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Understanding the structure and complexity of regional greenway governance in China

Abstract

Regional greenway implementation requires a complex governance structure to deal with regional-local, cross-jurisdictional and cross-sectoral relations. This paper explores how these three inter-governmental relations are shaped by different governance structures and how they influence regional greenway implementation outcomes. An analytical framework was proposed considering four structural factors (size, specialisation, order and anarchy) and China's inherited *tiao (vertical)-kuai (horizontal)* system of authority. By analysing a case study project with evolving governance structures over time, the paper reveals that a more powerful, sectorally-specialised, autonomous and inclusive local coordination office is ideal to foster institutional linkages within administrative jurisdiction, between adjacent governments, and across government hierarchy. These links are essential for efficient and integrated greenway implementation in city-regions.

Keywords: Regional greenway; Governance structure; *Tiao-kuai* governance; Inter-governmental relations; City-region planning; China

1 Introduction

Regional greenways are large-scale connected passages and/or open spaces that accommodate multiple functions in both humanistic and ecological terms (Searns, 1995; Erickson, 2004). These multiple functions include passages that provide people with access to open space and link together the rural and urban American landscape (President's Commission, 1987), and ecological infrastructure, biotope networks or ecological corridors which help conserve European species and habitats (Jongman and Pungetti, 2004). Over the

years, numerous greenway projects have been launched in city-regions which encompass multiple political jurisdictions (Hoover and Shannon, 1995), as well as in bioregions "definable by natural boundaries with a geographic, climatic, hydrological, and ecological character" (Thayer, 2003). Despite that regional greenway projects differ in their objectives, geographical conditions and institutional contexts, their large spatial extent has brought in regional-local, cross-border and cross-sectoral challenges and invited interrogation to the governance issues (Hoover and Shannon, 1995; Erickson, 2004; Ryan, Fábos and Allan, 2006).

It is recognised in the governance literature that inter-governmental relations at/across various administrative levels have a considerable impact on regional outcomes (e.g., Peters and Pierre, 2001; Willi, Pütz and Müller, 2018; Yang and Han, 2020). However, scholarship in the area of greenway studies has largely ignored the dynamic horizontal relationships among administrative jurisdictions and their agencies (e.g., Erickson, 2004). Besides, much less is known about why inter-governmental interactions happen the way they do. The more recent organisation-theory-based approach to public governance by Egeberg and Trondal (2018) emphasized the importance of structural factors (i.e., size, specialisation, order of structure and organised anarchy) in shaping governance processes and outcomes. Their approach sheds light on the governance structure that is a key variable in influencing inter-governmental relations, and provides a new perspective to examine the mechanisms by which the structure and inter-governmental relations are connected. This study focuses on the structural factors and interrogates: How are inter-governmental relations shaped by governance structures? How do inter-governmental relations influence regional greenway implementation outcomes?

This paper is organised into six sections. Section 2 reviews the literature. Section 3 presents the conceptual framework. Section 4 introduces the Central Zhejiang Greenway Project

(CZGP) and data-collection methods. Section 5 examines how governance structure affects the governance of the CZGP through working on inter-governmental relations. Sections 6 discusses the findings and concludes.

2 Literature review

There is an increasing recognition that government agencies are the main, if not the only, facilitators in developing interconnected greenway networks (Erickson, 2004), which may include trails and ecological corridors with or without recreational access. This section reviews inter-governmental relations in greenway practices, inter-governmental conflicts in China, and Egeberg and Trondal's structural solutions to the conflicts.

2.1 Towards effective regional greenway governance: three dimensions of inter-governmental relations

For greenway projects at a regional scale or a bioregional scale, their operation across an array of administrative units needs effective inter-governmental relations. Three aspects of inter-governmental relations are frequently cited as preconditions to effective greenway governance: regional control, inter-departmental collaboration and cross-jurisdictional coordination (Erickson, 2004; Ryan, Fábos and Allan, 2006).

2.1.1 Regional control

Regional control deals with diverse geographical areas and influences the strength and coordinateness of the overall greenway system (Erickson, 2004; Ryan, Fábos and Allan, 2006). Weak and poorly-coordinated greenway projects exist for multiple reasons. Many emerge as grassroots efforts at the local level (Fábos, 1995), thus lacking regional control in the first instance. The regional agency might merely work as an advisory body without land-use planning authority, resulting in the absence of a metropolitan greenway plan (Taylor, Paine and FitzGibbon, 1995). Even with a regional greenway plan, the lack of a regional

regulatory structure may lead to the implementation being accomplished locally, rather than regionally, as illustrated by many greenway projects in Chicago (Erickson, 2004).

Erickson (2004) identified three models of governance structures in terms of regional control, namely, centralised, moderate and decentralised. In the centralised model, a regional entity has overall control over implementation, resulting in better inter-jurisdictional coordination and a larger funding base. However, the implementation may be hampered due to a lack of grassroots support and local municipalities' conflicting goals. The moderate model features shared responsibility among regional and local governments, but cooperation among jurisdictions is not compulsory. In the decentralised model, regional agencies are advisory bodies while local governments are key implementers. Greenways are therefore developed at a manageable scale, but may not link to their neighbours due to absence of a shared vision. These three models provide important insights into the vertical relationships between regional and local governments, but have largely ignored the dynamic horizontal relationships between local agencies as well as jurisdictional administrations.

2.1.2 Inter-departmental collaboration

Inter-departmental collaboration is critical for developing regional greenways which cut across diverse departments and lines of authority. For national and regional departments responsible for policy-making, collaboration among them is essential for greenway plans to be aligned with other priorities and policies, such as urbanisation, transport development, land use, and environmental protection. In the Chicago metropolitan area, for example, the Chicago Department of Transport, the Chicago Park District, the Department of Housing and Economic Development, and the Trust for Public Land collaborated on preliminary design work for the Bloomingdale Trail (City of Chicago, 2012). Coordinating specific mandates among local units of government, on the other hand, contributes to a smooth greenway implementation process. For example, the revenue source for the Susquehanna Greenway

Project in Pennsylvania came directly from existing local department programs as part of annual budget contributions (Susquehanna Greenway Partnership, 2006).

Two approaches to cross-sectoral collaboration can be found in greenway studies: hierarchy and network. The hierarchical approach represents a highly centralised way to produce collaboration with the impetus coming from the top (Peters, 1998). For example, the cross-sectoral greenway coordinating body in Singapore, the Singapore Garden City Action Committee, is not only under the chairmanship of National Parks Board, but it reports directly to the Prime Minister who utilises authority and command to achieve effective collaboration among different central agencies, such as Singapore Land Authority and Land and Transport Authority (Tan, 2006; Olivia, 2012). This hierarchical approach could minimise the degree of conflict within the public sector (Tan, 2006) and reduce the transaction cost of collaboration (Alexander, 1993), but is less effective when individual agencies have little motivation to cooperate, especially in contemporary society where governance stresses decentralisation and participation (Peters, 1998).

Collaboration through a network, on the other hand, relies on the deliberation of public officers and societal stakeholders (Kraak, 2012). In New England, for example, non-governmental organisations (NGOs) play an important role in creating and facilitating partnerships with state government agencies which administer many of the funding resources for greenways (Ryan, Fábos and Allan, 2006). Informal arrangements between government agencies may contribute to coordinated efforts based on trust and communication rather than on forced undertakings.

2.1.3 Cross-jurisdictional coordination

Coordination across diverse local jurisdictions aims at the overall greenway connectivity. Without cross-jurisdictional coordination, greenway policies are fragmented and greenway

practices may vary widely throughout a region. Poor coordination among jurisdictions may be caused by a lack of coordinated plans at the local level, as illustrated by many grassroots greenway projects in North America where centralised planning is less common (Ahern, 1995). In the Milwaukee region, for example, greenways are viewed as individual projects rather than an integrated regional network because cities and counties act in isolation from each other (Erickson, 2012). In countries with a centralised planning system such as China, coordinated greenway plans are always in place, but fragmented implementation may ruin the coordination efforts at the local level (Liu, Lin and Zhao, 2016). A healthy balance between centralised power and local efforts seems necessary to the realisation of a shared greenway vision.

2.2 Inter-governmental conflicts in Chinese regional greenway governance

Three sets of structural conflicts present a challenge to effective regional greenway governance in China. These conflicts are regional-local, inter-departmental and cross-jurisdictional. Regional-local conflicts are a significant barrier to regional control; inter-departmental conflicts may lead to poor collaboration within a territory; and cross-jurisdictional conflicts may result in poor coordination across territories.

In the Chinese language, there are vivid terminologies to describe the cross-hatching of authorities: the vertical systems of government sectors are called lines (*tiao*), while the horizontal territorial governments at various levels are called pieces (*kuai*) (Lieberthal, 1995) (Figure 1). Relationships within the *tiao-kuai* administration system can be categorised as leadership relations or professional relations. Where leadership relations apply, the superior unit can issue binding orders to its subordinate. Professional relations exist among units in interrelated areas. In such instances, the superior agency can only issue non-binding directives to its subordinate agency (Mertha, 2005).

INSERT FIG. 1 HERE

Figure 1. Inter-governmental relations in Chinese *tiao-kuai* administration system

2.2.1 Regional-local conflicts in Chinese greenway development

The governance structure of greenway implementation in China is marked by a strong top-down political mobilisation. A three-level governance structure is often observed, including city-region, municipal and sub-municipal (i.e., district, county and town) governments (Chung, Zhang and Wu, 2018; Liu *et al.*, 2019). The Pearl River Delta Greenway Project, for example, was planned at the provincial level, organised at the municipal level and implemented at the sub-municipal level (Liu, Lin and Zhao, 2016).

Several authors believe that the centralised system can boost implementation efficiency (Liu, Lin and Zhao, 2016), achieve regional uniformity (Yu, Li and Li, 2006) and rebuild regional regulation which has been undermined in the post-reform process of decentralisation (Xu and Yeh, 2012). However, budgetary and resource constraints at the local level cannot be overlooked. As municipalities and/or townships need to fund greenways through their own revenue sources, they may lack the budget to implement the extensive plan (Zhang, Chung and Yin, 2019). Besides, localities are obliged to secure land for greenway development, but they are strictly regulated by an annual land quota on converting rural land for development (Chung, Zhang and Wu, 2018). Confronted with these barriers, local governments may not take the regional greenway directive seriously.

2.2.2 Inter-departmental conflicts in Chinese greenway development

In Chinese *tiao-kuai* system, direct interactions among different functional units at the same administrative level are rare. Guangzhou Land Department, for example, may find it difficult to establish formal, direct ties with Guangzhou Construction Department, as these are part of different functional hierarchies. Conflicts among government agencies can arise from differences in guidance from their respective functional supervisors (Sinkule and Ortolano,

1995). For example, a city-level land resources department may not approve a greenway project when it involves the consumption of the annual land quota which is strictly controlled by the provincial land department. Nevertheless, attempts have been made to foster cross-agency partnerships in delivering regional greenway projects. Jin and Jiang's (2012) study of the Pearl River Delta Greenway Project shows that city-level inter-departmental committees enhance interaction and coordination among participants; however, effects are modest as these committees exist temporarily without strong legislative and financial support.

2.2.3 Cross-jurisdictional conflicts in Chinese greenway development

Competition arises among different jurisdictions because the fulfilment of greenway mandates in China is often seen as special governing performance that may influence local cadres' career prospect. In the Pearl River Delta Greenway Project, for example, local governments compete over greenway length under the length-oriented greenway assignment and evaluation system (Liu, Lin and Zhao, 2016). Yet, despite the existence of such conflicts in greenway development, there is a paucity of formal mechanisms to resolving them (Moore, 2014). Alternatively, informal bargaining among jurisdictions has indeed been an important strategy to resolve cross-jurisdictional conflicts, together with the intercession of higher-level governments (Lieberthal, 1995).

2.3 Inter-governmental conflicts and meta-governance

Egeberg and Trondal (2018) proposed the meta-governance model as a solution to inter-governmental tensions. The logic underlying the model is that meta-governance through (re)designing governance structure can systematically affect governance processes by mobilising attention and action capacity around particular lines of conflicts, and creating conditions for horizontal and vertical coordination (Egeberg, 1999; Egeberg and Trondal, 2018). Four dimensions of governance structure are identified as generic and meaningful to explaining organisational behaviour. They are size, specialisation, order of structure and

organised anarchy. Size represents the number of staff positions, which indicates the capacity of an organisation to develop policies and implement them. The size dimension represents the extent to which political attention has been mobilised around certain fields. Egeberg and Trondal (2018) acknowledge that recruiting more employees gives an agency the capacity of dealing with inter-governmental problems.

Specialisation expresses how tasks are distributed among different units within an organisation. The choice of specialisation principle can largely decide what kinds of inter-governmental conflicts the leadership will be confronted with. Governance structure based on territorial specialisation, for example, implies that tasks are implemented via a set of territorially delimited units. Such structure encourages policymakers to focus on intra-territorial policy coordination, so that various sectoral concerns will be considered coherently within territorial units; however, it may trigger conflicts across such units. Implementing policies via a set of sectorally delimited units (i.e., sectoral specialisation), on the other hand, is supposed to foster standardisation within a particular policy field (e.g. transport, education) across territories, but inter-departmental collaboration may suffer (Egeberg and Trondal, 2018).

Order of structure describes whether individuals' affiliated organisation makes up their primary or secondary structure. The primary structure is the structure to which actors tend to devote most of their time, energy and loyalty, such as a ministry or government department. A secondary structure is where actors are part-timers because they have another organisation as their primary structure. The structural order matters because it is supposed to have a clear behavioural consequence. Secondary structures such as inter-departmental committees and regional networks composed of neighbouring cities are supposed to ease inter-governmental tensions and enhance coordination. However, effects of such secondary structures are usually modest as they cannot shape individuals' actions to the same extent as primary structures do.

Organised anarchy describes a situation where actors, problems and solutions ~~not only~~ move across organisational boundaries in a relatively frictionless way~~, but do so in a highly organised manner~~. Organised anarchy is seen as a positive feature that may facilitate innovation as a range of actors from different units communicate more often. It may even limit corruption since corruption tends to thrive better in closed and homogeneous structures than in open and unspecialised ~~organised~~ ones.

Egeberg and Trondal's four structural dimensions provide a new perspective for studying inter-governmental conflicts in regional greenway governance and finding out structural solutions to address the conflicts.

3 A conceptual framework for greenway governance in China

China has an authoritarian governance structure characterised by functional and territorial fragmentations. Figure 2 presents a conceptual framework proposed to guide the analysis.

A set of local coordination offices (LCOs) are responsible for local greenway implementation from inception, through construction, to management. These LCOs sit in the Chinese *tiao-kuai* administration system and interwoven into the one-to-many, i.e., one central government to many local governments, and the many-to-many, i.e., many ministries to many bureaux/departments relationships. The central-local tension has emerged due to the continuity of decentralisation and the resurgence of recentralisation (Han, 2000; Li, Xu and Yeh, 2014; Yang and Han, 2020). Since the economic reform, controls over revenue and expenditure have been progressively transferred to sub-national agents (Walder, 1992). This fiscal decentralisation has been partly undermined by the 1994 reform which re-centralised the majority of revenue collection while keeping expenditure mainly in the hands of local governments (Pan *et al.*, 2017). Overall, however, sub-national agents have gained real

autonomy which enables them to pursue local interests and protect themselves against conflicting demands from higher levels (Moore, 2014).

Horizontal conflicts at the same administrative level may also present some challenges to regional greenway implementation. A typical type of horizontal conflict exists between different sub-national governments (*kuai*) which may have divergent preferences. Such '*kuai-kuai* conflict' has been stimulated by economic decentralisation because local agents would use their increasing administrative power to protect their market and resources (Wei, 2013). The centralised cadre management system further triggers inter-jurisdictional competition for better economic performance (Lin and Zhang, 2015). However, there is a general lack of formal mechanisms to resolve disputes and forge horizontal partnerships between cities, as a result of China's strong legacies of state socialism which values hierarchical linkages and neglects horizontal networking (Xu, 2008). Another type of horizontal conflict is those between different government sectors (*tiao*). These '*tiao-tiao* conflicts' are largely due to conflicting demands from higher levels within different functional areas (Sinkule and Ortolano, 1995).

The above inter-governmental conflicts associated with the *tiao-kuai* system have manifested themselves in regional greenway development. LCOs, as the coordinating bodies for local greenway implementation, have deliberately redesigned their governance structure to address, or at least ease these inbuilt conflicts. This study focuses on four dimensions of LCOs' governance structure: *size, specialisation, order of structure, and organised anarchy* (Egeberg and Trondal, 2018). Specifically, size refers to the sheer number of positions in LCOs involved in the greenway project; specialisation expresses how greenway tasks are distributed among diverse units; order of structure represents whether LCOs constitute actors' primary or secondary structure; and organised anarchy means the structure of LCOs is open for actors and resources to move across organisational borders in a relatively frictionless ~~and~~

~~organised~~ manner. Each of the four structural dimensions is mapped onto three sets of inter-governmental relations that are crucial to the outcomes of regional greenway governance: regional-local relation, inter-departmental relation and cross-jurisdictional relation. The governance outcomes feed back to the governance structure as an evolving meta-governance process.

INSERT FIG. 2 HERE

Figure 2. A conceptual framework integrating China's *tiao-kuai* system and meta-governance model for regional greenway implementation

4 Methodology

4.1 The case study project

The case study – Central Zhejiang Greenway Project locates in the Central Zhejiang City-Region (*Zhezhong cheng shi qun*, CZCR). CZCR is a typical city-region within a single province, one of the two city-region forms in China along with those encompassing areas in multiple provinces (Han, 2015). This city-region is in Zhejiang Province and its territorial extent is the same as the administrative jurisdiction of the prefecture-level city of Jinhua. It consists of ~~comprises one prefecture-level city (Jinhua) which administers~~ two districts (Jindong and Wucheng) and seven counties/county-level cities (Yiwu, Pujiang, Dongyang, Wuyi, Lanxi, Pan'an, Yongkang) (Figure 3). Jinhua Government serves as the regional government while the nine districts/counties/county-level cities are local policy implementers.

INSERT FIG. 3 HERE

Figure 3. Location of the Central Zhejiang City-Region (CZCR)
Source: Prepared by the authors based on shapefile from http://www.webmap.cn/

The CZCR case has two successive stages of greenway project implementation, making it possible for us to conduct temporal analysis. The first region-wide greenway plan was launched in 2013 when Jinhua Government (2013) initiated a three-year Greenway Network and Tourism Development Plan. A number of greenways were prioritised in this region, with a total length of 1127.2 kilometres (Figure 4). As regards implementation, the nine districts/counties/county-level cities were supposed to serve as local implementers, each developing small, but critical portions of the plan (Jinhua Government, 2013). But the implementation outcomes fall short of expectations. The interviews with government participants show that only eight districts/counties/county-level cities have implemented parts of the 2013 Greenway Plan.

INSERT FIG. 4 HERE

Figure 4. Proposed regional greenways in the 2013 Greenway Plan
Source: Prepared by the authors based on shapefile from http://www.webmap.cn/ and maps from Jinhua Government (2013)

Nevertheless, the greenway vision for CZCR stayed alive and active. A 2017 Plan update features a shift towards the development of '*ecological corridors*', which in particular refers to the catchments of the rivers spanning across the city-region (Figure 5). Despite this shift, the ecological perspective is still absent from this new plan, as ecological corridors align well with the CZCR administrative boundaries, not the natural boundaries of a bioregion defined by the geography of watersheds. It suggests that ecological corridors in CZCR are designed to serve human needs, rather than to facilitate species dispersal and survival in the landscape. In the 2017 Greenway Plan, the size of the proposed network has reduced to 530 kilometres, making it more doable at a manageable scale (Jinhua Government, 2017). Apart from the plan, the governance structure of LCOs also develops in a way that may affect implementation outcomes, which is the focus of this study.

INSERT FIG. 5 HERE

Figure 5. Proposed regional ecological corridors in the 2017 Greenway Plan
Source: Prepared by the authors based on shapefile from http://www.webmap.cn/ and maps from Jinhua Government (2017)

4.2 Data collection and analysis methods

Semi-structured interviews with 19 key informants from three levels of governments were conducted in November and December 2018 (Table 1). These interviewees were selected based on their participation in the Central Zhejiang Greenway Project. A list of questions were developed to guide each interview, including informants' organisations, their roles and duties, strategies for greenway implementation within their jurisdictions, as well as relations with other stakeholders.

At the city-region level, interviews were conducted with officers from three regional agencies: Jinhua Urban and Rural Planning Bureau (JURPB), Jinhua Housing and Urban-Rural Development Bureau (JHURDB), and CZCR Ecological Corridor Development Office (CECDO). JURPB oversaw the planning of the two regional greenway plans. CZCR Greenway Construction Leading Group (CGWCLG), an office under JHURDB, supervised the implementation of the 2013 Greenway Plan. In 2017, responding to the new plan to develop ecological corridors within the catchment area, CECDO was established to take over as the regional greenway agency. At the county level, interviewees were selected from LCOs, including three construction departments and one transportation department for local implementation of the 2013 Greenway Plan, and one ecological corridor working group (ECWG) for the 2017 Greenway Plan. Finally, we assessed the role of townships in regional greenway implementation through interviews with officers from Houzhai Sub-district Government, Hangping Town Government and Langya Town Government.

Documentary evidence was used to corroborate and augment evidence from interviews. These include the regional greenway plans in 2013 and 2017, regulatory plans of greenway projects in each jurisdiction, minutes of greenway meetings, and technical guidelines to greenway construction. Data from interviews, documentation and observation notes were transcribed, coded and themed for in-depth analysis.

Table 1. List of interviewee's organizations

	Government	Agency	No. of informants
City-region	Jinhua Government	Jinhua Urban and Rural Planning Bureau	1
		Jinhua Housing and Urban-Rural Development Bureau	1
		CZCR Ecological Corridor Development Office	2
County-level city/ county/ district	Wucheng Government	Construction department	2
	Jindong Government	Transportation department	3
	Yiwu Government	Construction department	2
	Pujiang Government	Construction department	2
	Dongyang Government	Ecological Corridor Working Group (ECWG)	3
Township	Langya Town Government		1
	Hangping Town Government		1
	Houzhai Sub-district Government		1

5 Results

This section presents findings on the restructuring of LCOs in terms of the four structural dimensions detailed in Section 2.3 (i.e., size, specialisation, order of structure and organised anarchy), their impacts on three sets of inter-governmental relations (i.e., regional-local, inter-departmental and cross-jurisdictional relations), and the consequent governance outcomes.

5.1 Size

Although the two regional greenway plans were adopted at the regional level, the implementation is not achieved regionally, but rather locally through a number of local greenway projects coordinated by LCOs. A comparison between the two successive implementation stages shows that LCOs become larger in size, higher in rank and more issue-

specific. Originally each local government delegated the greenway duties to an existing agency, e.g., the construction department in Yiwu, Wucheng, Dongyang and Pujiang, and the transportation department in Jindong. They worked as LCOs to take the *sole* responsibility for greenway projects within their territories. Usually, one to two officers in these LCOs would organise, coordinate and control a greenway project from funding application to construction then completion (interview, Jindong transportation officer, 27 November 2018). Since 2017, 'developing ecological corridors' has been clearly placed on the agenda of Jinhua Government, and the size of LCOs have been increased by local governments which control personnel management of local agencies (interview, Wucheng construction officer, 28 November 2018). Instead of letting existing agencies to work as LCOs, each local government established an ecological corridor working group (ECWG) with officers from a variety of policy fields, such as finance, planning, construction, development and reform, water resources, land resources and agriculture (interview, Dongyang ECWG officer, 28 December 2018). These newly developed LCOs are larger in size and more focused on ecological corridor projects. For each phase that a project goes through, there would be a certain position in charge. For example, the officer from Dongyang Finance Department deals with funding application and that from the land resources department aims to ensure compliance with land use plan (interview, Dongyang ECWG officer, 28 December 2018). Besides, with local government leaders taking a lead, ECWGs are higher in rank than any other local agencies.

While the size of LCOs has no impact on regional-local and cross-jurisdictional relations, its influence on the inter-departmental relation is evident. In contrast to the previous situation that LCOs could not issue binding orders to other local agencies as they were of equal rank, recent implementation practice shows an increase in LCOs' structural capacity so that these agencies are more capable of eliminating inter-departmental conflicts and achieving cross-

sectoral collaboration through command and authority. For example, Wucheng ECWG played a key role in resolving the disagreement between the finance department and the development and reform department over the source of funds for ecological corridors. The finance department preferred to use bank loans as Wucheng Government faced a growing budget deficit, whereas the development and reform department argued that bank loans would increase the government's debt level and the local economy would suffer. Finally, Wucheng ECWG interacted with these two departments and reached an agreement that 70% of the funding came from bank loans and the remainder was provided by government revenue (interview, Wucheng construction officer, 28 November 2018).

The varying structural capacities of LCOs create different policy outcomes. Interview results show that only parts of the 2013 Greenway Plan were implemented and most of the built greenways were within the boundary of a town or a township. The distribution of greenways was scattered because LCOs tended to hive off their greenway projects into town/township governments in order to ease their workload (interview, Pujiang construction officer, 19 December 2018). As might be expected, developing greenways became an add-on to the existing workloads of these local agencies, and transferring greenway duties to lower-level governments might be an option. However, town/township governments might not develop greenways of high quality, as they were not specialised in construction. They were also politically fragmented, making it even harder to develop a greenway that traverses a couple of towns (interview, Dongyang ECWG officer, 28 December 2018). Since ECWGs took over the role as LCOs, they have been devoted to developing ecological corridors that cross different towns and connect neighbouring counties. Around 356.4 kilometres of ecological corridors had been built by the end of 2018, leaving the remaining of the plan to be finished in 2019 (interview, JHURDB officer, 15 November 2018).

5.2 Specialisation

Previously the underlying principle of specialisation was territory because the 2013 Greenway Plan was implemented by territorial governments and their LCOs, not by the regional greenway agency CGWCLG (Figure 6). In 2016, for instance, Wucheng and Jindong were supposed to build greenways of 20 kilometres each, and the allocation for Yiwu was 40 kilometres (Jinhua Government, 2016). In each territory, greenway implementation took place through the local government-LCO control. Such control was underpinned by several mechanisms. First, all the greenway projects proposed by LCOs should be approved by their local governments which would then allocate budget. Second, local government leadership controls the appointment and advancement of LCO leaders who in turn control personnel management for successive subsidiary levels. Thus, LCOs attached more weight to the concerns of local governments than to those of the regional greenway agency. The year 2017 saw the establishment of ECWGs which strengthened the sectoral part of the governance structure. These new LCOs, although still under relatively strong control of their respective local governments, have become increasingly subject to the leadership of the new greenway agency at the regional level, CECDO. A hybrid, multilevel governance structure, composed of territorial as well as sectoral components, has emerged (Figure 7).

INSERT FIG. 6 HERE

Figure 6. The governance structure of implementing the 2013 Greenway Plan

INSERT FIG. 7 HERE

Figure 7. The governance structure of implementing the 2017 Greenway Plan

The choice of specialisation principle has no obvious impact on the inter-departmental relation, but its effect on the regional-local relation and the cross-jurisdictional relation is

significant. Although territorial specialisation in the original set-up was expected to increase the cross-sectoral cooperation within each territorial unit (Egeberg and Trondal, 2018), the *tiao-tiao* conflicts made it relatively hard for various local agencies to cooperate. For example, Jindong Land Resources Department rejected a greenway proposal initiated by Jindong Transportation Department because it consumed the precious annual land quota (interview, Jindong transportation officer, 27 November 2018). In terms of the regional-local relation, previously the regional greenway agency CGWCLG did not have a relationship with LCOs based on 'binding orders'; rather it was based on 'non-binding instructions' in Mertha's (2005) terminology. CGWCLG would not allocate funding for local greenway projects. Neither did it control cadre management of LCOs (interview, JHURDB officer, 15 November 2018). Since the reorganisation in 2017, local cadres have taken a lead in ECWGs, and their appointments have been made by leaders of the regional government who are at the same time leaders of the new regional greenway agency CECDO. Hence these ECWGs become more directly linked to CECDO. In addition to stronger regional control, the cross-jurisdictional link has been enhanced following the strengthening of the sectoral component in the governance structure. In assessing ECWGs' performance, CECDO attaches great importance to the overall connectivity of the network. Thus, officers from neighbouring ECWGs are motivated to form partnerships and link their ecological corridors at the border. The ECWG in Dongyang and that in Yongkang, for example, proposed an integrated scheme to ensure ecological corridors on both sides are connected and share the same design style (interview, Dongyang ECWG officer, 28 December 2018).

The changing inter-governmental relations have their implications on the ground. At the outset the weak regional-local control resulted in the 2013 Greenway Plan being implemented differently across jurisdictions. There was no standardisation concerning which department should play the role of LCOs (interview, JHURDB officer, 15 November 2018). In Jindong,

for example, the transportation department looked after rural greenways while the construction department dealt with the development of greenways in urban areas (interview, Jindong transportation officer, 27 November 2018). It contrasts with the situation in Wucheng where the construction department was the sole LCO because its leader had expertise in landscape design and won the support of Wucheng Government leaders through persuasion and advisory activities (interview, Wucheng construction officer, 28 November 2018). Another variation is the vast difference in the size of built greenways. From 2014 to 2016, Pujiang had developed the largest greenway network with a total length of 87.5 kilometres, while only a few regional greenways had been built elsewhere (interview, Pujiang construction officer, 19 December 2018). In implementing the 2017 Greenway Plan, ECWGs took over the role of LCOs to coordinate local projects. Compared with their precursors, these new LCOs work more closely with the regional authority, which contributes to harmonising implementation practices across territories.

5.3 Order of structure

At the outset, government officers were part-timers of LCOs; they have their affiliated departments as their primary structure. Over time, though, a more separate agency has been established locally: officers from relevant departments have been transferred to the ECWG, making up their primary structure.

The change in structural order does not lead to any improvement in the regional-local relation or the cross-jurisdictional relation, but it shows more political attention has been mobilised to foster cross-sectoral collaboration in ecological corridor development. Previously government officers would not devote most of their time and energy to greenway development because they had their major job duties to fulfil. For example, the officers in Jindong Transportation Department would deal with rural road construction which was the main area of their responsibility (interview, Jindong transportation officer, 27 November

2018). They had limited chances to interact with officers from other departments as communication in the *tiao-kuai* system was either channelled within the vertical *tiao* or within the horizontal territorial *kuai*. With the establishment of ECWGs in 2017, agency representatives started to transfer their loyalty to this new agency and developed a genuine vision towards ecological corridor development. More importantly, their interaction and coordination happen in a deeper sense as these officers are located in the same department. For example, Dongyang ECWG has successfully achieved coordination between the water resources department and the construction department through someone who previously worked in these departments (interview, Dongyang ECWG officer, 28 December 2018).

The coordination among a different set of agencies is one of the strongest assets that predict completion of ecological corridors on the ground. In Dongyang, for example, more than 100 kilometres of ecological corridors have been developed along the riverbanks following the division of labour: the water resources department focused on existing dykes which might be flooded and the construction department completed the remaining part of the network (interview, Dongyang ECWG officer, 28 December 2018).

5.4 Organised anarchy

Organised anarchy is the term to describe a structure that is open and unspecialised, which is linked to an organization's innovativeness (Egeberg and Trondal, 2018). The original greenway development took place in a closed and homogeneous culture: governmental actors had exclusive access to greenway projects. This was largely due to the belief that the provision of greenways was a kind of public service that did not generate huge profits (interview, Dongyang ECWG officer, 28 December 2018). However, there are signs of organised anarchy in recent implementation practices as the cast of participants is more variable.

The structure of ECWGs is loosely coupled, thus allowing officers from diverse departments to cross organisational boundaries and interact in relatively frictionless~~an organised~~ manner. Regional-local and cross-jurisdictional relations, however, are not affected by such arrangement. An open and unspecialised ~~organised~~ structure also encourages the collaboration between state and non-state actors. Although Chinese governments are not allowed to engage in financing activities, state-owned enterprises (SOEs) can circumvent this constraint imposed on the state and finance ecological corridor development through borrowing money from bank and issuing bonds. For example, Yiwu Water Resources Construction Group (YWRCG), a local SOE, funded ecological corridor projects along Yiwu River. Apart from capital suppliers, SOEs have built up joint-venture relationships with sitting tenants who provide their land rights in exchange for compensation and economic opportunities. In Cao village, Yiwu, for example, YWRCG designed an amusement park along the ecological corridor and encouraged villagers to become shareholders by providing their land-user rights necessary for the project.

Consequently, more resources have been mobilised for ecological corridor development. The participation of SOEs has lessened the public sector's financial burden caused by the construction and maintenance of ecological corridors, and that of sitting tenants has increased the efficiency of the land acquisition process. With such working models for ecological corridor implementation, Yiwu, for example, has ten ecological corridor projects under construction, each of which is coordinated by a local SOE.

6 Discussion and conclusion

Regional governance involves a multiplicity of inter-governmental relations between regional and local authorities, between adjacent jurisdictions and between government sectors at the same administrative level. This study extends the governance literature by exploring the

governance process of the Central Zhejiang Greenway Project via a conceptual framework that focuses on four dimensions of LCOs' governance structure (i.e., size, specialisation, order of structure and organised anarchy) and their restructuring towards stronger inter-governmental relations and a collective greenway action.

Along with a shift from the 2013 Greenway Plan to the 2017 Greenway Plan that focuses on ecological corridors, LCOs have experienced some structural changes. These local agencies responsible for regional plan implementation become larger in size and more issue-specific. Besides, they work more closely with the regional entity as the structure becomes sectorally specialised. The new LCOs are made up of officers from relevant departments who would treat LCOs as their primary structure. Also, there are signs of organised anarchy as a variety of participants frequently cross the organisational boundaries to interact.

Table 2. Impact of LCOs' governance structure on inter-governmental relations and outcomes

Structural dimension	**Regional-local relation**	**Inter-departmental relation**	**Cross-jurisdictional relation**	**Outcome**
Size	Impact not observed	Impact observed (eliminated inter-departmental conflicts and enhanced collaboration)	Impact not observed	Improved construction quality; expanded network
Specialisation	Impact observed (strengthened regional control)	Impact not observed	Impact observed (enhanced cross-jurisdictional link)	Contributed to uniform implementation and formation of interconnected network
Order of structure	Impact not observed	Impact observed (developed a	Impact not observed	Contributed to integrated implementation

		cross-agency network)		
Organised anarchy	Impact not observed	Impact observed (facilitated cross-sectoral interaction)	Impact not observed	Smoothened implementation process

LCOs' structural changes have worked on inter-governmental relations in different ways (Table 2). The evolution from weak to strong regional control is observed subsequent to a change in the choice of major specialisation principle. Previously the structure was territorially specialised since local implementation took place through the territorial government - LCO chain of command. The regional greenway agency CGWCLG, however, merely acted as an advisory body for strong local governments to implement individual pieces of the regional greenway system. Therefore, the Central Zhejiang Greenway Project features a decentralised model in its original set-up, in contrast to the stereotype that a centralised implementation structure is always in place in Chinese greenway development (e.g., Yu, Li and Li, 2006). Over time, though, the governance structure is moving towards a moderate model in Erickson (2004)'s terminology. The establishment of ECWGs at the local level provides a sectoral component because such units are designed particularly for ecological corridor development. Although they are still under relatively strong control of local governments, these ECWGs have become increasingly subject to the leadership of the new regional coordination body CECDO which has power over their cadre management. Strong control at the regional level simultaneously fosters standardisation and uniformity of ecological corridor practices across different jurisdictions.

In addition to stronger regional control, sectoral specialisation has shown to foster closer relationships between adjacent jurisdictions. As the top-down greenway assessment is

oriented towards the connectivity of the network, adjacent ECWGs start to partner with each other and link their ecological corridors at the border. With the coordinated efforts from these ECWGs, an interconnected ecological corridor network maintains steady progress toward completion.

This study also reveals that officers' contacts across different departments have a strong, positive relationship with their capacities, their participation in cross-sectoral organisations, and the openness of the structure. With local government leaders taking a lead, ECWGs are higher in rank than any other local departments, thus allowing them to utilise authority and command to resolve conflicts and achieve long-standing coordination. As such, cross-sectoral collaboration takes place through the hierarchical approach, similar to that in Singapore (Tan, 2006). Besides, by transferring officers from relevant agencies to ECWGs which make up their primary structure, these participants are more dedicated to cooperative undertakings. The structure of ECWGs is loosely coupled, thus allowing different sectors to interact in a relatively frictionless~~an organised~~ way. These participants have specialised capabilities and resources that are necessary for the smooth and integrated implementation of ecological corridor projects.

Four conclusions can be drawn from the research. First, adequate administrative capacity of LCOs at the local level should exist in order to mobilise personnel for effective greenway implementation. Second, regional greenway governance has to live with the 'coordination dilemma' (Egeberg and Trondal, 2018), in which tensions exist between regional coordination and local autonomy. LCOs at the outset attached more weight to the concerns of their territorial governments, but increased regional control over LCOs' cadre recruitment empowers the regional greenway authority at a later stage. In this process, the 'double-hatted' agencies that serve both their respective territorial governments and the regional greenway authority are instrumental. Third, an efficient way to foster inter-departmental collaboration

is to transfer representatives and their loyalty from relevant agencies to LCOs. Such an arrangement may not only provide a platform for agencies to interact but also *institutionalise* a cross-agency network. Fourth, an open and unspecialised~~organised~~ governance structure is necessary for the non-state sector to participate in greenway development, and this is especially the case for greenways developed at a 'bioregional' scale where a wide range of state and non-state actors are involved. These findings may also have important implications in the planning, development and implementation of inter-jurisdictional projects in city-regions where a multi-level and cross-sectoral approach is required.

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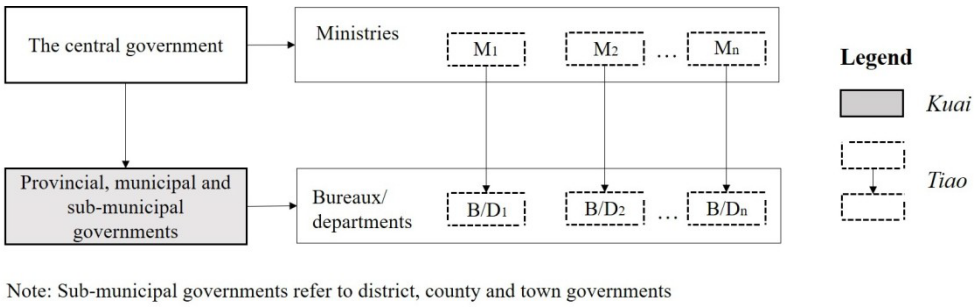

Figure 1. Inter-governmental relations in Chinese tiao-kuai administration system

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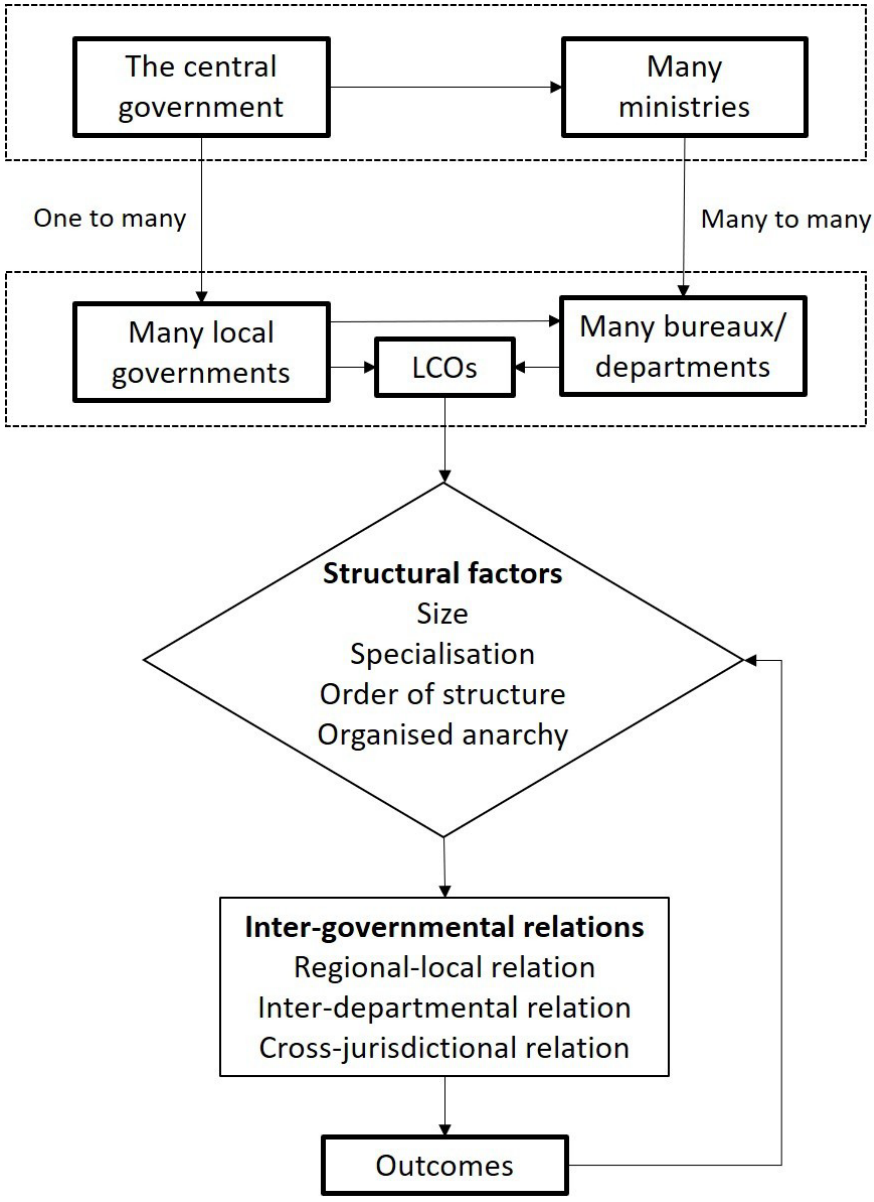

Figure 2. A conceptual framework integrating China's tiao-kuai system and meta-governance model for regional greenway implementation
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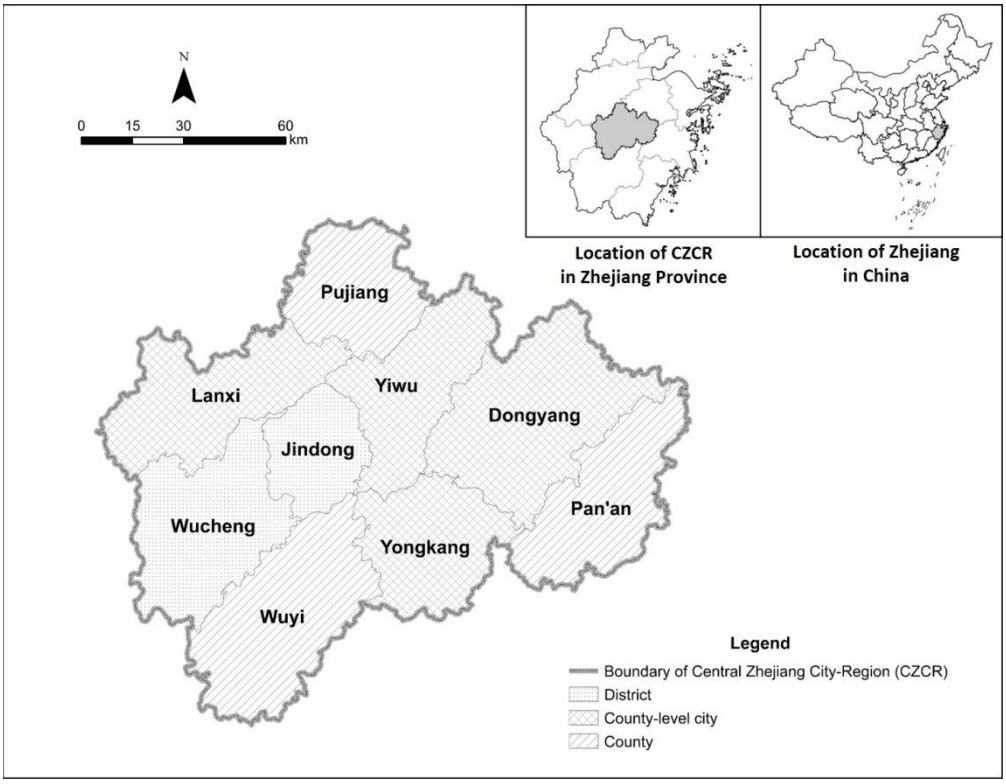

Figure 3. Location of the Central Zhejiang City-Region (CZCR)

247x191mm (150 x 150 DPI)

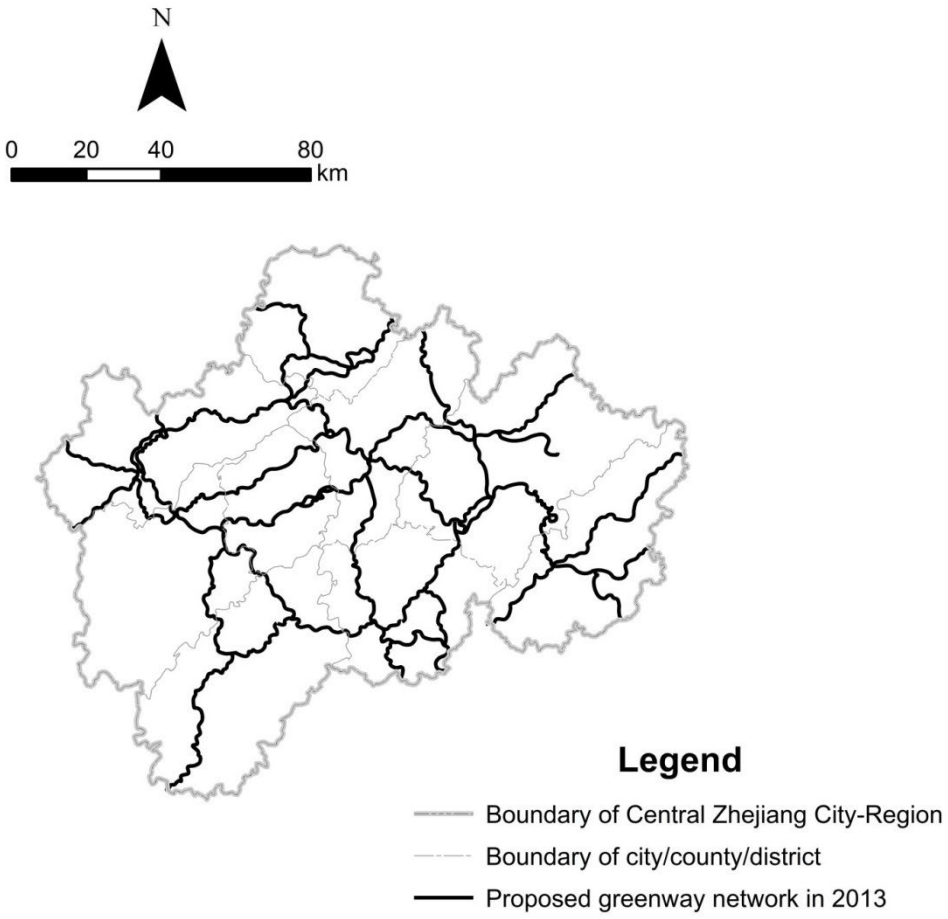

Figure 4. Proposed regional greenways in the 2013 Greenway Plan (Source: Prepared by the authors based on shapefile from http://www.webmap.cn/ and maps from Jinhua Government (2013))

18x17mm (2000 x 2000 DPI)

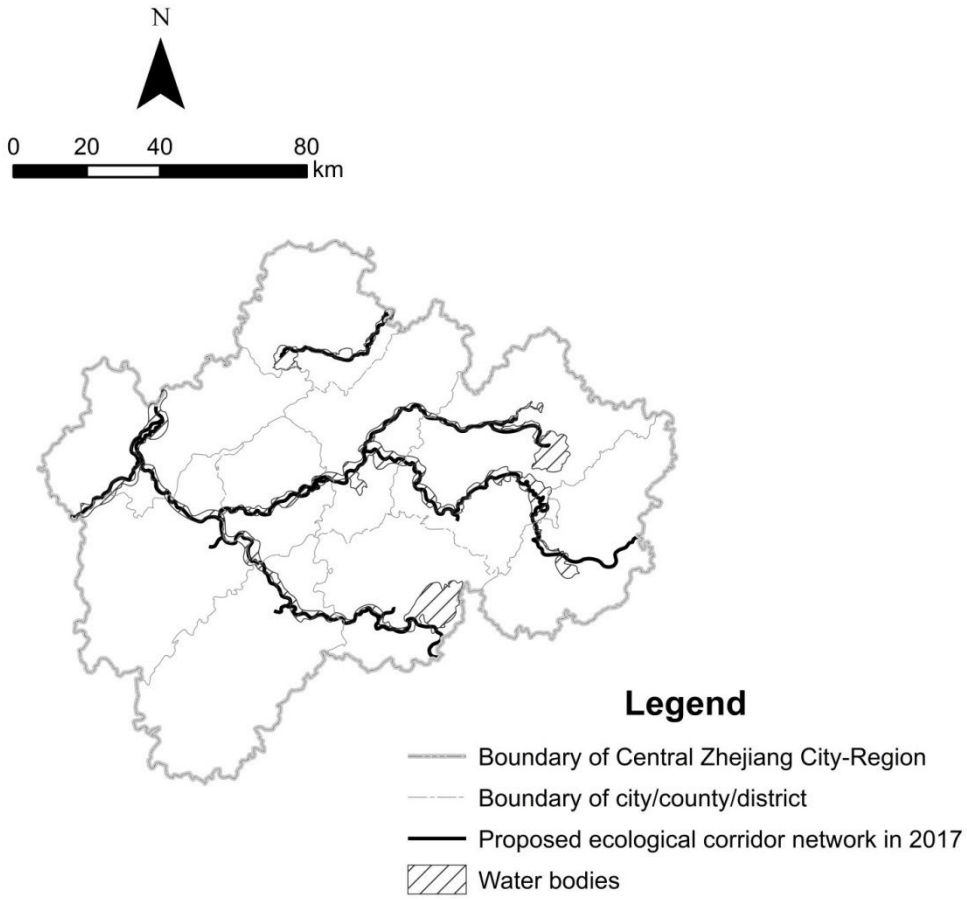

Figure 5. Proposed regional ecological corridors in the 2017 Greenway Plan (Source: Prepared by the authors based on shapefile from http://www.webmap.cn/ and maps from Jinhua Government (2017))

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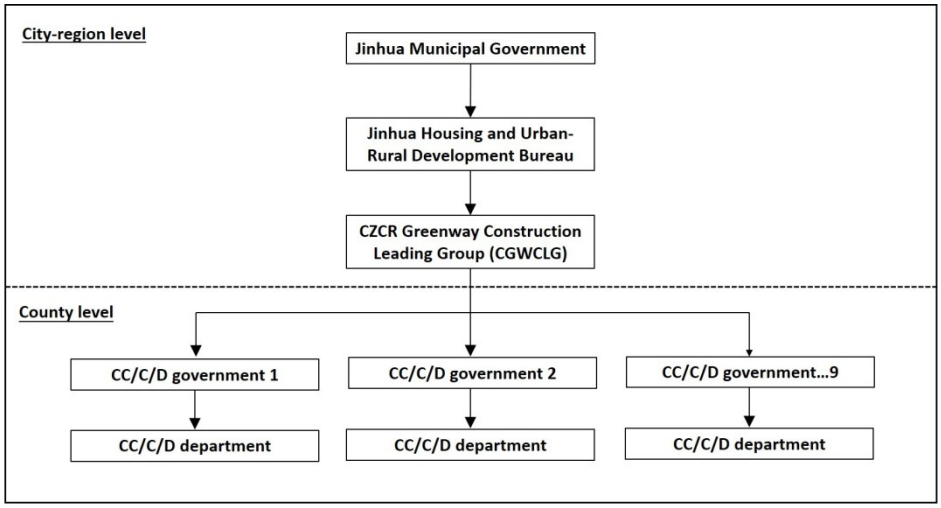

Figure 6. The governance structure of implementing the 2013 Greenway Plan

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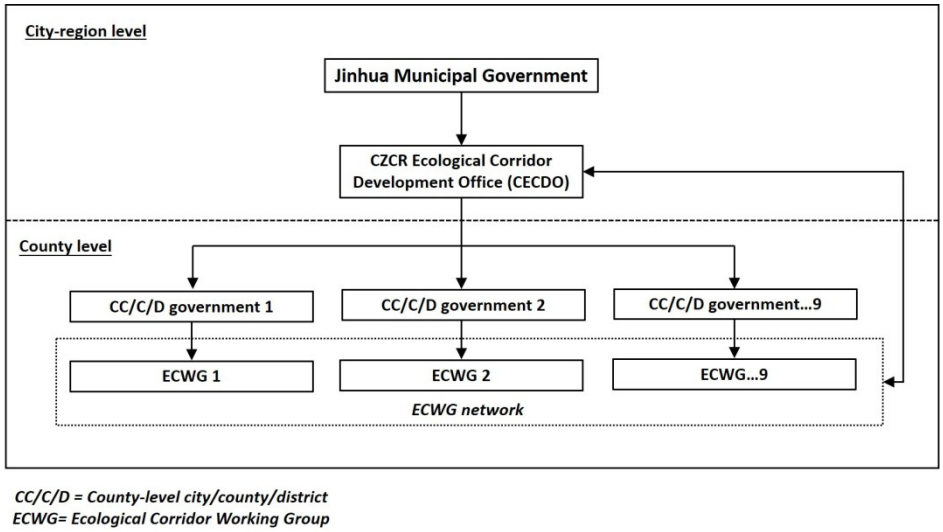

Figure 7. The governance structure of implementing the 2017 Greenway Plan

312x172mm (150 x 150 DPI)

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