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Research Paper

Emergence of local collective action for land adjustment in land consolidation in China: An archetype analysis

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HIGHLIGHTS

- The archetype analysis with the SES framework can systematically explain the emergence of local collective action for land adjustment.
- We found six archetypes of collective action in land adjustment.
- For self-organized LCPs, local leadership combined with informal convention or formal rules creates favorable conditions for local collective action.
- For government-led LCPs, the effective involvement of farmers and social learning combined with long-term compensation mechanisms facilitate local collective action.
- For enterprise-led LCPs, reciprocity with a long-term compensation mechanism contributes to local collective action.

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ABSTRACT

Land consolidation (LC) is considered an effective instrument to respond to public demands in rural areas of China due to its evolution from a purely technical policy into a more comprehensive social project. As one of the most important steps in LC, land adjustment has a major impact on its success. Despite the broad heterogeneity of local contexts, land adjustment-related collective action has emerged nationwide as a public good. However, the generalized patterns explaining how and why such examples of local collective action occur remain poorly investigated. This study analyses configurations of the factors that generate land adjustment-related collective action in LC by drawing upon the archetype approach and using a social-ecological systems (SES) framework to conceptually decompose the many details of cases. Based on 34 systematically selected cases from eastern, central, and western China, the results show that there is a set of 23 configurations of factors that bear a causal relationship with collective action in land adjustment. These can be clustered into six archetypes. Some collective action conditions that are well known in the existing literature, such as group size, reciprocity, and trust, are reconfirmed in this analysis. Furthermore, several distinctive implications are drawn from the archetype analysis: 1) Local leadership combined with self-governance convention and institutionalized self-organization or powerful local leadership allied with goal congruence create favorable conditions for the local collective action of self-organized LCPs. 2) Leadership also plays a significant role in facilitating local collective action for land adjustment under government-led and enterprise-led modes as government and enterprises rely on local leadership to avoid the need to contact numerous scattered farmers and to save on transaction costs. 3) While excessive intervention by the government is restrained under self-organized and enterprise-led modes, the archetypes highlight that government participation facilitate local cooperation. 4) The government and enterprises likely engage in rural collective action through divergent mechanisms motivated by their political or economic goals. In general, these findings provide new insights into land-related local collective action and may benefit China and other regions for transition processes towards rural sustainability.

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1. Introduction

Land management is important for sustainable rural development. In China, rapid urbanization and industrialization are the driving forces behind the ever-growing demand for building land and large-scale rural–urban migration (Liu & Ravenscroft, 2017; Long et al., 2009; Long, 2014). This leads to a massive decrease in fertile farmland, on the one hand, and a great number of abandoned houses in rural areas, on the other hand (Long, 2014; Tan & Heerink, 2017). The household responsibility system, which aimed at the egalitarian distribution and allocation of land-use rights based on household size in China (Zheng et al., 2020), also resulted in the current severe land fragmentation (Tan, Heerink, & Qu, 2006). This shortage and fragmentation of cultivated land have led the Chinese central government to become concerned about food security. Under this circumstance, land consolidation (LC) is used to increase cropland area, eliminate fragmentation, renovate agricultural infrastructure and thereby enhance land productivity through land consolidation projects (LCPs) (Huang et al., 2011; Long, 2014; Zhang et al., 2014).

Various methods have been proposed to implement LCPs including the merging of fragmented parcels, the construction of new roads, irrigation, drainage, and measures for village renewal (Jin et al., 2017; Muchová & Jusková, 2017; Tang et al., 2017). Many scholars believe that LC is an important tool to reduce land fragmentation, improve land use efficiency and improve agricultural production (Burton, 1988; Castro Coelho et al., 2001). It is also generally regarded as a comprehensive measure of rural development and a means of achieving sustainable rural development (Burton, 1988; Huang et al., 2011). Long (2014) argues that LC is an excellent tool for promoting the primary production of food staples, improving working conditions in agriculture and the living conditions of people living in rural areas in the course of coordinating urban and rural development.

In the past two decades, China's LC has developed quite rapidly. In particular, during the first ten years of the 21st century, the core principle of LC in China was to increase the amount of arable land and improve the efficiency of land use (Long, 2014). In response to the pressures of urban expansion, in 2005, an innovative policy was introduced to link the growth of urban agglomerations with the reduction of rural settlements to strengthen the quantitative orientation goals of LC (Huang et al., 2011). Since then, the task of LC has been extended to include rural settlements. Therefore, current efforts are more fully integrated into the rural environment, including fields, water, roads, forests and villages, reflecting the closer relationship between LC and rural community development (Luo & Timothy, 2017). Thus, despite the original farm-focused aim of LC, the Chinese government has gradually developed it from a technical project into a comprehensive social project to address public demand in rural areas (Huang et al., 2011; Tang et al., 2017). LC has changed its position from land-only to high-level integration, its orientation from grain production to landscape protection, its core orientation from land to people, and its target from protecting farmland to optimizing production, life, and ecology (Yan et al., 2016). For example, in 2016, the area of land cultivated through LC increased by 259,500 ha. In addition, it is estimated that for every 100 million yuan (China's monetary unit) of investment in LC, the labour input required for project construction accounts for approximately 20%, which can create more than 1.5 million jobs. In addition, the evaluation of typical case projects showed that the quality of cultivated land increased by 1.21 grades on average after LC (Yun et al., 2016). However, problems still exist. For example, from a long-term perspective, the current LC model pays too much attention to the structural performance of project management instead of community-oriented value performance, which leads to conflicts in LC (Luo & Timothy, 2017). Furthermore, China's LC with the primary purpose of saving farmland is still at a low level. There is still large gap in terms of promoting the ecological environment (Huang et al., 2013).

For decades, China's LCPs have been led by government bureaus (department, agency, or division) employing what is called the build-transfer model, meaning that the government invests and conducts LC and the land is handed over to farmers after the LCPs are completed (Tang et al., 2017). The first set of LCPs in which the government invested began in 2001, and there were 124,085 LCPs funded by national and provincial governments encompassing a total area of 110,600 km^2 between 2006 and 2010 (Zhang et al., 2014). Approximately 100 billion RMB have been spent each year on rural LC (Luo & Timothy, 2017).

With the comprehensive and in-depth development of LC, the types of LC have gradually diversified, its scale has continuously expanded, and the adjustment of the land property has become more complex because it disrupted the former land–property rights relationship and reconfirmed land property rights. In a sense, the process of LC in China is also a process of rural land property rights adjustment. Therefore, land readjustment, as a new mode of land acquisition, reorganization, and redevelopment, is one of the most important steps in LC, and it has had a major impact on LC success in terms of improving the structure of agricultural production in the context of LC (Iscan, 2010).

China's public ownership system leads to the complexity of farmland rights. According to the types of rights involved, land adjustment refers to the adjustment of ownership, contract rights, and other rights of the land. The land adjustment discussed in this paper mainly refers to the adjustment of land contract rights among farmers, which can be regarded as the counterpart of land reallocation in countries with private ownership. It refers to the reorganization of land contracted by families. When LCPs involve irregular boundaries, inserted land, and enclaves, the ownership is adjusted to establish regular boundaries between villages as the land is owned by villages rather than farmers (Zhang et al., 2018). Other land rights mainly include farmland lease rights, easement rights, and mortgage rights. However, due to the inactive farmland market and legal prohibitions in China, these rights emerged relatively late, and they are therefore not within the scope of this paper.

The adjustment of property rights also refers to the redistribution of interest. It often causes disputes and dissatisfaction such that there are contradictions in assessing values and rights that must be resolved, which is generally time-consuming (Zhang et al., 2018). This greatly reduces the effect of LC in achieving large-scale agriculture. However, since 2006, local governments have been incentivized to complete LCPs as quickly as possible because one of their assessment indexes is the scale of LCPs completed within one year. Therefore, local governors tend to skip the step of land adjustment to save time and speed up the LC process (Zhang et al., 2018).

While there have been many different approaches and organizational modes for land adjustment, existing studies have concluded that local peoples' input is limited (Long et al., 2012; Tang et al., 2012). Scholars argue that judging from the practice of land adjustment in various places, the current participation of farmers most often represents a single form, which is manifested as scattered and disorderly participation to seek private benefits (Long et al., 2012; Shi et al., 2014). Public participation has gradually emerged in LC (Lü et al., 2013), and some scholars argue that regardless of how LC is defined, farmers' involvement in LC has become increasingly frequent and obvious. As beneficiaries and property rights subjects, farmers should be the most important participants in LC (Shi et al., 2014).

Scholars agree that the involvement of local people is the main factor in the smooth implementation of land adjustment schemes (Liu & Ravenscroft, 2017; Tan & Heerink, 2017). Some case studies describe and explain the process of collective action and its role (Liu & Ravenscroft, 2016); others investigate where it occurs and seek to determine its drivers against specific social-ecological backgrounds in terms of land adjustment (Zhang et al., 2018). Additionally, scholars have addressed interactions between farmers in land adjustment from the perspective of collective action (Liu & Ravenscroft, 2017).

However, most related studies present insights into one or a few cases where the understanding of local collective action is fragmentary

and cumulative learning is limited. To the best of our knowledge, no study has yet systematically explained collective action in the context of land adjustment. In addition, there is a large number of socioeconomic and institutional variables that could affect collective action. The effects of some variables may depend on the states of others; thus, a key research topic for collective action theory in this context is based on the need to understand the complex interconnections among these variables.

We address this research gap by adopting the archetype approach to check for repeating patterns explaining the emergence of collective action for land adjustment in LC in China across cases. The paper defined the emergence of local collective action through the lens of individual actors reaching agreements in land adjustment and voluntarily achieving the exchange of property rights for LCPs. Admittedly, not all LCPs involved land adjustment. Besides, Local governments may initiate LC through public land acquisition and set relatively low compensation standards, which will affect the interests of farmers. Therefore, some kind of rural collective action against such LC may occur. For example, farmers may collectively oppose LC. The above issues are beyond the scope of this study, but they are worth studying in future studies. In this definition, LC mainly refers to the comprehensive consolidation of rural land. The object of LC has been expanded from agricultural land to rural construction land, and its content has evolved from supplementing the amount of cultivated land to optimizing the layout of rural ecology, agriculture, and construction space. The main research questions are thus as follows: Are there recurrent configurations of factors that facilitate the emergence of local collective action for land adjustment in LC in China? How does the combination of these factors affect the local collective action for land adjustment in LC?

The remainder of the article is structured as follows. Section 2 presents the theoretical background by reviewing the literature on collective action and introduces the archetype approach, especially its function of addressing causal explanations of complex systems. Section 3 outlines the development, practical types, and collective action problems of land adjustment in China. The analytical framework and methods are presented in section 4, section 5 describes the results, and section 6 presents the main implications, contributions, and limitations of the paper.

2. Theoretical background

2.1. The potential for collective action

Collective action problems refer to situations where joint results generated by individuals are lower than expected (Olson, 1965; Ostrom, 2009). The problem of collective action exists throughout society and within the ecosystem inhabited by human beings. Over the past few decades, there has been considerable evidence that human actors can solve some (but by no means all) collective action problems without the need for external rules and external enforcement (Ostrom, 2010).

The expanding theoretical literature has proposed many structural variables that are believed to affect the possibility of individuals taking collective action to overcome social dilemmas. Some are related to the physical characteristics of resources, such as resource scarcity (Bardhan, 1995), resource size (Wade, 1988), and proximity to markets (Agrawal & Yadama, 1997), while some are related to the attributes of resource users such as the user group's origin, wealth and size (Olson, 1965). In addition, the extant research suggests that institutional context such as governance structure also greatly affects the level of coordination (Araral, 2009; Hong & Needham, 2007). Further, the interactions of the variables that produce outcomes increase the complexity of the system. For example, both leadership (Ostrom, 2009) and involvement in decision-making (Wang et al., 2019) may influence collective action; however, given that the local elite may have greater chances of positioning themselves in decision-making to capture benefits, which is referred to as "elite capture" (Liu & Ravenscroft, 2016), it is unclear whether their interactions will produce different outcomes. In addition, some factors affect other intermediate variables, such as transaction costs, and thereby affect the likelihood of cooperation (Oberlack & Eisenack, 2018).

Thus, it is important to link external variables to internal core variables, such as trust, reciprocity, and reputation, because they, in turn, affect the level of cooperation (Ostrom, 2009, 1990, 2005). This seems to be the case for land adjustment. The reciprocal relationships among involved parties are pivotal in the emergence of land adjustment projects. Reciprocal relationships and repeated interactions among farmers, government, and enterprises enable all participants to determine whether other parties are worth trusting. Continuous positive cooperation experience can promote and strengthen trust relationships between participants (Hong & Needham, 2007).

2.2. The archetype approach: Causal explanation of a complex system

Dealing with complex systems remains a challenge for scholars in the social sciences because complex systems are difficult to understand and manage (Cox et al., 2010). Outcomes of such systems result from interactions among different types of social and biophysical variables. Among these components, some are common to many systems while others are relatively unique to a particular system (Cox, 2011; Stoker, 2019). The context-dependence of social-ecological dynamics makes it extremely difficult to draw general conclusions for governance, and generic design factors can also be too abstract for application to a concrete environment.

For this type of challenge, there is a strong tradition of global change research that addresses the high level of complexity present in the interactions between civilization and nature (Schellnhuber et al., 1997) by analysing recurrent patterns across cases, contexts, and scales (Oberlack et al., 2016). "Syndromes of global change" decompose the dynamics of a complex system into several weakly interacting sub-systems called syndromes (Schellnhuber et al., 2002). Each syndrome presents configurations of factors and outcomes and their functional relationships as observed in multiple world regions (Lüdeke et al., 2004; Schellnhuber et al., 1997). This allows for comparison between cases to find both generality and case-specific concretization to maintain richness.

Scholars maintain the systems-theoretical idea behind the syndrome concept but go one step further in the research on institutional dimensions by using the archetype approach. In this method, archetypes refer to reappearing building blocks that partially explain certain cases (Eisenack, 2006). This means that some archetypes can be found in multiple cases, and some cases combine multiple archetypes (Oberlack & Eisenack, 2014). Thus, intermediate abstraction is required to address recurrent patterns because every place is particular, and these patterns thus indicate an intermediate degree of generality while having the potential to recur in more than one case. The underlying hypothesis for the level of generalization is that if they share archetypes, successful institutional arrangements can be transferred between cases (Eisenack, 2006). The archetype concept has recently been used in analysing land-related problems concerning archetypical livelihood vulnerability in large-scale land acquisition situations (Oberlack et al., 2016), land-based adaptation to global change (Sietz & Van Dijk, 2015), patterns of land systems (Václavík et al., 2013) and rural renewal (Wang et al., 2019).

The most illuminating and fertile distinction in how the sciences differ from one another is between various modes of scientific explanation (Elster, 1985). In particular, there are usually three categories of explanation in the social sciences—causal, intentional, and functional (Vatn, 2005)—among which causal explanations play an important role in explaining cause-effect relationships. In the archetype approach, a causal component refers to important factors and their interactions as a means of explaining outcomes across cases (Oberlack et al., 2016, 2019). As the intricate association within a set of variables, a web of causal relationships is formed in generating an outcome such that pulling on

one thread in the web can affect others (Cox, 2011). The archetype approach confronts webs of relationships by using the type-subtype relationship, and each archetype presents a subsystem of the overall system.

It is worth noting that archetype analysis provides more empirical evidence to support the results of existing case studies and may lead to new propositions for further testing (Oberlack et al., 2019). However, any archetype analysis of a limited number of cases is a heuristic process that cannot capture all the causal relationships related to a given phenomenon. For example, archetype analysis can extract a combination of factors that affect a phenomenon; however, it cannot explain how these factors affect this phenomenon in a specific situation. Therefore we may use specific case information as an example to evidence how the factors of a certain archetype interact.

We adopt the definition of an archetype as a recurrent building block (Oberlack & Eisenack, 2018). In this study, an archetype presents a reappearing configuration of the institutional, biophysical, technical, and socioeconomic factors that facilitate local collective action for land adjustment in LC in China.

3. Collective action for land adjustment in LC in China

3.1. Development of land adjustment with the transformation of LC

Since the Reform and Opening-up, with population growth and economic development, a large amount of cultivated land has been lost due to the occupation of non-agricultural construction, posing a serious threat to China's food security (Lili et al., 2015). To strengthen the protection of cultivated land, a key policy requires that the state implement a compensation system for occupied land ("Dynamic Balance of Farmland"). This means that the increase in total arable land by reclamation within a certain administrative area cannot be less than the decrease in total arable land such that the amount of total arable land remains stable. Against this background, the main goal of LC is to reclaim new arable land and expand farmland. Therefore, land adjustment was absent during this period.

At the same time, the Chinese central government strictly controls the quotas of new construction land in urban areas (Tan et al., 2009). However, urbanization requires more space to develop industry and service industries and to expand residential areas. In addition, on the one hand, a large number of farmers have flooded into the cities, resulting in idle rural housing (Long et al., 2012). On the other hand, the rural farmers who have stayed in the countryside must improve their living conditions and infrastructure (He, 2013), which is a prerequisite for large-scale land adjustment.

In particular, under China's cultivated land protection index quota system, the goal of LC has shifted from cultivated land protection to meeting the new cultivated land indicators put in practice by local governments. In fact, for local governments, one of the most important functions of LC is to "provide cultivated land" whereby LC becomes the source of local "land finance", which refers to the fact that some local governments rely on income from land use rights to maintain local fiscal expenditures. Due to the unbalanced economic development in the region, the demand for land varies, and the conditions for cultivated land and supplementary cultivated land resources are not met. Therefore, to meet the demand for land for local economic development, developed regions such as Zhejiang Province created the Zhejiang model of transferring and trading land development rights (Wang & Tao, 2009). Chengdu has developed the "linkage between urban land taking and rural land giving" (LUTRG) model, which connects agricultural LC to construction LC (Li & Zhai, 2013). LUTRG means that the increase in urban construction land is linked to a decrease in rural construction land. It refers to the several rural construction land plots (mainly from homesteads) to be reclaimed as arable land (that is, old plots) and plots to be used for urban construction (that is, new plots) that together form a project area. This model ensures that the cultivated land in the project area does not decrease through LC. In 2018, the official document, the "Three-year Action Plan for Comprehensive Land Remediation and Ecological Rehabilitation Projects (2018–2020)" of Zhejiang Province stated that the "supplement of cultivated land" in LC would be expanded from agricultural land to construction land, in particular, expansion to land for rural settlements and township enterprises, with the connotation being the further expansion of LC.

In addition, with the acceleration of industrialization, urbanization and agricultural modernization, constraints with regard to natural resources and the ecological environment have become increasingly prominent, and a single-element LC model has proved insufficient in solving the comprehensive problems of rural areas. In 2019, the Ministry of Natural Resources issued a notice to deploy pilot projects for comprehensive LC across the country, and "LC+" began to appear. As an advanced form of LC, "LC+" refers to the development of existing LC concepts and models, which means that more attention will be paid to the cohesive role of LC in attracting industrial land, integrating and coordinating funds, and promoting the restoration of the ecological environment. In practice, models such as "LC + modern agriculture", "LC + targeted poverty alleviation", and "LC + new urbanization" are emerging.

From 2012 to 2017, 89,600 LCPs were carried out nationwide, with a total construction scale of 12.3 million hectares. With the comprehensive and in-depth development of rural LC, the Chinese government has gradually changed it from a technical project into a comprehensive social project to stimulate rural development. The types of LC are gradually being diversified, the scale of LC is continuously expanding, and the adjustment of land ownership in LC is becoming more complex. These issues have raised concerns within the central government about land adjustment. Therefore, in 2003 and 2012, the Ministry of Land and Resources issued two official policy documents that set forth basic procedures and principles for land adjustment. The policy emphasizes that land adjustment should adhere to the principles of law and regulation, openness and fairness, and voluntary consultation. Obviously, from a policy perspective, the Ministry of Land and Resources requires that all land adjustment carried out by localities must be done voluntarily by farmers. This means that if farmers are unwilling to participate in land adjustment, no one has the right to forcibly adjust their ownership.

3.2. Types of land adjustment in LC in China

For historical reasons, the ownership of rural land in China is very complicated. Land adjustment in LC refers to the redefinition and distribution of ownership, use rights, and other rights of collective land in the LCP area. In China, the average land area cultivated by a family is less than 10 mu. A mu is the unit measure of China's municipal land area; one mu equals approximately 666.67 square meters. Therefore, there are many public production links in LC that cannot be managed by individual households. The emergence of LC depends on the collective action of rural society when faced with land adjustment issues. In China, from a practical perspective, there are three main types of collective action in land adjustment in LC (Wang & Hu, 2019; Yang et al., 2011) (Fig. 1).

The first type is aimed at realizing the agricultural scale effect through the adjustment of land management rights between farmers. The land of the LCP area is recovered; after the project is completed, the new land will be allocated. The common practice is to centralize the scattered land contract rights. The infrastructure is also renewed in the context of increased agricultural input from the government.

The second type is LC aimed at unifying land transfer. Industrialization and urbanization have driven a large number of farmers to work or live in cities. The land previously occupied by rural farmers entering the city is scattered in different areas, and it is interspersed with the land of the farmers who remain in the villages, which does not support the optimal allocation of land resources. Thus, village organizations adjust

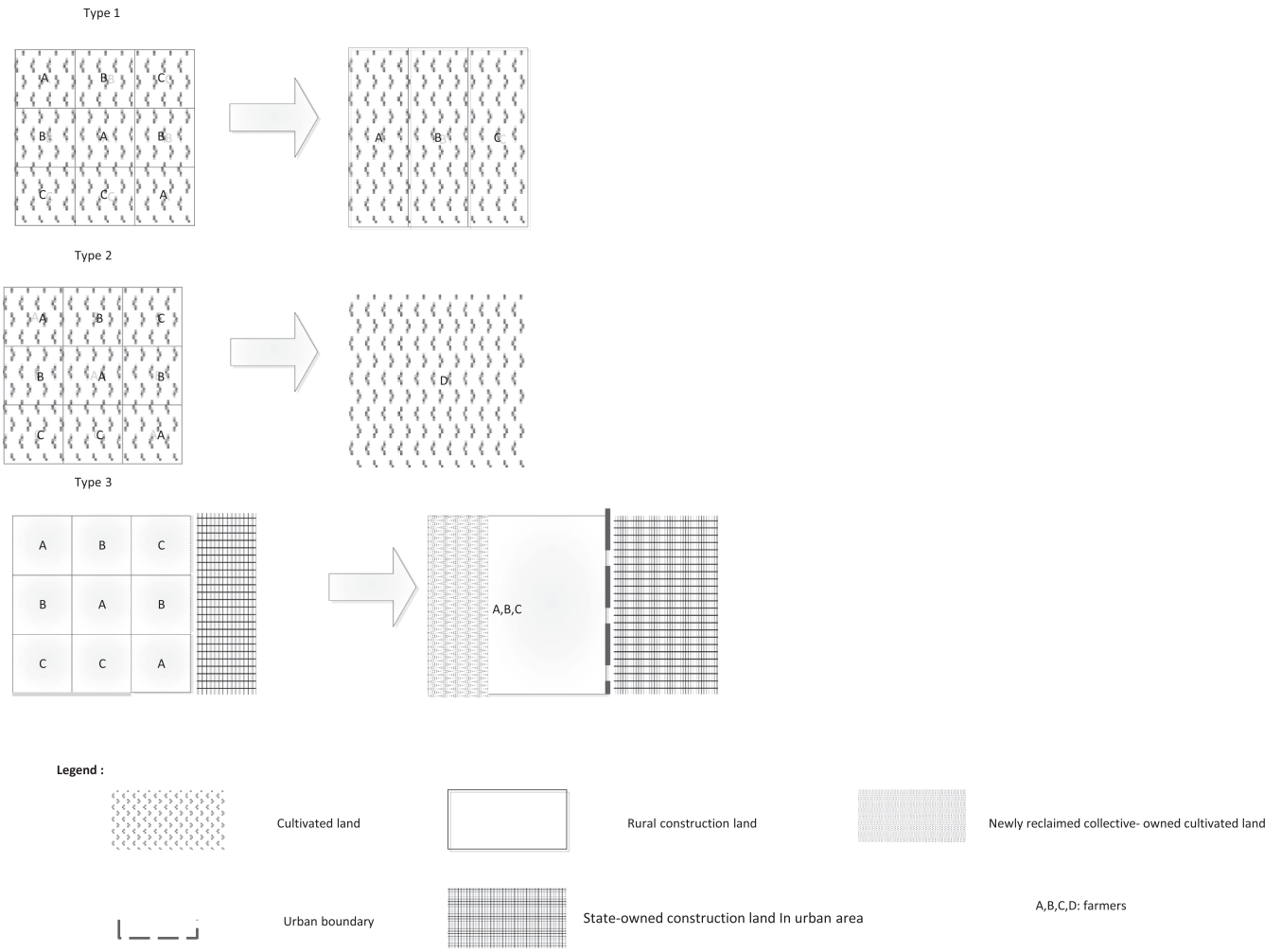

Fig. 1. Types of Land Adjustment in LC in China.

the scattered land of the farmers now living in the city to a single location and transfer it to a large-scale agricultural management entity to achieve unified land transfer in the process of LC.

The third type is LC based on transferable land development rights. For instance, some LCPs are combined with the LUTRG policy. In practice, when the increase–decrease linked project encounters one of the following situations, it will require land adjustment. First, the land adjustment will be required when the project involves the construction of multiple villager groups, for example, the farmers of villager group A are placed on the land of villager group B in the same village, or when the concentrated residential areas occupy the land of villager groups A and B at the same time. The second situation requiring land adjustment is cross-village or cross-township construction in the farmers' concentrated residential area within the LC project. At this time, the land occupied by the cross-village or cross-town must be compensated, and the corresponding ownership must be adjusted. Under these circumstances, the farmers relinquish the original land and obtain a more valuable but generally smaller piece of land as compensation when the land is redistributed. The land for compensation can be in the same or a different location (Tan & Heerink, 2017). In this way, part of the land can be saved for infrastructure or sold to (partially) cover the costs of development.

3.3. Collective action problems in land adjustment for LC in China

Although land adjustment has developed in recent years in China, land tenure in most LCP areas remains unchanged. This seems to be a paradox; that is, land adjustment, which in theory can bring great benefits to farmers, has in reality developed slowly.

The aforementioned types of land adjustment in LC represent a collective action problem. If the related participants refuse to cooperate, they are unable to improve the local infrastructure, realize large-scale agriculture, and invest in the agricultural industry by exchanging land property rights. In other words, everyone loses.

Extensive research has been conducted to diagnose the aspects of the environment that hinder collective action in land adjustment. First, legal issues are frequently mentioned. The lack of a legal basis for collective land ownership adjustment, coupled with the lack of generally accepted land redistribution standards, makes it difficult for the governor to eliminate farmers' suspicions (Han & Wang, 2016).

Second, on the one hand, given that farmers voluntarily participate in land adjustment and that the government emphasizes that if no agreement is reached, no plan will be launched (Liu & Ravenscroft, 2017), holdouts may emerge. On the other hand, there has been criticism that land quotas that were ostensibly being saved by LC were exchanged for construction land quotas that were of makingeconomic and political benefit to the government (Cai et al., 2020), thus forcing rural households to make compromises in LC (He, 2013). For example, in recent years, many places in China have actively promoted pilot "exchange homestead for apartment" projects as well as the concentrated living of rural populations to solve the problem of shortages of industrial and urban construction land. This has led to government requisitions of arable land to artificially build towns. Governments have demolished a large number of farm houses, causing farmers to live in

increasingly concentrated areas, a process referred to as "farmers moving upstairs" (He, 2013). For those farmers, first, the daily cost increased significantly after LC (Zhou & Wang, 2015). Second, as farmers are faced with "going upstairs", character of their village and the farmers' lifestyles undergo drastic changes. Indeed, perhaps the biggest criticism of the policy of land adjustment is that the government generally does not recognize that it hurts the culture and economy of many farmers (Huang et al., 2013; Xu et al., 2011; Yep & Forrest, 2016). Third, village governance has also become a problem. Compared with scattered households, these concentrated farmers have higher requirements for community services, property management and other public services (Zhou & Wang, 2015). These are also considered to be the constraints of collective action in land adjustment.

Fourth, comprehensive LC must integrate the resources of the relevant government departments to realize the comprehensive benefits of sustainable rural development. This task is beyond the reach of a single department and depends on the cooperation of all relevant departments. The cooperating departments mainly include water conservancy, ecological environment, forestry, transportation, and finance. In reality, unclear responsibilities and poor coordination of these departments cause coordination gaps among government departments and increase the transaction cost of negotiation.

Fifth, the top-down governance structure leads to a low degree of public participation in LC and is also considered to be a central collective action problem (Shi et al., 2014). For example, the selection of participants is not reasonable, the number of participating farmers is limited, and the form of participation makes it difficult to achieve effective two-way communication. Thus, the needs of farmers cannot be fully responded to, hampering their cooperation. Asymmetric power relations due to the government-led method also undermines the incentives of actors to participate in the land adjustment project because the farmers worry that the government may abuse its power to benefit a small number of people.

In addition, a lack of knowledge is also considered to be a major problem. In general, farmers have a limited understanding of policies, and they are worried that their interests will be damaged in the process of land adjustment; thus, they are not enthusiastic about participating.

Finally, sufficient financial resources are an important premise of land adjustment (Tan & Heerink, 2017). LC involves a wide range of areas, a high demand for capital, and a long construction period, particularly for the LCPs.

In particular, village renovation generally includes demolition and resettlement compensation, residential area construction, and infrastructure supporting funds that require a huge amount of capital support and are generally based on government investment. Since the implementation of the fiscal decentralization policy, local governments have been faced with major problems in maintaining their budget balance, so land adjustment may add an extra burden to their overstrained budget (Tan & Heerink, 2017). This could become an underlying problem for collective action; for instance, farmers may not obtain adequate compensation due to financial constraints.

Although there are many constraints on collective action in land adjustment, and the implementation of LCPs often involves a complex interest relationship among dozens or hundreds of farmers in a village or even several villages, there is also strong dependence among the actors. Thus, collective action has emerged nationwide in China despite the crucial heterogeneity of contexts in terms of natural conditions, economic development and governance structures for land adjustment, and the fact that it is clear that there are still some lessons to be learned concerning the emergence of collective action at the local level.

4. Materials and methods

4.1. Analytical framework

LC is a complex social-ecological system composed of multiple elements. We used Ostrom's social-ecological systems (SES) framework to code the cases (Ostrom, 2007, 2009). Although the focal SES can be considered to have logical integrity, the framework also provides a common set of relevant variables and their subcomponents for organizing studies of similar cases. The framework helps us construct relationships among a set of variables that are thought to affect outcomes. It is a multilevel, nested framework for explaining the outcomes (O) as a result of interaction processes (I) of the following variables: actors (A), resource systems (RS), resource units (RU), and governance systems (GS). Each highest-tier component presents a core subsystem of the SES and contains multiple variables at the second and at lower tiers. Therefore, it is useful for analysing archetypes.

We must modify the SES framework to appropriately code the primary case evidence. First, the "interaction" category is a challenge within the SES framework when dealing with case study data (Villamayor-Tomas et al., 2020). In particular, a large number of highly dispersed actors must participate in the LC process, that is, to achieve collective action with the help of organizational carriers and the corresponding organizational procedures. The organization of farmers is a process of public governance that emphasizes multi-agent participation and the comprehensive use of political, economic, and social means. Therefore, the interaction (I-attributes) in LC mainly includes the participation process of actors in different LC stages. Second, it proved useful to link the external structural variables to core relationships, i.e., the inner core of individual level variables that affect collective action (Ostrom, 2010) and social capital. Core relationships (C-attributes) can relate to trust, reputation, reciprocity (Ostrom, 2010), legitimacy, goal congruence (Ju & Tang, 2009), leadership (Wang & Tan, 2020), social learning (Assuah & Sinclair, 2019), and co-benefits.

Transferring the logic to collective action in the area of LC, the outcome (O-attributes) here refers to the emergence of collective action in LC. The interaction resource systems and resource units (RS attributes) correspond to the characteristics of the land-use system encompassing a specified territory (here, the village) and various types of services offered by LC. Governance systems (GS attributes) would be the equivalent of the government and other organizations that manage the LC and various institutional arrangements such as the specific rules related to the implementation, planning, and revenue approach of LC. Actors (A-attributes) include the characteristics of individuals or collectives that participate in the LC.

In short, the collective action for land adjustment in LC is the specific process by which actors (e.g., farmers); objects (e.g., land resources); and institutional mechanisms (e.g., compensation mechanisms) interact with each other (Ostrom, 2009). It is conceptualized as an outcome of the interplay between diagnostic attributes and design attributes (Oberlack & Eisenack, 2018; Wang et al., 2019). Specifically, diagnostic attributes refer to I-attributes, C-attributes, A-attributes, and RS–attributes. Design attributes refers to GS-attributes while outcome attributes refers to O-attributes (Fig. 2).

4.2. Methods

Overall, archetype analysis is a reasonable approach to analyse LC. One of the major challenges of large-N research on collective action is the large number of variables that potentially affect any type of collective action and its interaction with the identified variables through a single empirical analysis (Ostrom, 2010). The archetype approach enabled us to conceptually obtain recurrent patterns of basic interplay in LC. The objective of archetype analysis is to classify reappearing causal effects identified in the cases. Thus, to some extent, the approach enabled us to focus on narrow but strong causal relationships of collective action in LC.

In addition, the research team conducted field interviews and collected more than 200 cases in China from 2011 to 2018. Because this is an ongoing research project, the use of primary empirical cases in this paper improves the consistency and completeness of the information

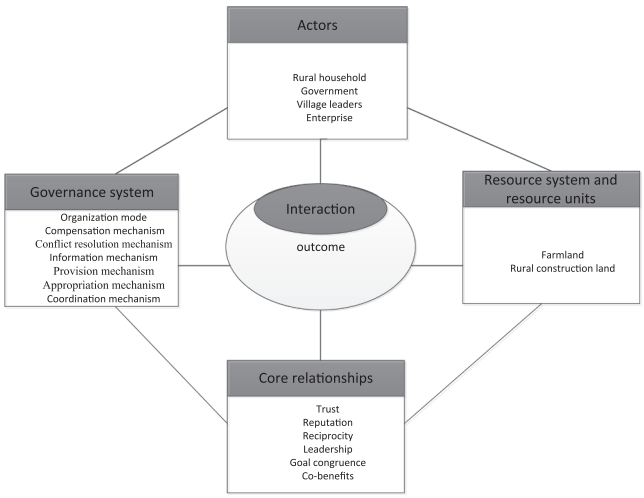

Fig. 2. Social-ecological systems (SES) framework of LC.

compared to *meta*-analytical methods. However, the archetype analysis in this study came from first-hand cases rather than from *meta*-studies such as those in the extant literature (Oberlack et al., 2016; Oberlack & Eisenack, 2018). Therefore, a relatively detailed introduction to case selection, data collection, coding, and data analysis is required to clarify the procedure of the archetype analysis of first-hand cases.

4.2.1. Case selection

The selection of cases had to meet the criteria of typicality and diversity (Sovacool, 2011). All included cases have the following in common: 1) The actors reached collective action in land adjustment in LC. 2) The cases are all from the rural land system reform pilot areas determined by central or local governments. 3) The cases belong to typical officially recognized LCPs, e.g., officials from county-level bureaus of land and resources. 4) The cases must be holistic as archetype analysis extracts recurrent patterns based on medium-sized N cases to balance the generalizability and accuracy. Each case must be completely described in text. After filtering the potential cases for the archetype analysis according to the above criteria, the samples cover 34 LC projects from 11 provinces in China (Appendix B). Each LC project investigated in a case study was treated as an individual case.

To ensure representativeness, the samples come from eastern, central, and western China, with 10–13 cases from each region (Appendix B). There are great differences among the three regions in terms of natural climate, land scarcity, demographic characteristics, and economic development. This guarantees that the identified patterns are from different contexts. In addition, the LCPs involved in the cases are funded by different actors (e.g., local government, enterprise or farmers' self-financing). In addition, both large-scale LCPs (LCP area exceeds 10 ha) and small-scale LCPs (LCP area is less than 10 ha) are involved.

4.2.2. Data collection

Interviews at three levels were conducted to gather information. For each case, interviews took place with 2–4 government officials from the county level or town level. And 3 group interviews were held separately in the village: one with village leaders or entrepreneurs, one with villagers who were involved in LC, and one with villagers who did not participate.

First, the county-level officials in charge of LC informed us about the overall situation with land transfers in the target county. They also provided us with relevant rules and regulations for LC. From county government officials, we could also learn which townships had experience in LC. Subsequently, detailed procedures to organize and implement LC were explained to us by township-level officials. They also informed us about the villages that participated in LC. Finally, the research team went to the selected village and conducted semistructured interviews to obtain further information based on a stakeholder-based approach (Vatn, 2005). We interviewed entrepreneurs, village elites, village cadres, and farmers. The questions asked of the village leaders and village elites were mainly about the socioeconomic conditions of the village and the detailed process of LC while for the farmers and entrepreneurs, the main questions were about their motivation to participate in LC.

Comments from all the interviewees were carefully recorded in written form and a consistent narrative structure. Researchers conduct regular reviews to compare their findings and ensure that nothing important has been missed. Also, the local government officials managed to take excellent records of all kinds of meetings related to LC, which served as the main secondary data source. The researchers analyze the records based on the same subject as the interview and copy important items with photos and translate them into field transcripts.

We coded the data from the recorded transcripts and field notes. Through stepwise coding, a detailed codebook of the collective action of LC was developed and continuously refined according to the attributes of the SES framework (see appendix A). Initially, the first ten cases were coded to check the feasibility and suitability of the codebook. Then, the redundant codes were removed, and the equivocal codes were clarified. Finally, all the selected cases were coded according to the second-and third-tier variables of the SES framework using MAXQDA software.

4.2.3. Data analysis

A two-step procedure was employed for data analysis. First, we used Concept Explorer software to perform a formal concept analysis (FCA) to obtain the recurrent configurations of attributes. Specifically, we imported 34 cases represented by code into the software. The input of the Concept Explorer software is a table of attributes (called objects) and their binary attributes (whether the factor exists in the case). Every concept lattice generated by FCA was computed with modern algorithms to obtain 'closure', guaranteeing that each configuration of attributes is of maximal size (Ganter & Wille, 1999). Each configuration of attributes obtained from this process is called a model. In addition, FCA can visualize the various configurations of attributes in the cases by organizing the factors in a hierarchical structure. Second, based on the C-attribute, we clustered the models to obtain the archetypes.

A model qualifies as an archetype in this study based on the following criteria: 1) An archetype must consist of at least one diagnostic attribute, i.e., a C-attribute, I-attribute, RS-attribute, or A-attribute; at least one design attribute, i.e., a GS-variable and at least one O-attribute. Specifically, there is only one O-attribute that is emerging collective action for land adjustment in LC. 2) It appears in at least two cases to guarantee that archetypes come from different sources. 3) It cannot be composed of any other models to ensure the uniqueness of causality presented by the archetype. 4) It is consistent with the theory of collective action. This procedure also yields sub-archetypes. The extension of a sub-archetype is a strict subset of the archetype but contains models with additional attributes. Thus, a sub-archetype provides more detailed data; however, it cannot provide overly specific or repetitive information about the identified archetype. We ultimately obtained six archetypes and 17 sub-archetypes covering all the cases, with 2–9 cases for each archetype or sub-archetype (Appendix C).

5. Results

The results in Table 1 show that collective action in LC in China is facilitated by a set of recurrent configurations of conditions that can be summarized as (1) leadership with a self-governance convention for self-organized LCPs, (2) legitimacy of farmers' self-organization with strong governmental support for self-organized LCPs, (3) goal congruence coupled with leadership for self-organized LCPs, (4) farmers' involvement with social learning for government-led LCPs, (5) co-benefits with reasonable revenue distribution mechanisms for government-led LCPs,

Table 1
Archetypes for the collective action for land adjustment in LC.

AT	Description of archetype	Codes	No. of cases
1	Leadership with self-governance convention and institutionalized self-organization	C7-A31-A32-RS12-GS12-GS721-I22-I33-O1	7
1.1	Leadership with self-governance convention and small group	C7-A11-A31-A32-RS12-GS12-GS721-I22-I31-I33-O1	5
1.2	Leadership with self-governance convention and low dependence of users on land resources in *peri*-urban areas	C7-A221-A31-A32-RS11-RS12-GS12-GS41-GS721-GS31-I22-I33-O1	5
1.3	Leadership with self-governance convention and high economic capacity in *peri*-urban areas	C7-A21-A31-A32-RS11-RS12-GS12-GS41-GS721-GS31-I22-I33-O1	4
2	Legitimacy of farmers' self-organization with strong governmental support	C41-C42-A32-GS12-I31-I33-I34-O1	6
2.1	Legitimacy of farmers' self-organization with strong governmental support and leadership	C41-C42-C43-C7-A32-GS12-I22-I31-I33-I34-O1	5
2.2	Legitimacy of farmers' self-organization with strong governmental support in *peri*-urban areas	C41-C42-A32-RS11-GS12-I31-I33-I34-O1	3
2.3	Legitimacy of farmers' self-organization with strong governmental support and an unsatisfactory environment	C41-C42-A32-RS51-RS61-GS12-I31-I33-I34-O1	2
3	Goal congruence coupled with leadership	C5-C7-A32-RS12-RS42-RS52-GS12-GS31-I31-I22-O1	5
3.1	Goal congruence coupled with leadership and small group	C5-C7-A11-A32-A4-RS12-RS42-RS52GS12-GS31-I31-I22-O1	4
3.2	Farmers' involvement in decision-making with leadership and goal congruence	C5-C7-A11-A32-RS12-RS42-RS52-GS12-GS31-GS721-I11-I31-I22-O1	4
4	Farmers' involvement with social learning	C8-RS51-GS11-GS41–I11-I31-O1	9
4.1	Farmers' involvement with social learning and leadership	C7-C8-RS51-GS11-GS41–I11-I22-I31-O1	7
4.2	Farmers' involvement with social learning and long-term compensation mechanisms	C8-RS21-RS51-GS11-GS22-GS41–I11-I31-I33-O1	5
4.3	Farmers' involvement with social learning and trust	C1-C8-A33-RS21-RS51-GS11-GS41–I11-I31-I34-O1	3
5	Co-benefits with reasonable revenue distribution mechanisms	C6-RS21-RS51-GS11-GS41-GS51-GS61-GS64-I31-I33-O1	8
5.1	Co-benefits with reasonable revenue distribution mechanisms and vertical coordination	C6-C7-RS21-RS51-GS11-GS41-GS51-GS61-GS64-GS71-I31-I33-O1	4
5.2	Co-benefits with reasonable revenue distribution mechanisms and distinctive quality	C6-RS21-RS31-RS32-RS51-GS11-GS41-GS51-GS61-GS64-I31-I33-O1	4
5.3	Co-benefits with reasonable revenue distribution mechanisms and policy priority in *peri*-urban areas	C6-RS11-RS21-RS51-GS11-GS41-GS51-GS61-GS64-I31-I32-I33-O1	4
6	Reciprocity with long-term compensation mechanism	C3-A4-GS13-GS22-GS41-GS51-GS53-GS54-I12-O1	6
6.1	Reciprocity with long-term compensation mechanism, and governmental support in *peri*-urban areas	C3-A4-RS11-GS13-GS22-GS41-GS51-GS53-GS54-I12-I31-O1	4
6.2	Reciprocity, long-term compensation mechanism good reputation, trust in government and distinctive quality	C2-C3-A4-RS31-RS32-GS13-GS22-GS41-GS51-GS53-GS54-I12-I31-O1	3
6.3	Reciprocity, long-term compensation mechanism and leadership	C3-C7-A4-GS13-GS22-GS41-GS51-GS53-GS54-I12-I33-O1	3

and (6) reciprocity with a long-term compensation mechanism for enterprise-led LCPs. The text below describes each of these and provides specifics through case examples.

Self-organized LCP means that the LC is mainly led by self-organization. The self-organized mode relies on the village community organization and emphasizes the participation of farmers. Government-led LCP means that the LC is mainly led by the local government. The local government dominates most of the stages of LC and plays a leading role for government-led LCPs. Under this circumstance, the government not only acts as the executor and cost payer but also as the policy decree and plan maker. Enterprise-led LCP means that the LC is mainly led by the enterprise. The enterprise assumes the main responsibility and is responsible for all governance processes such as the demolition and resettlement of residential areas as an independent stakeholder.

5.1. Leadership with self-governance convention for self-organized LCPs

Archetype 1 shows that in some self-organized LCPs, strong leadership together with the self-governance convention and institutionalized self-organization enhances local collective action. Leadership describes situations in which one or several members who have entrepreneurial skills are respected as local leaders in the rural community. Such elites are accountable to the public for social status, prestige, and glory, and they are recognized as not (only) pursuing (individual) material interests. They can effectively influence the attitudes and behaviours of other members of the village. For instance, in some cases, self-organization, which comprises village leaders, reputable elders, and capable people, is responsible for most of the work of LC including confirmation of rights; area calculation; methods of compensation; representing the interests of farmers and conveying the negative opinions of farmers to the local government, which greatly strengthens the willingness and capacity of farmers to communicate.

The self-governance convention and institutionalized self-organization are other components of archetype 1. Some cases include the self-governance convention, which is manifested in village regulations and agreements about collaborative implementation, mutual supervision, and reasonable income distribution, which nourishes collective action. Allied with strong leadership and self-governance conventions, cooperation is more likely to emerge in villages with small groups (sub-archetype 1.1), low dependence on land resources (sub-archetype 1.2), and high economic capacity (sub-archetype 1.3).

5.2. Legitimacy of self-organization with governmental support for self-organized LCPs

Normative legitimacy means that values pursued by the LC are right and proper for the good of society as a whole, and cognitive legitimacy means that farmers regard the LC as comprehensible and "taken for granted". Realization legitimacy means that land adjustment goes beyond simple individual household interests and is linked to broader collective interests such as sustainable rural development and ecological preservation. It helps reconcile local anti-growth sentiments and address holdout problems regarding broader societal concerns.

Legitimacy does not work well in the absence of governmental support. Regardless of the momentum of self-organization in land adjustment governance experiences, governments still play an important role in facilitating local collective action. This combination of legitimacy and governmental support greatly promotes collective action in land adjustment. On the one hand, an important policy backup is provided by the government. For example, after Chengdu became a pilot for reform, the earlier pilot area sought to establish a new village development council and successfully resolved various disputes. After this new type of organization was recognized (gained regular legitimacy), Chengdu began to conduct pilots in various districts and counties and issued relevant government documents, forming an overall framework for village-level governance mechanisms. This provided an institutional

environment for changes in the governance structure within the community. Given the strong economic incentives and organizational support from the government, individual farmers were inclined to cooperate.

Within Archetype 2, the three sub-archetypes have two other components for self-organized LCPs. First, legitimacy is achieved by the self-organization of farmers and their actions. Specifically, regulatory legitimacy means that the self-organization of farmers is recognized by the government and that the implementation of LC conforms to governmental rules and regulations. This happens because the government allows experiments in designated pilot areas with land adjustments organized by farmers and the private sector. Regulatory legitimacy helps alleviate legal problems and improve the governance structure of the land adjustment.

Two interesting insights are sub-archetype 2.2 and sub-archetype 2.3. First, it is more profitable to implement a LCP in suburban areas because the economic value of land is often higher (2.2). If the initial infrastructure and environment are relatively poor, farmers will have a strong desire to improve their living environment (2.3). These issues, in connection with the legitimacy of farmers' self-organization and governmental support, enable the cooperation of farmers.

5.3. Goal congruence coupled with leadership for self-organized LCPs

Goal congruence coupled with leadership also plays an important role in cases of self-organized LCPs. Goal congruence means that participants have achieved consensus on the common goals of LC. A typical practice is that of Dezhou City, Shandong Province, located in the plain area, which has adjusted seven or eight pieces of land scattered by farmers to one location and merged the plots, thereby realizing "one household and one field" through land adjustment. The consolidation was in the common interest of farmers for farmland fragmentation governance; thus, the partnerships had high goal congruence. Even if common interests are formed in the village, the cost and benefits experienced by each farmer are different, and the collective action of the farmers still relies upon the leadership in the village. For example, local leaders also take advantage of their many informal relationships and social capital with farmers to adjust and guide the behaviour of farmers through lobbying activities, forming a collective action cultural identity of "public interest first".

We find two sub-archetypes in this category. First, village community organizations generally take villager groups as units and organize farmers to make rules. On the one hand, the villager groups are small; generally, there are 20 or 30 households; therefore, the farmers have a high degree of mutual trust and highly efficient communication (sub-archetype 3.1). Second, due to the sufficient involvement of the farmers in decision-making, the self-organized groups can use local times, places, and information to make reasonable decisions, enhance the effectiveness of public decision-making, and conduct detailed coordination of income distribution and cost-sharing actions (archetype 3.2). For example, in the practice of unified LC in Shayang County, Hubei Province, there are 10 problems in a village, such as the distribution of wasteland, the use of public weirs and ponds, the distribution of land plots, the adjustment of planting structures, and the construction of tractor roads; further, each village group must solve a different set of problems.

5.4. Farmers' involvement with social learning for government-led LCPs

For government-led LCP cases, the effective involvement of farmers in both decision-making and social learning are the main components for archetype 3. For government-led LCPs, sufficient and effective participation by farmers is instrumental in guaranteeing process transparency and achieving a two-way flow of information. The farmers underscored the importance of their discussions and decisions about the sharing of costs and distribution of profits. These discussions and decisions are important for enhancing the farmers' trust in government because they prevent special interest groups or individuals (i.e., the state and local elites) from using or even abusing their power to increase their benefits; they also build trust between participants.

The farmers also indicated that they had acquired new knowledge related to LC through policy advocacy from the government and the village committees. For example, local governments use radio, television, and other media to vigorously publicize the upcoming experience and practice of land adjustment; thus, participants can learn from other areas that have had prior experiences with land adjustment. In addition, the farmers deepened their understanding of issues related to LC through lobbying activities from local leaders (sub-archetype 3.1). For example, in some cases, village cadres allowed the farmers to realize the economic benefits brought by unified LC through accounting to persuade them to participate.

Another important component is the long-term compensation mechanism (sub-archetype 3.2). In some cases, the long-term compensation mode includes work opportunities, regular income bonuses, and social security. These measures have been adopted to guarantee the sustainable livelihood of farmers after LC. This diversified compensation mechanism reduces farmers' concerns of being excluded under the government-led mode.

5.5. Co-benefits with reasonable revenue distribution mechanisms for government-led LCPs

Co-benefits are achieved in government-led LCPs. This means that more than one objective is achieved through LC. However, as mentioned above, LC projects are mainly funded by the government, and budget limitations have been a major problem. Combining government funds through project packages has a scale effect on capital, making it an efficient approach, especially in poorer parts of the country. Project packaging means that the local government applied and packaged different-but-related projects from different government levels and departments. For example, it binds together the funds for LC, farmland and water conservancy, village construction, and other projects to concentrate them into one project, which is helpful for local economic construction. In this way, the governments can raise sufficient funds for LC and achieve the goals of each project simultaneously. This, in turn, can effectively improve the living environment of the project area so that the farmers are more inclined to actively participate.

Another component is reasonable revenue distribution mechanisms. For LC based on transferable land development rights, LC can often achieve a huge appreciation income from the land. Therefore, the distribution of income becomes the core issue. Generally, a reasonable income distribution mechanism requires the local government to share the value-added income generated by land adjustment with other stakeholders.

For local governments, the total amount of funds for LC is fixed, and local governments prefer to choose villages with leadership (archetype 4.1) and distinctive quality (archetype 4.2) to reduce conflicts and promote the development of the rural industry. In addition, in a few cases, LC has been prioritized, particularly in comparatively developed areas with good accessibility (archetype 4.3). Under the pressure of performance appraisal, the local governments naturally choose those villages with a good foundation and strong qualities. This is because as long as one invests a small amount of resources, one can clearly and quickly achieve results, which is a tempting return for some governments.

5.6. Reciprocity with long-term compensation mechanism for Enterprise-led LCPs

In practice, we found that reciprocity and long-term compensation mechanism emerged in enterprise-led LCPs. Enterprise-led LCPs means that the LC is mainly led by enterprises. Enterprises obtain long-term

income by investing in new industries (such as rural tourism), and farmers obtain job opportunities and improve land productivity. The participation of enterprises can make up for the lack of financial resources to a certain extent as they cover all or a certain ratio of the total cost of the LCP.

Government support plays a significant role in the enterprise-led mode. First, the enterprise needs the government to create a favourable investment environment (sub-archetype 5.1). For example, the government works out preferential policies for the involvement of external funds in LC, and the establishment of a land property transaction platform under government supervision also contributes by facilitating investment activities. Second, the enterprise needs the government to establish trust in the whole project (sub-archetype 5.2). For instance, in terms of the implementation of an LCP, one of the main risks plaguing an enterprise is that individual farmers will not comply with the contract. For example, in some villages, the farmers received new houses but failed to demolish the old ones according to the contract. Under these circumstances, the enterprise signs a contract with the government and relies on the good reputation of the local government to promote project implementation.

In particular, investment activities are typically driven by market incentives including good accessibility with close market proximity (sub-archetype 5.1) or a distinctive quality such as plentiful tourism resources (sub-archetype 5.2). In addition, investors prefer villages with sufficient social capital, and they rely on local leadership to handle hold-up problems (sub-archetype 5.3). For example, most of those with strong opposing opinions were persuaded by recognized local chiefs. This can greatly reduce the costs of negotiation for enterprises.

6. Conclusions and discussion

To achieve common benefits in rural communities, farmers organize in various ways to solve the problems of rural public affairs. Through the lens of farmers reaching agreements in land adjustment and voluntarily achieving the exchange of property rights for LCPs, we explored the underlying patterns leading to local-level collective action across 34 cases from eastern, central, and western China using archetype analysis. Despite the fact that every case had a different context, the results show that there is a set of 23 configurations of factors, and these configurations bear a causal relationship with collective action in land adjustment, which can be clustered into six archetypes, of which three concern self-organized LCPs, two concern government-led LCPs and one concerns enterprise-led LCPs. This paper shows that such core relationships of legitimacy, trust, reputation, reciprocity, and leadership, together with other conditions, might be necessary or sufficient for cooperation. It is the combination of primary variables rather than any single variable alone that makes a difference.

Some collective action conditions such as group size, reciprocity, and trust are well known in the existing literature and are reconfirmed in this analysis (Olson, 1965; Ostrom, 2009, 1990). As shown by self-organized LCPs in sub-archetype 1.1, a small group of farmers can realize collective action by themselves. Second, collective action is particularly likely to occur based on trust and reciprocity, as evidenced by enterprise-led LCPs sub-archetypes 5.1–5.3. Furthermore, several distinctive implications are drawn from the archetype analysis.

First, local leadership combined with self-governance conventions and institutionalized self-organization and powerful local leadership allied with goal congruence create favourable conditions for local collective action of self-organized LCPs. For self-organized LCPs, under the strong leadership of village cadres, local collective action can be realized with a formal and institutionalized self-governance convention in the case of a relatively small group (sub-archetype1.1), a low dependence of users on land resources (sub-archetype 1.2), and a high economic capacity of farmers (sub-archetype1.3). Sub-archetype 3.1 also suggested that leadership allied with co-benefits makes a difference in facilitating cooperation in self-organized LCPs.

Leadership also plays a significant role in facilitating local collective action for land adjustment under government-led and enterprise-led modes as government and enterprises rely on local leadership to avoid having to contact numerous scattered farmers and to save on transaction costs. For government-led LCPs, local governments prefer to choose villages with leadership as evidenced by sub-archetype 4.1. For enterprise-led LCPs, the combination of reciprocity and leadership also enhanced the capacity of local collective action. This may be because, in a relatively immature market such as China, human factors are still crucial to the implementation of land adjustment. The village cadres collected and conveyed the farmers' negative opinions about the initial LC scheme to the local government and the enterprises, serving as a communication bridge between the external actors, i.e., the government and enterprises and the farmers. Thus the government and enterprises can avoid having to contact numerous scattered farmers and save transaction on costs. Moreover, the village cadres use their reputation to convince the villagers to participate in LC. The findings indicate that they made every effort using their social network to persuade the local government to give up its excessive intervention and to protect the farmer's interests.

Second, while excessive intervention by the government is restrained under the self-organized and enterprise-led mode, the archetypes highlight that government participation facilitates local cooperation. The archetypes show that land adjustment is not a dichotomy of "governance by the government" or "governance by self-organization". It has been found that the government-controlled system provides strong incentives for pursuing their financial self-interest rather than the local people's benefit (Tang et al., 2012). This may well be the case. However, government-led projects are still likely to strengthen local collective action with local involvement and local leadership (archetype 4). The government also has a great deal of influence in facilitating local collective action both in self-organized LCPs (archetype 2) and enterprise-led LCPs (sub-archetype 6.1) through different instruments. For self-organization LCPs, the legitimacy of farmers' self-organization, strong governmental support, leadership and an unsatisfactory environment create favourable conditions for local collective action while for enterprise-led LCPs, reciprocity with governmental support contributes to local collective action in *peri*-urban areas.

Third, for government-led LCP cases, the effective involvement of farmers and social learning combined with leadership, long-term compensation mechanisms or trust create favourable conditions for local collective action. A crucial factor is the attitude of the government. Although the government acts as a participant, farmers will benefit from limited intervention by the public authorities. In other words, it is important to distinguish between government coercion and government domination. In China, the government-led mode has advantages under the current conditions. The key lies in how the farmers' right to participate is protected; farmers should be given the right to choose rather than having the will of the government imposed on them. That is, while excessive intervention by the government is restrained under the self-organized and enterprise-led mode, the cases highlight the dependence on the government to facilitate local cooperation.

Finally, the government and enterprises likely engage in rural collective action through divergent mechanisms motivated by their political or economic goals. For local government actors, the government intends to improve rural living conditions through LC to upgrade its political performance in the implementation of the national strategy as manifested by a combination of attributes in archetype 5; that is, co-benefits are achieved through LC. However, this will also lead to the problem of excessively tilting government resources to a small number of villages. Judging from the actions of individual local governments, driven by radical political achievement goals and driven by the logic of governance facilitation, the government has a relatively concentrated investment of millions of special projects in a few demonstration villages, giving them special policy resources to ensure that the village can realize the construction of public service facilities in a short period,

resulting in the inefficient use of public resources. Enterprises equally negotiate with farmers with the support of the government and pursue a win–win outcome based on market-oriented and profit-driven mechanisms as presented in archetype 6.

Admittedly, the archetypes of local collective action illustrated in this study are only based on 34 LC cases in China through the lens of farmers reaching agreements in land adjustment. Therefore, further research based on other cases, other fields, and other forms of collective action is continuously required to explore more diverse patterns and jointly illustrate the whole picture of collective action in LC. Furthermore, sometimes the combination of factors can significantly facilitate the local collective action of LC, producing "a whole greater than the sum of the parts". Further research may build on our findings by investigating the multiplying effect.

However, this research still makes contributions in the following respects. First, the study provided new empirical evidence for some classical collective action conditions from the practice of LC in China. Second, the Chinese government has been devoted to finding duplicable and applicable institutional patterns for governing natural resources, and archetype analysis provides a good analytical perspective. Third, the conclusions of this study on the role of the government in promoting local collective action provide a reference for conducting similar studies in other transitional countries that rely on government intervention and have a collective governance tradition.

7. Authors

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CRediT authorship contribution statement

Yanqing Gong: Writing - original draft, Data curation, Software. **Rong Tan:** Conceptualization, Methodology, Writing - review & editing, Supervision.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.landurbplan.2021.104160.

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