized and idealized concept of nature in traditional Chinese philosophies, literature or painting, there has always been a deep fear and hostility of the wilderness and inherent unsustainable and abusive exploitation of the environment.

Perceptions of nature as hostile go back to Chinese antiquity, so much so that the sparsely populated and natural areas outside of towns and cities were often considered savage, violent and dangerous. For example, during the Qing Dynasty (1636-1911), the county was the lowest state administrative level located in county seat or county town, and *xiang* (乡) was the settlement concentration larger than 100 households in the rural areas (Whyte, 1983). The vast and sparsely populated areas outside *xiang* was called *ye* (野) or *huang* (荒), meaning the wilderness that was not cultivated by humans nor under human influence, and therefore was always associated with savagery, violence and danger (Tin & Yang, 2016).

In fact, despite the romanticized and idealized concept of nature in Daoism or Buddhism as harmonious, poetic and carefree, the concept of wilderness received “the hostile perception of a nature that the late-imperial Chinese found frightening and repulsive.” (Santangelo, 1998, p. 618). Travellers also portrayed nature with fear, noting that “beyond the human realm there is nothing but horror” depicting the wilderness filled with wild animals and plants as a highly undesirable place (X. Yang, 2000, p. 95). In stark contrast, cities were portrayed as full of comfort, delight and pleasure. As a result, “the ‘artificial’ is seen as a positive product of human civilisation, which modifies nature from a adversary to a friend of humankind” (Santangelo,

1998, p. 618; X. Yang, 2000). This traditional attitude to nature largely contributed to the abuse of the environment.

Thus, some environmental historians argue that the Chinese approach to nature has never been sustainable throughout history. While it is generally believed that China's environmental problems are only attributable to Mao's "war against nature" and to post-Mao reforms and industrialization, historians argue that the roots of the Chinese environmental crisis are multi-millennial, and "many of the basic conditions of Chinese life and the physical milieu within which it functions are the demonstrable products of this history" (Elvin, 1993; Elvin & Liu, 1998, p. 3; Osborne, 1989; Shapiro, 2001). In particular, Osborne (1989) argues that the ecologically irrational environmental policies instituted in the 1950s were similar to those of the 1850s which prioritized economic development and depleted natural resources to accommodate increasing population. In late imperial 18th and 19th Century China, long term deforestation was intensified on a huge scale due to increasing population (Elvin, 1993). Between 1750-1850, during the Qing Dynasty, the Chinese population doubled from around 200 million to 400 million (Lu & Holbrook, 2015). In the YRD region, for example, short term commercial intensification on lowlands and highlands had caused environmental deterioration in the long term. The lowlands experienced economic intensification of grain and fish/shrimp production. Deforestation in the mountains caused serious soil erosion and silted up the lower streams for transportation, irrigation and drainage (Osborne, 1998).

At that time, environmental policies were also not able to be fully enacted at the local level. The state was able to gather information and issued environmental policies to limit development and maintain ecological and social stability in ecologically damaged areas. But facing demographic pressure, economic development was deemed essential to support population

growth. With a lack of technological solutions to handle resource scarcity, limits on land use in certain areas had accelerated land reclamation in other regions. The state was also limited in its power over lineage and private landholding systems. Villagers rented out land to outsiders who paid no respect to local ecological systems and cleared forests to grow annual crops (especially maize to provide staple food). Local officials were in favor of short-term goals, and conservation and environmental protection was not a factor on which local officials' performance was judged. Moreover, in some cases, local officials on the same level of bureaucratic hierarchy held opposing interests which undermined preservation policies across administrative boundaries. Even the enforcement of policies from higher levels were sometimes modified to reflect local officials' interests (Osborne, 1994). These power dynamics in the enforcement of environmental policies also continued to the present.

In short, ecology is a modern term and concept in China despite claims of the ecological civilization discourse that its policies, practices and strategies are deeply rooted in traditional culture. While nature is portrayed as harmonious, poetic and carefree in traditional Chinese philosophies, literature or paintings, the actual perception of nature was always rooted in a combination of fear and exploitation: first, wilderness and nature has always been considered fearful, savage and repulsive, while the artificial (built environment) is seen as a positive product of human civilization; second, the Chinese approach to nature has never been sustainable due to limited natural resources and increasing population. The lack of holistic, cultural, and not in the least friendly perception of ecology and nature, contributes to the dogmatic interpretation and implementation of ecology in forms of culture, aesthetics and statistics disregarding the history, context or integrity of rural landscapes.

6.2.3 Interpreting Ecology

6.2.3.1 Interpreting Ecology as Aesthetics and Culture

According to the three case studies discussed in Chapter 4 (constructing ecological conservation as demonstration of traditional eco-culture; rendering development as a part of the cultural landscape; designing the eco-culture aesthetics as a code of conduct), it is evident that eco-culture aesthetics reflect a political ideology on governance, and that they work distinctly differently from the eco-aesthetics that simulate the wilderness or biodiversity. As discussed in Chapter 2, the aesthetics and rhetoric of ecology in other contexts normally illustrates high ecological value by simulating the looks of wilderness or biodiversity. Spaces of designed eco-aesthetics drive up property prices and result in social inequality and exclusion, and their ecological authenticity is questionable (Dagenais, 2004; Gandy, 2013).

In comparison, eco-culture aesthetics impose strong ideological and political intentions in addition to simulating the aesthetics of ecology. As mentioned in Chapter 2, eco-culture reflects society's ideological values and code of conduct on environmental issues, and seeks to build societal consensus on policies and strategies for ecological civilization. Through the visual strategies and deliberate reshaping of landscape narratives discussed in Chapter 4, eco-culture aesthetics deliver ecological education and propaganda to the general public in order to guide society-wide collective ecological consciousness, worldview, attitude and moral sense.

State discourse on eco-culture has also confused and misled the public about the meaning of culture. Despite the complex modern development and usage of the word "culture", Williams (1985) broadly identifies three ways the word is used: (i) culture describes a general process of intellectual, spiritual and aesthetic development; (ii) culture indicates a particular way of life, whether of a people, a period, a group, or humanity in general; (iii) culture describes the works

and practices of intellectual and especially artistic activity (Williams, 1985, p. 90). The way eco-culture is constructed, to unify societal ecological values, assumes the first two understandings of culture, as a process of development and as a way of life. In addition, the idea of eco-culture in urban planning and design practices in China “suggests an emphasis on governmentality”(Oakes, 2019b, p. 180). In this case, the emphasis is on *governing with culture*, which “draws our attention to biopolitical modes of rule that focus on individual and collective behavior, in which a given population is rendered governable” (Oakes, 2019b, p. 180).

However, in state discourse, eco-culture is considered a continuation of traditional Chinese culture or an integral part of cultural landscape. The culture in traditional culture or cultural landscapes assumes all three understandings of culture: a process of development, a way of life and the artistic forms or activities created by the first two. In cultural and geographical studies, traditional culture or cultural landscapes are understood as cultural products, activities or landscapes that are embodied and given meaning in daily lives, and are a result of the interplay between nature and society, or as the outcome of various forces over history. These interpretations coincide with the social construction perspective of spatial production, which centres the role of culture in creating distinctive rural space, life and society.

The actual role of eco-culture (as a code of conduct for governance) does not fit in any of the above descriptions of traditional culture or cultural landscape. The design of eco-culture aesthetics is not historically produced, nor is it embodied in the daily lives of local residents. Instead, eco-culture is combined with reformation of cultural governance and insistence on a scientific development outlook (科学发展观). As Pan Yue, former deputy director of State Environmental Protection Administration stated, “the revival of Chinese culture is the foundation to the revival of the Chinese nation” (Y. Pan, 2003). State discourse has also widely referred to

eco-culture as the foundation and driving force of the revival of the Chinese nation. As Perry (2017) stated,

...the contemporary emphasis on cultural nationalism, rather than a sharp break with an earlier reliance on Marxism-Leninism-Mao Zedong Thought as the ideological foundation of Chinese Communism, marks yet another turn in a tortuous legitimization project that has frequently (if fitfully) drawn upon a wide range of resonant symbols from the Chinese past and present – elite and folk culture alike – to buttress the standing of the CCP (p.9).

Moreover, President Xi Jinping emphasizes the importance of eco-culture in achieving ecological civilization in “turning building a beautiful China into conscious action of the whole population (把建设美丽中国转化为全体人民自觉行动)” in which eco-culture is a code of conduct intending to guide the collective will and actions of the population (Xi, 2019b). In short, the ability of strong cultural governance with nationalistic intentions—which is embodied in eco-culture—to achieve sustainable development and ecological civilization not only justifies the Party’s right to rule, but also reinvents the state’s green image internationally and domestically, which further strengthens the Party’s political legitimacy (Guo, 2003; Perry, 2017).

6.2.3.2 Interpreting Ecology as Numbers

Meanwhile, the case studies in Chapter 5 (the manipulation of remote sensing and surveying technologies for successful measurement of numbers; calculative yet ambiguous greening plans; the legitimization of ecological construction in the planning process; the radical restructuring of rural spatial and social order by village layout planning) all suggest that achieving environmental goals is not necessarily concerned with spatial conditions, i.e. landscape patterns, ecological processes and functions, or cultural and social sustainability. Instead, local

officials are pressured to achieve environmental goals assigned to them from the political center by increasing areas and numbers of eco-spaces irrespective of pre-existing conditions of landscapes and communities. The target-based responsibility system for cadre performance management was initially carried out to enforce the compliance of local authorities in implementing party-state policies concerning economic tasks, which was largely impacted by fiscal and administrative decentralization. It imposed pressure by linking local officials' performance evaluation and overall career prospects with their achievement of assigned goals. In recent years, under stringent environmental governance, this mechanism is now applied to the achievement of environmental goals.

Moreover, the implementation of eco-spaces is a result of strategized cooperation among various levels and departments of local governments. In constructing eco-spaces, the conversion of land uses involves various local land-related bureaus or departments. For example, the conversion of Lianghong National Wetland Park from village land to nature reserve could only be made possible with the cooperation of multiple levels of government, including departments of Land and Resources (changing in land use), Forestry (building and managing the wetland park), and Urban planning (incorporating the wetland park in urban planning). Similarly, the international design proposal for the Jiashan part of the YRD core area was facilitated by the Jiashan county government and land-related local bureaus, including the county's Housing and Urban-Rural Construction Bureau, the Natural Resources and Planning Bureau, the Culture, Sports and Tourism Bureau, the Water Conservancy Bureau, the Transportation Bureau, the YRD's Integrated Ecological and Green Development Demonstration Area Management Committee, and the Territorial Spatial Planning Research Institute in Jiaxing Municipality. It is therefore argued that the numerical interpretation of ecology is essentially driven by local

officials' performance evaluation and career prospects, instead of driven by improving environmental conditions.

In summary, in China's mainstream political realm, ecology is an ideological and scientific tool that maintains governance, resource management and economic growth as intended by the authorities and experts. Ecology is a modern term, despite state discourse claims to a continuation of traditional culture and ecological philosophy. Not only was there rarely sustainability in the use and development of land in China, historical exploitation and abuse of the environment is consistent with the fearful and repulsive attitude towards untamed wilderness and nature, as well as limited natural resources and over-population. Without a holistic, historical, cultural and, most importantly, a friendly perception of ecology and nature, the interpretation and implementation of ecology to achieve environmental goals assigned from the top-down was essentially driven by local officials' performance evaluation, career prospects, administrative legitimization of their decisions and local interests, instead of actually improving environmental conditions.

6.3 Transformation of Rural Spaces

6.3.1 From Lived Space to Designed Space

Rural spaces in China have been progressively planned, designed, and transformed from lived space to designed space. As discussed in Chapter 2, designed spaces in China could be conceptualized in relation to the ideas of conceived space and governable space. Conceived space refers to Lefebvre's framing of physical space that is envisioned and imagined by planners, designers, engineers or scientists, which is not the result of social processes, as opposed to lived spaces which are passively experienced and produced by everyday activities. Conceived space

emphasizes the processes through which space is produced. Meanwhile, the idea of governable space highlights the rationalities, purposes and techniques of the government, or in other words, power relations in the production of space. For example, rendering visible (aesthetics) and numbers (eco-metrics) are two of the most widely adopted technologies by the Chinese government in the operation of governable space. Therefore, designed spaces stress both the dominance of conceived space over lived space, and the rationalities, strategies or intentions adopted to transform the space for certain governmental outcomes. Through analyzing the case studies in Chapter 4 and 5, it is evident that rural eco-spaces in China have been transformed from lived spaces to designed spaces:

First, the reorganization of the spatial and social order has not only operated through radical spatial transformation, but more importantly through tampering with local historical and cultural narratives of rural space, which constituted a radical break with history and tradition and a new ordering of society as intended by ecological civilization. For example, while the actual history of the Tongli Wetland Park site was largely impacted by the schistosomiasis disease due to marshy deltaic soil and poor drainage, designed aesthetics and narratives portrayed it as an ecological conservation created by centuries of local ecological wisdom. Similarly, in the Green Valley project, while the green industrial areas were designed in the spatial pattern of local cultural landscapes and were rendered as a continuation of local culture, the pre-existing water villages were either demolished or tucked away from the green vision.

This type of spatial and social reordering cannot be simply explained as high-modernist planning (discussed in Chapter 2), which is primarily based on a techno-scientific approach to the re-organization of spatial forms for social reordering and political control. The tampering of historical and cultural narratives signifies strong ideological and cultural control over rural

spaces. It not only aims to improve land-based environmental indicators, but also to build a collective code of conduct that transforms the mode of production, lifestyle and environmental issues, as well as to reassert culture to reinstate the party state's ideological influence. Comparing with high-modernist planning in which spaces were engineered into an appearance of order, ideological and cultural governance emphasizes reaching society-wide collective values and consensus on governmental decisions and strategies to keep the governed territory and population in order.

Second, planning and design schemes of eco-spaces provided symbolic representations of rural images envisioned by planners, designers, or officials. This perspective considers rural space as socially constructed. It acknowledges that cultural landscape is shaped by and therefore represents local social, cultural, geographical and economic processes. However, design schemes, such as the Green Valley project and Tongli National Wetland Park, adopted cultural landscapes as symbolic representations of culture and tradition. This is a form of consumptive landscape connected with political economy, and is distinctively different than productive landscapes which are embodied and given meaning in daily activities and lives. In fact, none of the designed eco-spaces examined in this dissertation were produced by or for everyday activities of local villagers. Indeed, in some cases, such as the red windmills in Donglian Village, cultural elements were not even extracted from local conditions. Essentially, planning and design were intended to indicate the presence of culture and tradition in order to render visible the administrative achievement of ecological civilization, as well as to promote rural tourism.

Third, local villagers do not have a meaningful participatory role in the decision-making process of ecologization, nor are their everyday lives involved in eco-spaces. In fact, in China, civil society does not have any role in the decision-making process of environmental protection

or in spatial planning and design. As discussed in Chapter 2, both authoritarian and decentralized environmental governance enacted in China impose and implement environmental policies without participation or consultation from the general public. The non-participatory approach is also applied in spatial planning and construction practices. The formulation of spatial planning and design schemes, such as urban-rural planning, land use planning, and the recently initiated territorial spatial planning, also operated without participation or consultation from the public. In some cases, exemplified in the “built before planning” process of Lianghong National Wetland Park, the construction was only made possible through the cooperation of various local governmental departments then legitimized in planning documents, indicating the ecologization process as essentially embedded in administrative hierarchies and local-state power dynamics.

Also, the everyday lives of local villagers were no longer integrated into designed eco-spaces. The villagers from the eco-space sites, as well as the villagers relocated from other state-led rural urbanization projects, were concentrated into rural settlements in the form of multiple-story housing blocks equipped with modernized infrastructure such as bathrooms and kitchens (Ahlers, 2015; Bray, 2013, 2020). As discussed in Chapter 1, over the past decades, a series of rural-urban integration policies, such as the three concentration policy, building a new socialist countryside (建设社会主义新农村) and rural revitalization strategy (乡村振兴战略), were issued to urbanize the rural with urban infrastructure, public services, and modern lifestyle, and to provide more efficient layout of rural land and natural resources, industries, settlements, infrastructure, facilities and energy (Ministry of Housing and Urban-Rural Development, 2010). However, by transforming farmers into urban inhabitants, these policies and practices, including ecologization, also disassociated large numbers of villagers from their land.

In fact, in all of the case studies examined in this dissertation, rural spaces were demolished and reconstructed to create space for designed eco-spaces from the top-down without consideration for social sustainability. In the Ecological Conservation Performance Evaluation System, there's only one indicator concerning the social dimension of ecological conservation—public satisfaction—which is evaluated based on local residents' satisfaction with ecological conservation and environmental improvement. Similarly, in the Green Development Index System, there's also only one indicator (public satisfaction) that evaluates the social dimension of green development. Not only is it a subjectively evaluated indicator, but it is also not directly linked to social sustainability such as social well-being or social justice (L. Xie et al., 2019). Furthermore, for the small number of local villagers who were not forcibly relocated, such as villagers in Donglian Village and inside of the Tongli National Wetland Park, the designed eco-spaces are not part of their everyday lives or activities, but are consumptive spaces and symbolic representation imagined and imposed by officials or designers. This will be further elaborated in the rurality of ecologized rural spaces discussed in the next section.

6.3.2 Rurality and Social Sustainability in the Process of Ecologization

As discussed in Chapter 2, in the context of rural urbanization and the globalized economy, it is argued that the multiplicities of rurality in China are “defined by social and cultural practices rather than by functions and/or by imagination such as rural idyll” (Chung, 2013, p. 607). Over the past four decades, rural space has gone through tremendous spatial, economic and social transformation. Despite that, rurality has been maintained by the everyday lives of local villagers that engage in both the modernized economy and local cultural traditions. This means so long as villager rationality, namely local social relations, cultural practices and

land-based economies are preserved, rurality would still persist. The rurality and social sustainability of eco-spaces in the countryside will be discussed in relation to the hybridity and multiplicities of Chinese rurality.

6.3.2.1 Transformation of Rural Living Spaces

The evidence shows there has been substantial improvement of environmental and economic sustainability in rural areas. First, the ecologizing of rural landscapes has driven up areas of greening and ecological conservation areas which may indicate an improvement of the physical environment. Environmental indicators such as forest coverage, wetland protection rate and vegetation coverage have been key indicators in Ecological Conservation Performance Evaluation System and Green Development Index System. In Jiangsu Province for example, all the environmental goals were reached or even exceeded for the 13th FYP (2015-2020) (Jiangsu Province Government, 2021).

Second, the total amount of cultivated land is strictly protected and preserved according to the Protection of Cultivated Land (Regulation on the Implementation of the Land Administration Law of the PRC, 2021, Chapter IV). In both the Ecological Conservation Performance Evaluation System and the Green Development Index System, the amount of cultivated land is also one of the key indicators in evaluating resource utilization. As observed at various field sites, village layout planning has resulted in the resettlement of sparsely populated villages to increase and preserve the area of farmland.

Third, rural revitalization strategies have indeed brought about increased economic income for rural residents due to agricultural modernization, new types of industrialization and urbanization, and have improved local residents' living conditions by enhancing infrastructural

construction and public services, and reducing the income gaps between rural and urban residents (Xinhua, 2023b). According to the two measurement systems Ecological Conservation Performance Evaluation System and Green Development Index System (refer to Tables 2.1 and 2.2), resource utilization, environmental protection (such as hazardous waste disposal rate and wastewater treatment rate), and environmental quality (such as water and air quality) are some of the environmental improvements that rural revitalization strategies and ecological civilization policies have brought about. These functional improvements in rural spaces will be discussed in relation to high-modernist approach of ecological planning and the value of cultural landscapes in Section 6.4.3.1.

6.3.2.2 Overlooking of Social Sustainability

However, in the process of ecological transformation, social sustainability has been largely overlooked. As discussed earlier, rural space has been transformed based on administrative rationality instead of based on the science of landscape ecology and considerations of social sustainability. The planning and design of eco-spaces for green goals, serves either to drive up eco-metrics or to impose eco-ideology, and is not constructed for everyday activities or economies for local communities. In achieving environmental goals assigned from the top-down, local villagers have been forcibly relocated from their land to make room for additional eco-spaces, exemplified by village layout planning and the construction of ecological conservation areas. Moreover, to visualize a more civilized future, the reconstruction of rural landscapes and alteration of local landscape narratives has caused a break from local culture and tradition irrespective of pre-existing geographical or social conditions.

Created eco-spaces are essentially consumptive landscapes that are not designed and built for local communities. The ecologization of rural landscapes have relocated local villagers for ecological conservation, urban greening, green industries, or preserved villages for ecotourism. As opposed to productive landscapes shaped by and for local villagers, eco-spaces in the countryside become consumptive landscapes for urban visitors for the following reasons: 1) these eco-spaces are not directly involved in the productive or economic activities of local communities; 2) they are not controlled or managed by local communities, and therefore are not infused with local values; 3) they are built directly for visual consumption or development purposes, which deprived local communities of their land resources, or have been in conflict with local interests and caused local environmental issues; 4) the planning of rural areas considered pre-existing village patterns as not economically viable and a waste of resources, while villages were relocated to make space for eco-spaces, industrial areas or for large consolidated tracts of farmland for more productive and efficient agriculture.

In addition, local cultural traditions, landscapes, and narratives have been altered to match the visions of a civilized society. According to both the eco-developmental logic and Chinese perception of the wilderness/rural, peasants and their culture are considered uncivilized (Rodenbiker, 2021; X. Yang, 2000). As discussed in Chapter 1, the *Yangzi River Model* was illustrated in the China Modernization Report to symbolize the temporal and spatial hierarchies of China's modernization path: from a "primitive society" in the upper reaches (settled mostly by ethnic groups and rural communities), to an "agricultural society" in the middle reaches (settled by rural communities and less developed cities) , to the highly modernized "knowledge society" at the Yangzi estuary (China Modernization Strategy Research Group, 2007, p. 101). In the report, even though ecological rationality is emphasized as the key to achieving high levels of

modernization and sustainable development (i.e. knowledge society), economic modernization is still represented as the single criteria to the exclusion of any other mode of knowledge or development.

Meanwhile, as discussed earlier in this chapter, the Chinese perception of nature/wilderness has been savage, primitive, backward, and more precisely, uncivilized. In contrast, built environment were portrayed as comfortable, delightful and pleasurable. As a result, rural cultural traditions, landscapes, and narratives are redesigned and reconstructed to correspond to envisioned images of a civilized society that is economically developed and city-like. In short, the design and construction of eco-spaces for the vision of ecological civilization has displaced local communities, dismissed local culture, and overlooked the dimension of social sustainability.

6.3.2.3 Loss of Rurality

As mentioned in Chapter 2, agricultural economist Wen (2012) argues that in the process of rural revitalization the key to achieving ecological civilization is to respect rural local environmental knowledge which has coped with centuries of limited resources by maintaining environmental protection through small-scale farming. Other scholars believe that the key solution for the tension between limited land resources and overpopulation is by reducing the number of farmers (W. Wang & Qi, 2014). In fact, state policies and strategies, such as agricultural modernization, rural revitalization, and ecological civilization have been devised to optimize regional layout and land use in rural areas by land use concentration and turning farmers into urban inhabitants, as exemplified by the kind of resettlement resulting from eco-space projects and village layout planning. Reducing the number of farmers has caused

tremendous loss of local rural culture, heterogeneous and diverse agricultural knowledge, food production and village society as a whole.

It is believed that even when “rural landscape and functions have vanished in the village and villagers are no longer involved in agricultural activities”, the hybrid and ever changing rurality in China could be maintained by local villagers’ everyday activities that engage in both modernized economy and local cultural traditions (Chung, 2013, p. 607; G. Lin et al., 2016). However, in cases where local residents were displaced and concentrated to drive up eco-metrics and to make room for eco-spaces, industrial agricultural production, or other more economically viable land uses, cultural practices were lost, local history was rejected, and the rural collective institution system was disrupted. In comparison to economic restructuring associated with rural industrialization and the rural network economy, environmental restructuring disassociates rural society and their cultural, social and economic relations from the land. Similar to what was argued in the last section, all the eco-spaces examined in the dissertation were essentially consumptive landscapes, as opposed to productive landscapes that are embodied in daily lives and given meaning. From this perspective, environmental policies, assessment and mandates operating in the Chinese administrative and spatial planning system have resulted in the loss of rurality.

6.4 Role of Spatial Planning and Design in Ecologization

6.4.1 Ecologization as Urbanization, Modernization and Civilization

The world urbanization rate, as commonly acknowledged by international organizations, is measured by the percentage of the population living in urban areas (World Bank, 2023). In China, the urbanization rate is also indicated by the percentage of urban (or non-agricultural)

population (National Bureau of Statistics, 2023). Over the past 10 years, 140 million of the rural population has become urban, resulting in an urbanization rate of 65.2% in 2023 (Qiu, 2023). The state has determined to further promote urbanization as the path to modernization and ecological civilization. According to the National Planning for the New Type Urbanization (2014-2020) issued by the State Council, urbanization is significant to the socio-economic development of the state, and it is necessary to further promote urbanization to achieve modernization, healthy economic growth, industrial structural transformation, to solve the three agricultural questions (agriculture, rural areas, and rural people) and to promote coordinated regional development (State Council, 2014). Therefore, in mainstream urban governance in China, increases in urbanization rate could be achieved by turning rural inhabitants into urban inhabitants in two ways, administratively transforming rural land into urban land, and reducing the rural population by relocation.

Furthermore, in state discourse, “urbanization is the only path to modernization” (K. Zhang, 2023). Recent changes in the Chinese countryside are officially characterized as a new type of urbanization (human-centered, environmentally friendly, modernized and rural-urban integrated) which emphasizes spatial optimization with cultural and environmental governance. Urbanization is the platform that supports and drives the progress of modernization: on one hand, the new type of rural urbanization will modernize millions of peasants, and transform urbanized rural areas as satellite towns of central cities forming spatial hierarchies; on the other hand, new forms of central cities, metropolitan regions and mega-urban regions will assist in developing a new regional development pattern (Steering Committee of the New Type Urbanization, 2022).

State discourse also stresses that Chinese-style modernization is the only right path towards national rejuvenation and that it is “a new form of human civilization” (Qiushi, 2023).

This new form of civilization is not only scientifically advanced and economically developed, but also culturally and ideologically progressive and deeply rooted in tradition, and is also characterized as distinctive from the Western style of modernization based on capitalism (Qiushi, 2023). Thus, this form of civilization is closely associated with the level of urbanization and modernization, exemplified by the Yangzi River Model (discussed in the last section) in which the less urbanized settlements of ethnic groups at the upper reaches of the Yangzi River are considered the most backward form of civilization, while the highly urbanized and modernized urban regions at the Yangzi River estuary are deemed the most advanced form of civilization.

In this logic, the greening and ecologization of rural landscapes through planning is essentially a form of state-led urbanization. As exemplified by the case studies of ecological conservation areas, greening and village layout planning, ecologization has resulted in the relocation of local communities into concentrated settlements as urbanites. Statistically, the reduction of rural population simultaneously indicates an increase in the rate of urbanization. Spatially, the relocation of village settlements allows for more optimized and ordered spatial layouts through planning and design, which not only led to the increased rate of urbanization and modernization, but has also led to a more civilized society (as intended by the authorities).

6.4.2 Ecologization as Environmental and Pro-growth Reconstruction of Urban Space

Ecologization is also a strategy to optimize urban layout by reconstructing the rural areas. As discussed in Chapter 1, since ecological civilization has become the leading political ideology, there has been great efforts from the central government in strengthening environmental governance, including institutional restructuring for environmental governance,

the amendment of the Environmental Protection Law, and the management of environmental implementation at the local scale through the cadre performance evaluation system. Meanwhile, regionally decentralized authoritarianism or fragmented authoritarianism (refer to Chapter 1) characterizes Chinese environmental governance as politically centralized and economically and administratively decentralized. Even though the central government stressed the great importance of environmental protection, economic development remains the priority for local governments (municipalities, counties, towns) because not only are local officials still evaluated based on their ability to bring about economic performance, but local governments are responsible for their revenues and expenditure due to fiscal decentralization. In recent years, some scholars have noted a significant increase in green and ecological spaces in recent urban development projects in China that aimed to reconfigure the built environment through ecological changes (F. Wu, 2012; L. Xie et al., 2019; F. Zhang et al., 2022; F. Zhang & Wu, 2022). This idea is also applicable to ecologization in rural areas as discussed in this dissertation.

Essentially, ecologization is intended to optimize the overall layout of urban territory. While there has been a significant increase in the number and area of eco-spaces in the countryside of the YRD region, they are part of wider regional schemes to optimize the layout and function of urban territory, and to increase the efficiency of land uses by relocating villages that were previously sparsely distributed for family-based farming. This was exemplified in the analysis of Village Layout Planning, Green Space Planning, and the construction of ecological conservation areas discussed in Chapters 4 and 5. Particularly in the village layout planning (refer to Figure 5.8 and 5.9 in Chapter 5), except for a few villages that will be preserved as demonstration of traditional culture or ecological civilization, village communities that are less developed or with less economic development potential will be relocated into concentrated

village settlements to increase urban land use efficiency. The ecological changes (either the spatial or aesthetic) brought about by the construction of eco-spaces, such as ecological conservation zones, eco-villages and green industrial areas, indicates a strong environmental consideration along with economic development, which may further intensify the ecologization process. In this way, ecologization works as a strategy to reconfigure urban territory through spatial planning and design that is legitimized by the construction of eco-spaces.

6.4.3 The Role of Spatial Planning and Design

6.4.3.1 High-modernist Planning and Aesthetic Governmentality

As evidenced from the case studies presented in Chapters 4 and 5, there is a co-existence of an authoritarian eco-modernist approach and an aesthetic approach to spatial planning and design in creating green visions for ecological civilization. In a recent post on the Qiushi website (Qiushi, 2023), the leading journal and online platform sponsored by the Communist Party of China (CPC) for disseminating official party theories, ideologies and information, a drone photo of Huayuan Village in Zhejiang Province (Figure 6.1) is celebrated as the model for Chinese-style modernization and rural revitalization. In this image, the ordered spatial organization of rural settlements, the green mountains in the background and aestheticized theme parks in the foreground confirm the idealized vision of a “brand new human civilization” that is built with both eco-modernist and eco-aesthetic strategies.



Figure 6.1 Huayuan Village, Dongyang Municipality, Zhejiang Province

Note. Huayuan Village is a prototype of Chinese-style modernization and rural revitalization in the countryside with a mix of high-modernist planning and an aestheticized amusement park. From Qiushi Journal website, 2023

(http://www.qstheory.cn/dukan/qs/2023-08/15/c_1129801509.htm)

On one hand, the authoritarian high-modernist planning approach is still dominant in China. High modernism refers to the ideology that relies on a technological fix or “rational engineering of all aspects of social life in order to improve the human condition” (Scott, 1998, p. 88). As discussed in Chapter 2, the dominant approach to environmental governance and planning in China, such as science-based ecological planning and ecological engineering, is based on the law of nature and ecological carrying capacity, and follows the technical and engineering logics indicating scientific, technical and engineering solutions and improvements to

the environment and society. Ecology is placed in the developmental logic, in which ecological knowledge and science is tied to an advanced mode of development.

Therefore, ecologization is a result of a functional land-use zoning approach to environmental and urban planning, which emphasizes the functions of ecology, i.e. the functions of ecological infrastructure, ecosystem services and ecological engineering as fundamental support for human inhabitation, agricultural and industrial production and ecosystems (S. Ma & Wang, 1984; Sun, 2013; R. Wang & Ouyang, 2012). In this developmental logic, an orderly spatial layout in the land-use zoning plan should also be functional, intensive and efficient. Namely, a plan should fulfill the functions of agricultural production, ecosystem services, farmers' livelihood, and economic development.

Meanwhile, any lag in environmental and economic development was attributed to the lack of orderly spatial development (Fan & Li, 2009). For example, a functional zoning approach to spatial planning has long been adopted in China to reorganize and legitimize intended spatial economic development (Fan & Li, 2009). This developmental logic indicates that further urbanization and modernization is the right path towards ecological civilization. By driving up environmental indicators and strengthening functions of ecological infrastructure and engineering, enhancement of the environment is synonymous with urbanization and modernization. This high-modernist planning approach to the environment through functional land-use zoning and environmental indicators, does not consider the cultural landscapes maintained by local environmental knowledge as ecologically or economically efficient and valuable. Furthermore, this approach has also quantified the properties of nature and ecology in the planning and management of land, and were easily manipulated in local implementation.

In the meantime, as mentioned in Chapter 1, ecological civilization should be realized with the building a beautiful China strategy (Xinhuanet, 2018). Namely, “beautiful” and aesthetically appealing is one of the key features of a great modern socialist country (Xinhua, 2018). Some scholars have discovered the aesthetic and ideological implications in spatial planning and design practices in achieving ecological civilization (Oakes, 2019b, 2019a; C. P. Pow, 2018; Rodenbiker, 2017). Exemplified in Chapter 4, eco-culture aesthetics and propaganda slogans were used to aestheticize and represent the achievement of cultural traditions and desirable ecological conditions. As discussed in Chapter 1, Spirn has pointed out the authoritative role of ecology in determining the correct way of planning and designing, to the extent that it echoes something akin to religious dogma. She also pointed out that there has been no agreement or definition on what constitutes truly ecological landscape design or planning, since the discipline was formed by various disciplines with conflicting ways of knowing the environment. As a result, planning or design could prioritize either the cultural perception of ecology, the aesthetics of ecology, or the science of ecology among other things. The authority and ambiguity of ecology (i.e. the unquestioned and easily manipulated features of ecology in landscape architecture and more widely in spatial design disciplines), have contributed to the adoption of spatial planning and design as political and ideological tools to spatialize environmental and cultural governance in China.

It is therefore argued that both technocratic and aesthetic approaches are deployed in spatial planning and design in China to achieve ecological civilization. These approaches are also largely subjected to the hierarchies of the administrative and spatial planning system. The complete reorganization of spatial forms into eco-spaces coincided with what Scott called “a truly radical break with history and tradition” to form a new hierarchical and collective social

order and rule, which ultimately aimed at extending complete political control over the land and society, irrespective of local geographical, social or economic conditions (Scott, 1998, p. 93; Shapiro, 2001).

6.4.3.2 Ecological Planning and Design to Harmonize Conflicts

First, spatial planning and design practices harmonize and mediate conflicts between state environmental protection policies and local economic development. These conflicts are harmonized through aestheticized ecological images which suggests environmental issues have already been addressed, while the functional land use zoning approach (exemplified by urban greening planning and village layout planning) promises that orderly spatial development will promote both environmental and economic development. Administratively, ecologization guarantees the local implementation of state environmental and ideological policies which harmonizes conflicts and competing interests arising from fiscal and administrative decentralization. Meanwhile, the land use zoning approach to greening and ecologizing rural landscapes also rationalizes land use optimization for economic development, which remains a key determining factor for economic competitiveness of local governments and career prospects of local officials.

Second, ecologization mediates the tension between rural and urban in the process of urbanizing rural landscapes. Discourse and practices of ecological civilization take on traditional ecological knowledge and philosophy while promising that ecologization and urbanization will civilize a backward rural society. Additionally, through culture-building (exemplified by aestheticized eco-culture), local villagers and the general public are educated about ecological civilization and are urged to consider the big picture of the country's environmental protection.

For example, networked culture disseminating infrastructure, such as the New Era Civilization Practice Centers and Digital Media Centers, were established mostly in rural settings to bring propaganda, education, and ultimately consensus at a grass-roots level (Qiushi, 2020). The consensus on ecological civilization is then further consolidated by strong statistical improvement in environmental and economic indicators brought about by rural urbanization, rendering it the only right path towards ecological civilization.

In short, the objectivity and ideology of ecology has rationalized the land uses imposed for environmental protection and legitimized rural urbanization through culture-building. In this way, the construction of eco-spaces not only functions to harmonize state-local and rural-urban conflicts, but also serves to assist in asserting the environmental and ideological mandates of the state.

6.4.3.3 The Role of Landscape Architecture in China

This dissertation has analyzed the interpretation of ecology in both planning and design projects through the discipline of landscape architecture. The research and analysis positions the idea of landscape ecology as central in the theories, methods, and practices of landscape architecture. As indicated in Chapter 2, the discussion of landscape architecture in this dissertation represents all spatial design disciplines in formulating eco-space projects because of the blurry boundaries among the disciplines, and that they work on similar eco-space projects.

Unlike American and European landscape architects, Chinese landscape architects have very limited roles in regional-scale planning and new urban development projects for regional ecological effects (D. Li, 2020). In China, landscape architects work primarily on urban green space system planning and site-level design of scenic areas, residential compounds, urban green

spaces, garden design and landscape engineering. The planners and designers interviewed for this study (refer to interview Group 1 in Appendix B) explained the scope and role of landscape architecture in planning. In regional-scale planning, landscape architects work on urban green space planning, a special planning process that is complementary and subordinated to a master plan. Following the land use planning in a master plan, urban green space planning rationalizes the whole city's land use by deciding on the spatial layout of green spaces, such as public parks, green belts, green buffers etc. When more green space is needed, urban green space system planning suggests urban expansion, which requires converting other land uses into urban green space land use. But since urban green space system planning is subordinated to the master plan, it is subject to the direction of the master plan. Urban green space planning provides evidence for spatial land use decisions for the government, but it does not have a legal effect, and does not have power over the final decisions on political or economic dimensions (Liu, personal communication, August 31, 2020; Wang, personal communication, September 20, 2020).

A retired professor and former senior planning official further clarified that urban green space system planning is also different from ecological planning (Li, personal communication, September 24, 2020). While urban green space system planning works with the land use layout of green spaces, ecological planning is more concerned with the materiality of ecological elements and landscapes, such as pollution management, biodiversity, ecological protection, and less about land use. Moreover, unlike urban green space system planning which works with urban land, ecological planning and ecological construction only involves non-urban land (a land use category). This explains why ecological construction projects are emerging mostly on rural land. Landscape architects in China also have a limited role in regional spatial planning or watershed planning. Regional scale planning project teams normally include some landscape

architecture professionals who give suggestions based on their specialised knowledge. However, only a small number of top landscape architecture experts may be selected for the regional planning committee who vote on the final scheme.

Landscape architects in China work primarily on site-level landscape design projects. As shown in the diagrams in Chapter 1 (Figures 1.5 and 1.6), site-level landscape design function at the level of a site plan. The site plan takes effect on the landscape by implementing and constructing higher level strategic plans. It operates on a detailed and local level guided by the master plan and regulatory plan. It is normally completed by landscape architects or design firms commissioned by local governments or by site owners, and goes directly into construction without having to be examined or approved by higher-level governments or experts.

Since the site plan is at the lowest level of the planning system, it must adapt to any type of factors from higher levels in the planning system, such as changes in national policies, socio-economic planning, land uses, local bureaucratic decision making and aesthetic requirements, local funding availability etc. Furthermore, top-down drivers of change are not necessarily from urban planning hierarchies, but also come from higher level policies or bureaucratic decisions, which force landscape architects to adapt. Thus, landscape architecture schemes are embedded in local power dynamics and have become an implementation tool for local officials to achieve both national and local level goals.

Since 2019, the Chinese spatial planning system has transformed to a territorial spatial planning system, combining various spatial planning schemes into just one planning scheme that concerns both the materiality of ecological elements and landscapes, and land use (refer to Chapter 1). However, the role of landscape architecture for designing site-level eco-spaces remains at the lowest level of the planning system (Figure 1.6 in Chapter 1). At the regional

planning scale, landscape architects are still not involved in the policy and decision-making process. While at the site level, they are still working on site planning, the lowest levels in the planning system. Evidence from the case studies confirms that eco-spaces were planned, designed and implemented through site plans and special plans that are largely subject to higher-level changes and power dynamics in the administrative hierarchy. In a word, landscape architects in China have limited roles in both regional ecological planning and site-level landscape design for the formulation of eco-spaces.

Furthermore, spatial design disciplines, including landscape architecture, adhere to strong forward-looking actions and practices that focus on future visions and solutions for managing the materiality (forms, functions, aesthetics etc.) of spaces and landscapes. The forward-looking nature of design disciplines is easily manipulated and politicized by planning elites for certain political or commercial purposes. As a result, spatial design disciplines are deployed in creating spaces that are conceived and governed to exclude certain social groups (J. S. Duncan & Duncan, 2001; N. Duncan, 2004), increase property prices (Gandy, 2013), create mainstream aesthetic norms for sustainability (Doherty, 2017; Laage-Thomsen & Blok, 2020), or govern spaces and society through aesthetics (Ghertner, 2015; Oakes, 2016, 2019a; C. P. Pow, 2018).

In contrast, the approaches from social sciences (especially urban geography) to space and landscapes, such as cultural geography and political ecology, critically ask the question of how and why the landscape transformation occurs in a specific place and time. In this perspective, space is considered the dynamic material outcome of various historical, cultural, social, economic, and political processes, bringing spatial contexts and power relations into any reading and analysis of spatial forms. In other words, while studying the same space or landscape, the spatial design disciplines engage primarily with forward-looking acts for future-

oriented solutions, purposes and visions, and work predominantly on the materiality of space or landscape, and are less concerned with historical dynamics working in the background of the appearance of a space or landscape. By contrast, the design approach to spaces in China holds the belief that designed spaces will lead to changes in spatial processes or human behaviors. The planning and design decisions made by spatial design disciplines could be informed by the social sciences approach to reading and analyzing spaces through the examination of various processes and factors occurring in the specific place and time.

6.5 Summary

In summary, this chapter provided an analysis of the strategies, purposes and implications of designed eco-spaces in China's rural area by answering the three research questions. First, as the chapter demonstrated, the imposition of eco-spaces in rural landscapes was employed to achieve environmental and ideological tasks assigned from the top-down. Second, by deploying a supposedly apolitical and unchallengeable ideology and science of ecology, ecologization serves essentially to reinvent the party-state by building a green image worldwide, by urbanizing, modernizing and civilizing backward rural spaces and rural society, while further strengthening its political legitimacy and ideological influence domestically. Third, this chapter also identified spatial design disciplines as implementation tools for restructuring spatial and social order and rules. The conflicting ways of knowing, the future-oriented practices (less concerned with historical factors), and the site-level status of landscape design without the meaningful input on wider spatial planning and environmental policies have resulted in the imposition of eco-spaces that did not consider pre-existing spatial and social conditions and caused the loss of rurality, social sustainability, and cultural landscapes.

Chapter 7: Conclusion- Is ecologizing rural landscapes sustainable?

7.1 Ecologizing the Rural Landscapes

While all levels of governmental environmental reports in China have suggested significant increases in environmental indicators, the fieldwork conducted in the rural area of the lower Yangzi Delta where the national prototype project for ecological civilization took place tells a different story. The dissertation adopted the term ecologization to conceptualize the widespread construction of eco-spaces in response to SDGs and ecological civilization policies, and provided a design perspective to examine landscape transformation in the Chinese countryside. The dissertation has contextualized ecologization in distinct environmental and cultural governance, local power dynamics and planning practices in China, and argued that rural areas have become the statistical and aesthetic fix for urban sustainability by challenging established ideas of applying development indicators and aesthetic norms as sustainable. The observations and arguments highlighted here for the YRD are broadly relevant to other rural-urbanization contexts in China, as are the implications of unregulated local implementation of SDGs, and critical reflections on spatial design disciplines in relation to the metrics and aesthetics of sustainability. The study has also provided a design perspective to examine the landscape transformation in rural China where a large part of state-led urbanization is implemented through spatial planning and design practices.

This study started on Google Earth during the COVID-19 lockdowns in early 2020, where patterns of designed ecological spaces were identified amid rural landscapes in the border region of Jiangsu Province, Zhejiang Province and Shanghai Municipality in the lower Yangzi Delta. During fieldwork conducted in 2020 and 2021, a mix of technocratic and aesthetic

strategies were identified in the process of ecologizing and reconstructing rural landscapes to achieve the national ideology of ecological civilization. Overall, this dissertation has demonstrated how designed eco-spaces in rural areas arose from multiple forces and emerged through grounded political intentions and planning practices. It further critically examined the apparently apolitical idea of ecology and its deployment through the authoritarian environmental state in its mission to create green imagery and space. In China, the phenomenon of ecologization is implemented through the international sustainable development agenda, the construction of ecological civilization, environmental protection, rural urbanization and revitalization strategies, and urban and rural planning. Ecologization operates within a complex network of incentives, interests, and sometimes conflicting power dynamics between different levels in the administrative hierarchy. It draws upon landscape aesthetics and landscape ecology sciences to create green images, as well as invoking traditional ecological philosophy for collective societal environmental value.

In Chapter 2, a framework was provided to conceptualize designed eco-spaces in rural China. First, this chapter showed that designed spaces in China could be conceptualized as conceived space and governable space. The concept of conceived space highlighted how spatial forms were largely designed by the government and planning elites, instead of arising from the lived experience of local communities. The concept of governable space rationalized governmental strategies, purposes, and outcomes in transforming spaces, which set up strong links between expertise and politics. This conceptualization of designed space highlights the top-down, strategic schemes intended to transform and control spatial forms and social order.

Second, ecology was identified as in service of legitimizing resource management, economic development, political ideology and ecological planning. Eco-metrics and other

indicators informed by ecological science are highly political, since they dictate what to measure, how to measure, and how frequently phenomena should be measured, and therefore determine what to sustain and what not to sustain. By their very nature, such measures also guarantee that further development will benefit the environment by driving up eco-metrics. Furthermore, as a global ideology, the measures, initiatives, and practices concerning sustainability and ecology are ostensibly rendered apolitical by the authorities, so that ecology takes on the role of unquestionable authority.

Third, rurality in the Chinese post-productivist rural space is maintained by village rationality, including collective institutional systems, land-based economies, local social and cultural relations, and local environmental knowledge. It is therefore argued that as long as village rationality is preserved, rurality would persist even when rural landscape, its functions, or agricultural activities no longer exist. This section argues against either the perspective of viewing rural spaces as functionally distinctively different from urban spaces and therefore measuring rurality with indicators; or the perspective of viewing rural and urban as fundamentally the same produced by globalized political economy processes. This social construction perspective of viewing rurality as maintained by village rationality recognizes the distinct localities of rural spaces in which interaction of political economic processes with local societies is materialized with unique forms of communities, landscapes, and culture. It contributes to the argument that the statistical and aesthetic fix for urban sustainability in rural China has caused the loss of rural spaces, rural communities, and rurality, and is not a sustainable practice.

In Chapters 4 and 5, the phenomenon of ecologizing rural landscapes was discussed based on data collected across several field sites. Two strategies—eco-culture aesthetics and eco-

metrics—were identified as devised by local officials to implement environmental and ideological tasks assigned from the top-down: First, eco-culture aesthetics composed new narratives illustrating the reconstruction of landscapes as a continuation of tradition while omitting the context of pre-existing rural landscapes and communities. Eco-culture is essentially an ideological concept which aims to form societal collective environmental value through the power of culture and ultimately build consensus on ecological civilization. Eco-culture aesthetics' practices have altered the historical and cultural narratives of the landscape, imitated spatial patterns of cultural landscapes, and aestheticized rural spaces with ideological messages.

Second, eco-metrics are achieved as top-down administrative tasks irrespective of spatial conditions. To ensure the successful measurement of eco-metrics, not only are remote sensing technologies manipulated, but strategies of disguise are sometimes adopted to deal with measurements and inspection. The effects of eco-metrics at the local level was categorized by three strategies: 1) urban green space planning was achieved mainly through calculative tasks allocated by administrative units; 2) prioritizing ecological construction projects that mobilized various governmental departments to facilitate “building before planning”; 3) village layout planning that radically restructured rural spatial and social order, and made room for potential eco-spaces and economic development, which ultimately drove up both environmental and economic metrics.

The dissertation draws attention to the technocratic and aesthetic strategies of ecologization that promotes great increases in environmental indicators and green imageries while causing tremendous loss of rural landscapes, rural communities, rurality in general, and compromises social sustainability. The remainder of this concluding chapter will examine the further significance and implications of this study.

7.2 Significance, Implications, and Further Research

7.2.1 Ecologization as Urbanization, Modernization, and Civilization

A key argument in the dissertation is that ecologization cannot be adequately understood as solely local implementation of sustainable development, environmental protection, eco-tourism, or rural urbanization in the Chinese rural spaces. It is a form of urbanization, modernization, and civilization, which is embedded in distinct environmental and cultural governance in response to global sustainable development agendas, national ecological civilization policies, local power dynamics, land politics and planning practices in China. Critical of the scientific and aesthetic norm that views eco-spaces as ecological and sustainable, this study examined how this ecologization phenomenon in China is attached to the complexities of global-local environmental politics, and contributes to the critique of green, ecology and sustainability as universally beneficial (Angelo, 2019).

In fact, ecologization efforts in rural areas in China are built upon the interplay between environmental protection and urbanization. From the rationality of the government, ecologization provides a green image for the state to present to the world, fulfils internationally acknowledged environmental indicators of sustainable development and ecological civilization, all the while promoting further urbanization and modernization by acquiring rural land and transforming rural villagers into urban inhabitants. It is a form state-led urbanization that is formulated through the utilization and manipulation of statistics, namely, by decreasing the proportion of people living rural areas, increasing the areas of eco-spaces, and creating more room for economic development – all characterized as sustainable – irrespective of pre-existing social and spatial conditions.

Because of the ideology and perceived objectivity of ecology, ecologization also harmonizes political and territorial conflicts between rural and urban through intensified cultural governance that portrays ecologization and urbanization as a demonstration of civilized and modern living conditions. In a way, while rapid and extensive urbanization in China has created serious environmental and social problems, such as social inequality, resource depletion and environmental degradation, ecologizing rural landscapes has become a fix for urban sustainability issues, while it legitimizes further promotion of urbanization and modernization. As a pilot project, eco-spaces constructed for the green and ecologically integrated development for ecological civilization have dramatically transformed the social and spatial fabric of densely populated rural landscapes in the YRD region. As argued by Scott (1998), “political elites—particularly authoritarian high-modernist elites—typically begin with changes in the formal structure and rules” (p. 255). Implemented through planning and design schemes, ecologization as spatial restructuring aims to further restructure social order and rules by making a complete break with history and tradition whilst reconstructing anew. It is therefore argued that ecologization has transformed rural spaces from lived space to designed space, which is conceived by planning elites as the intended restructuring of social order by the authorities.

Another significant contribution of the dissertation is to shed light on the strong cultural governance techniques implicated in environmental protection and rural urbanization by examining the ideological and political role of eco-culture aesthetics. The analysis has highlighted the differences between eco-culture aesthetics (which aims to build collective environmental values and a code of conduct through designed aesthetics, propaganda, and education) and ecological aesthetics (which simulate the aesthetics of biodiversity or wilderness). A key argument of the dissertation is that eco-culture aesthetics is a symbolic instrument of

political authority that aims to create societal consensus on ecological civilization and reassert the ideological hegemony of the party-state while legitimizing further development.

This study is timely. Ecologization as a form of environmental remedy to support urbanization will soon be widely applied as a model across rural China, causing great loss of rural cultural landscapes, rural communities and rurality as a whole. It is a top-down, authoritarian form of environmental governance and urbanization that excludes local villagers' participation in the decision-making process irrespective of social sustainability, spatial conditions, or ecological functions. In a way, ecologization assists environmental protection by driving up eco-metrics, promoting urbanization by acquiring rural land and reducing the rural population. It achieves modernization by optimizing land uses, and envisions a civilized society by aestheticizing green images. It is argued that even though an authoritarian state like China “would have the capacity to mandate the environmental policies necessary to ensure planetary survival” (Humphrey, 2013, p. 427), this form of authoritarian environmentalism without democratic participation and consideration of social sustainability is an unsustainable practice.

7.2.2 The Role of Planning and Design in Eco-spaces in China

Both the statistical and aesthetic fix for urban sustainability was implemented in rural landscapes through spatial planning and design practices. In so far as some scholars have identified that spatial planning and design projects in China can be deeply implicated in spatial and cultural governance (Oakes, 2016; C. P. Pow, 2018; Rodenbiker, 2017), this dissertation contributes to this discussion by highlighting the role of spatial designs in the implementation of eco-spaces to explain how such expertise in reorganizing and realizing spatial forms is deployed to achieve the state's environmental and ideological goals. The dissertation has conceptualized

designed spaces as conceived and governable space that are formulated by planning elites for spatial governance purposes, and argued that rural spaces in the case studies have been transformed from lived space to designed space through planning and design practices. That is, even though some eco-spaces have imitated the aesthetics of cultural landscapes, natural wetlands or rural idyll, they are designed by planning elites to transform spatial and social order, and are not lived spaces produced by local communities. In this top-down authoritarian approach to spatial transformation, the planning elites hold decision-making and authoritative power over the reorganization of spatial forms, social order, and rules. Therefore, in the process of ecologization in China, landscape planners/designers as well as spatial design disciplines are directly involved in spatial and cultural governance.

The research further demonstrates that the authority of ecology is implicated in planning and design practices as landscape aesthetics and landscape ecology. However, as discussed in Chapter 2, there has been no agreement or definition on what constitutes truly ecological landscape planning or design, which has resulted in an ongoing debate over theories, methods, materials, and styles. As evidenced in the case studies, the ambiguity around the definition of ecological planning or design allows for the political deployment of ecological aesthetics and statistics as unquestioned political power in achieving sustainability.

In addition to the ambiguous definition of truly ecological planning and design, spatial design disciplines also tend to celebrate strong forward-looking and future-oriented practices. As an implementation tool that produces conceived spaces led by aesthetics and science, this approach in China largely disregarded historically and socially produced lived spaces. In other words, planners and designers tended to overlook the historical and social processes that produced spaces by imposing aestheticized or science-based schemes, which either provided

solutions to pre-existing issues or guided changes with new spatial forms. In this way, the authenticity of these designed eco-spaces is questionable since they are spatially and socially disassociated from the surrounding rural landscapes (Gandy, 2013). Only by in-depth research and consideration of historical, contextual, and social processes, can spatial design disciplines make a significant contribution to achieving authentic SDGs that not only appear to be statistically and aesthetically sustainable, but that are genuinely ecologically, socially, and culturally sustainable.

The dissertation also argues that in China, landscape architecture or any of the spatial design disciplines that handle ecological planning and design should have substantive policy-making power in regional ecological planning, and should be independent from the local administrative hierarchy, local land politics and the spatial planning hierarchy. The dissertation demonstrated that eco-spaces are only formulated as special plans and site-level landscape design projects (site plans) that are at the lowest level in the Chinese spatial planning hierarchy and without legal power. In other words, expertise in the formulation and design of eco-spaces is not involved in the decision and policy-making stages of planning, and it is also subordinated to the master plan and largely subject to the interests and power relations of local authorities in local land politics. Moreover, even though the regulations of territorial spatial planning guarantee the integrity of ecological redlines, this alone does not guarantee the integrity of ecological decision-making processes and functions at a regional scale. Therefore, to ensure ecological processes and functions for sustainable development and ecological civilization, ecological planners/landscape designers should be leading regional ecological planning, and should be actively involved in policy making that is responsible for social and environmental sustainability, independent from the administrative and spatial planning hierarchy, and local land politics.

7.2.3 Local Implementation of Sustainable Development Goals

Following the arguments from previous sections, it is evident that local implementation of sustainable development has encountered a great diversity of local contexts, strategies, and political dynamics. However, according to *Our Common Future* report, “no single blueprint of sustainability will be found, as economic and social systems and ecological conditions differ widely among countries. Each nation will have to work out its own concrete policy implications” (WCED, 1987, para. 51). The assessment and implementation of mainstream sustainability agendas (for example SDGs) are based on scientific, objective, and measurable indicators of social, economic, and environmental sustainability, which are comparable and manageable, but which can also be manipulated.

This dissertation has penetrated below the supposedly apolitical idea of ecology in achieving sustainable development, and historicized, contextualized, and, indeed, politicized designed eco-spaces in rural areas in China. A key approach highlighted here was to analyze planning and design strategies by revealing spatial production processes and governmental rationalities in implementing sustainability indicators on the ground. In this respect, it will be helpful to conduct further comparative work to examine how sustainability indicators have been implemented in other countries under different socio-economic systems and geographical conditions. Going beyond individual case studies, comparative research that examines regional, cultural, national, and geographical variations in the dynamics of implementing environmental sustainability could inform more integrated and critical implementation guidelines that enable ecological functions, and which ensure social responsibility and genuine sustainability, especially for authoritarian forms of environmental governance.

7.2.4 Limitations of Study

This study has limitations. First, due to Covid-19 restrictions, face-to-face interviews were prohibited by the terms of Human Research Ethics. As a result, the semi-structured interviews were all conducted online. Particularly, local villagers from the case study sites were not able to be interviewed on-site to gain their first-hand understanding of the implications of eco-spaces on villagers' everyday lives, rurality and social sustainability. Therefore, these implications were discussed in relation to site observation and documentation, field notes, planning documents, online media, online discussion forums, academic sources and interviews with planners/designers.

Second, face-to-face interviews with local officials, planners and designers who were responsible for the case studies could not be conducted (apart from one local official randomly encountered and informally interviewed on site, as discussed in Chapter 3). Instead, the three groups of interview participants were recruited from those involved in the implementation, measurement and research of eco-spaces in the YRD region or more widely in China, and not necessarily involved in the implementation of the case studies. Evidence collected from these informants was used to explain the administrative and technical mechanisms in implementing eco-spaces in China, since the hierarchy of the planning system, the remote sensing techniques and environmental indicators adopted are generally consistent in the whole country.

Third, even though the YRD region is a national prototype for green and ecologically integrated development, the strategies and implications of ecologization in the rural areas of the YRD cannot be generalized across China due to variations in the cultural, social, economic, geographical and administrative contexts. What can be inferred from the dissertation is that the phenomenon of ecologization will be adopted in other parts of China to achieve environmental

and ideological mandates, and that it will impact on rural sustainability. The strategies and implications of ecologization in other parts of China will have to be further examined in comparative research.

Fourth, the role of spatial design disciplines discussed in the dissertation cannot be generalized across China. The dissertation also does not generalize the role of spatial design disciplines in other planning and design projects. The analysis and discussion referred only to the practices in the eco-spaces that could be observed and information collected from the fieldwork as examples of environmental and ideological tasks assigned from the top-down.

7.2.5 Further Research

Despite these limitations, this dissertation has laid the foundation for further investigation of the following issues:

First, as a national prototype for material outcomes of ecological civilization, the phenomenon of ecologization in the YRD region may soon be widely applied across China. Therefore, further comparative work could be done to examine the strategies, mechanisms and implications of constructing eco-spaces in various cultural, social, economic, geographical and administrative contexts in other parts of China. The phenomenon of ecologization in China can also be studied in comparison to different contexts in other countries, since each country has to come up with their own implementation policies or guidelines for sustainable development goals, and each country has to deal with its own power dynamics, administrative hierarchy and land politics in implementing indicator-based SDGs and aesthetic norms.

Second, the cultural impacts of rural transformation to achieve SDGs or ecological civilization in China should be evaluated in relation to the rural infrastructure improvements (e.g.

wastewater treatment, drinking water protection, waste collection, recycling, alternative energy, erosion control, etc.) to evaluate the authenticity of sustainable development in rural areas. Third, the roles and feasibility of spatial design disciplines to achieve indicator-based SDGs and genuine sustainability should be further examined. The strategies and methods to plan or design genuine ecological, social and cultural sustainability could be better informed by in-depth examination of the multiple internal and external historical factors, especially in rural areas where sustainability was normally not planned or designed but maintained through local cultural practices based on local environmental knowledge and specific geographical conditions.

Fourth, by identifying the various implications of ecology adopted in implementing sustainability, this dissertation advocates for further critical research to challenge the supposedly apolitical buzzword “ecology”, as well as “green” and “sustainability” by examining their meanings, interpretations and implications in sustainable development policies, discourse and practices. Furthermore, further research on the methods of measuring, evaluating and implementing authentic sustainable development will inform policy-making that enables ecological functions and ensures social responsibility.

Fifth, even though top-down approaches to planning and design have been and will continue to be predominant in China, further research could explore the adoption of participatory and community-based approaches to planning and design in local-level projects, especially in rural areas where local villagers could contribute to and strengthen sustainable development with their local environmental knowledge, land management methods and local institutional organization. This type of participatory approach that involves local communities in the planning and design process could be further explored as an extension of village collective responsibility and social coordination/cooperation under centuries of village self-governance in China.

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Appendix A: Approval for Human Participant Research

The certificate of approval attached below was renewed for one year to 02-Mar-2023.



Office of Research Services | Human Research Ethics Board
 Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
 T 250-472-4545 | F 250-721-8960 | uvic.ca/research | ethics@uvic.ca

Certificate of Approval

PRINCIPAL INVESTIGATOR	Andrew Marton (Supervisor)	ETHICS PROTOCOL NUMBER	19-0540
PRINCIPAL APPLICANT	Yucong Zhang PhD student	Expedited review - delegated	
UVIC DEPARTMENT	Pacific and Asian Studies PAOR	ORIGINAL APPROVAL DATE	03-Mar-2021
		APPROVED ON	03-Mar-2021
		APPROVAL EXPIRY DATE	02-Mar-2022
PROJECT TITLE Implementing Ecological Civilization in China's Lower Yangzi Delta: A Case Study of the Aesthetics of Sustainability			
RESEARCH TEAM MEMBERS None			
DECLARED PROJECT FUNDING None			
DOCUMENTS INCLUDED IN THIS APPROVAL Interview questions.pdf - 04-Mar-2020 Recruitment email script_Yucong Zhang_revised_new.pdf - 24-Feb-2021 Consent_Form_Yucong Zhang_revised_new.pdf - 24-Feb-2021			
CONDITIONS OF APPROVAL			
This Certificate of Approval is valid for the above term provided there is no change in the protocol.			
Modifications To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol.			
Renewals Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.			
Project Closures When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.			
Certification			
This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Participants.			
_____ Dr. Rachael Scarth Associate VP Research Operations			

Certificate Issued On: 03-Mar-2021

Appendix B: Interview Questions

Group 1

For planners and designers, the questions were mainly focused on understanding what their role in planning for ecological and environmental purposes is, whether landscape architects have decision-making power in these processes, and how they interpret environmental policies:

- Since the ecological civilization index system has been adopted by municipalities to set up environmental goals in planning, who is in charge of setting up these goals? How is the spatial layout of increased green spaces decided and who is in charge of making the decision?
- What is the relationship between green space planning, ecological specialized planning, and the master plan? Are green space planning and ecological planning legally recognized? Are they able to change land uses or urban spatial structures?
- Except for green space planning, what's the role of landscape architects in ecological planning, the urban-rural master plan, and regional planning?

Group 2

For remote sensing technicians, questions were targeted at understanding how statistics in official reports and documents were acquired:

- How are the statistics in reports/documents measured and processed?
- Who is involved in the process of assigning tasks, measuring, and data processing?
- Each province, municipality or district has annual goals for environmental indices, what happens if the goals are not reached?

Group 3

For landscape ecology scholars, the questions aimed at identifying any gap between landscape theories and practices in China:

- Which landscape metrics could be used to evaluate or measure ecological services?
- How are these quantified indices measure in relation to actual ecological improvement in the environment?
- What is the role of landscape ecology in ecological planning, green space planning, or the master plan? Are green space planning and ecological planning legally recognized? Are they able to change land uses or urban spatial structures? (this question is partially the same as the second question for planners and designers).

Appendix C: Email Recruitment Script

(This script is delivered in Chinese)

Dear (name of participant),

My name is Yucong Zhang. I am a PhD student at the University of Victoria in the Department of Pacific and Asian Studies. I am contacting you to see if you might be interested in participating in a research study. This research is being done as part of my PhD project. The focus of the research is the roles of various stakeholders and visualization measures used in” the Yangzi River Delta region integration planning scheme”.

Participation in this study would take approximately one hour of your time for an interview either in person or over the phone. The interview will involve answering questions and giving insights regarding the aesthetics and visualization measures used in communicating the idea of Ecological Civilization.

I would like to assure you that the study has been reviewed and received ethics clearance through the University of Victoria Human Research Ethics Committee. Your participation is completely voluntary.

If you are interested in participating, please contact me at zhangyucong@uvic.ca.

If you may know someone who is involved in this planning scheme or know well how this planning scheme operates, please feel free to forward my email or contact me directly.

Sincerely,

Yucong Zhang