

Mechanisms of Rural Cluster Development: A Comparative Case Analysis of Eight Models in Zhejiang, China

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Abstract

Inter-village collaboration is a common challenge in rural governance, and how to build durable cooperation mechanisms is a shared concern across rural development practices. This study examines rural cluster development in Zhejiang Province, China. Based on a comparative case analysis of eight models covering thirty clusters, it develops a three-dimensional framework of mobilization, coordination, and distribution to explore how rural clusters operate and evolve. The study finds that rural cluster development is essentially a functional restructuring of rural development units: resources are integrated across villages without altering village boundaries. The eight models form three types of mechanism configuration according to their driving-force structures: externally guided, market-driven, and community-activated. The sustainability of collaboration depends on the degree of coupling among the mobilization, coordination, and distribution mechanisms.

Keywords

Rural cluster development, Inter-village collaboration, Mechanism analysis, Rural governance

Introduction

Villages are the basic units of rural development, and the difficulties they face tend to be similar across countries: small scale, fragmented resources, and industries that are hard to link into chains. Development approaches built on the single village are becoming increasingly strained. In response, many countries and regions have explored various forms of inter-village collaboration. The European Union (EU) promotes bottom-up development through the Liaison Entre Actions de Développement de l'Économie Rurale (LEADER) approach, which takes functional territories rather than administrative units as the basis for action [1]. Facing population decline, Japan has reorganized settlements and built inter-community cooperation networks [2]. India has experimented with hierarchical village clustering to improve regional resource allocation [3]. These practices raise a common question: When the endowment and governance capacity of a single village are insufficient to sustain development, how is inter-village collaboration possible?

Rural cluster development in China is a domestic response to this question. A rural cluster represents a development approach. Under this model, several geographically adjacent villages with similar resources

and interconnected industries are integrated. Administrative boundaries remain unchanged, while key villages act as core nodes for joint planning, coordinated industrial development, and shared-benefit distribution. Zhejiang Province has been an early mover. In 2018, Tiantai County first proposed cluster-based development at the county level. Since 2020, the practice has appeared every year in Zhejiang's top-priority annual policy document on rural affairs. In 2024, the Zhejiang Provincial Regulations on the Green Rural Revival Program required, in local legislation, the establishment of working mechanisms for cluster development. In 2025, Zhejiang officially released eight models of rural cluster development together with thirty practice cases, setting a target of building five hundred provincial key-village clusters by 2027.

Practice has also presented some challenges. In a few clusters, joint deliberation platforms have yet to function at full capacity, and benefit linkages remain to be consolidated. Yet practice has also yielded rich and encouraging experience. A growing number of clusters have moved from mere association toward genuine integration, with joint deliberation platforms functioning

effectively in day-to-day governance. Industries across neighboring villages are becoming increasingly complementary, and each village is gradually finding its differentiated role within the cluster. The cross-village flow of resources is being steadily facilitated, benefit linkages are growing tighter, and villagers' sense of gain continues to rise. The organizational framework of a cluster can be established quickly, and the inner mechanisms that sustain its operation are being refined alongside it.

This leads to the research question of this study: Why do some clusters achieve substantive integration while others stop at formal association? What configuration of mechanisms explains the difference? To answer this question, this paper builds a three-dimensional framework of mobilization, coordination, and distribution, and conducts a comparative analysis using the eight models and thirty clusters in Zhejiang as case material.

Literature review and theoretical foundations

International research

The international literature related to our topic falls into four strands.

(1) Collaborative governance and Institutional Collective Action

Based on a meta-analysis of 137 cases, Ansell and Gash proposed a contingency model of collaborative governance, identifying starting conditions, facilitative leadership, institutional design, and the collaborative process as key variables. The process itself consists of face-to-face dialogue, trust building, commitment, and shared understanding [4]. The Institutional Collective Action (ICA) framework proposed by Feiock further argues that in governance systems with fragmented authority, the decisions of a single government produce externalities for other jurisdictions, so cross-jurisdictional cooperation faces both transaction costs and collaboration risks. Institutional mechanisms, ranging from informal networks to formal contracts and authority consolidation, function to reduce these costs and risks, and actors tend to choose arrangements that bring the greatest gain at the lowest cost [5]. Tavares and Feiock applied the framework to inter-municipal cooperation in Europe and found that economic development levels and perceived collaboration risks significantly shaped the choice of cooperation

mechanisms [6]. This strand offers a basic framework for understanding inter-village collaboration, but most applications focus on the city or county level, and research at the village level is rare. Existing studies also concentrate on process variables and pay little attention to how the gains from collaboration are distributed among members, a dimension that matters equally for sustainability.

(2) Industrial cluster and growth pole theory

From Markusen's external economies of industrial districts to Porter's diamond model and Markusen's cluster typology, cluster theory explains how geographically proximate actors gain competitive advantage through specialization, knowledge spillovers, and shared facilities [7,8]. Perroux's growth pole theory and its polarization-diffusion mechanism provide a spatial-economic reference for understanding how core nodes drive surrounding areas [9]. This strand explains the economic logic behind cluster formation, but its unit of analysis is firms and industries. It does not deal with governance relations among administrative villages and cannot explain how gains are distributed among collective actors.

(3) Network governance and territorial development

Networks constitute a new paradigm of rural development and stress the importance of linkages across sectoral and organizational boundaries. The EU LEADER approach takes functional territories rather than administrative boundaries as its policy unit, relying on local action groups to bring together public agencies, market actors, and social forces [10]. Neo-endogenous development theory emphasizes the interaction between external support and internal community activation; drawing on rural governance in China. Xin and Gallent proposed a concept of neo-endogenous development combining an active state with activated communities [11]. This strand offers organizational references for cross-boundary collaboration, but its unit of analysis is relatively large, and the micro-level mechanisms of collaboration between villages have not been examined closely.

(4) Rural restructuring and spatial governance

The rural restructuring theory of Halfacree holds that contemporary rural space is undergoing functional and social restructuring, and that the meaning and governance of the rural are being redefined [12]. Chinese

scholars have built on this work to develop analytical frameworks of rural spatial governance, treating rural space as an object of governance and discussing the relationship between the allocation of development rights and spatial restructuring [13,14]. Rural cluster development constitutes one form of spatial restructuring for rural development units, and it falls directly within this research strand. It preserves existing village administrative boundaries yet reorganizes functional connections across villages. This represents a spatial-governance practice that maintains fixed boundaries while recombining functional elements. Most existing studies, however, focus on single domains such as land or projects, and a systematic explanation of the mechanisms behind cluster development as a comprehensive governance arrangement is still lacking.

Domestic research

Research on rural clusters in China has grown quickly alongside practice in Zhejiang and elsewhere. It can be grouped into three strands.

(1) Concerns the conceptual connotation

Gusmanov et al. argue that rural cluster development represents a form of territorial cooperation among neighbouring municipalities. Rather than pursuing administrative amalgamation, it builds functional ties across jurisdictional borders via economic cooperation and joint institutional arrangements. It shifts the focus of rural development away from individual settlements toward larger intermunicipal functional territories. Such collaborative arrangements improve horizontal coordination and unlock collective resource advantages across participating localities [15]. Other scholars have proposed spatial restructuring frameworks to interpret cluster development [16]. These studies clarify the basic attributes of rural clusters, but the terminology is not yet unified, and formulations suited to international academic discourse are lacking.

(2) Concerns the development units and scales

Related research highlights that cluster-based development represents a rescaling of rural governance units driven by functional logic. Resource allocation shifts from bureaucratic, administration-led modes to spatial-functional coupling. This narrows the institutional gap between fragmented administrative ownership and large-scale modern production [17]. Sun et al. constructed a function-network framework for contiguous development at the county scale and

discussed planning responses to the shift from single-village improvement to linked development [18]. This strand explains the institutional logic of rural clusters, but most of the work is theoretical deduction with little comparative empirical evidence.

(3) Concerns the operating mechanisms

Drawing on symbiosis theory, this study builds an analytical framework centered on symbiotic unit reconstruction, behavioral integration, and mutually-beneficial symbiosis. It illustrates how organizational embedding fosters the formation of intervillage collaborative relations through the practice of cross-village joint operation [19]. From the perspective of differentiated pathways for China's rural revitalization, Geng et al. established a systematic multidimensional evaluation logic for clustered rural development. They proposed the five-dimensional "5I Framework" (industry, inhabited environment, indoctrination, infrastructure, income). The framework was originally constructed to evaluate the overall development status of rural revitalization, with western China as a case, and provides a reference for assessing coordinated rural development [20]. This strand comes closest to our analytical framework, but it still relies on deep descriptions of single cases and lacks multi-model comparison.

Research gaps and positioning of this study

Taking together, existing research has three gaps. First, a theoretical gap: International literature lacks conceptual tools for describing and explaining rural clusters as a meso-level governance arrangement in rural areas. Second, a comparative gap: Existing studies are mostly deep descriptions of single cases; systematic comparison across models is lacking, and the question of how mechanism configurations differ across models and under what conditions each works remains unanswered. Third, a distribution gap: The collaborative governance literature focuses on the process of collaboration itself and pays little attention to how the gains of collaboration are distributed among villages, a key variable for sustainability. Chinese practice, by contrast, shows that the credibility of distribution rules directly affects whether collaboration survives.

Our research design follows from these gaps. Using the eight models and thirty clusters in Zhejiang as empirical material, this paper extracts a mechanism framework that can speak to international theory while addressing all

three gaps. Specifically, this paper proposes the concept of rural cluster development to fill the conceptual gap, build a three-dimensional framework of mobilization, coordination, and distribution to fill the comparative gap, and take the distribution mechanism as the core point of entry to fill the distribution gap.

Analytical framework

Defining the core concept

This paper defines rural cluster development as follows: Without changing administrative boundaries, several geographically adjacent villages with similar resources and related industries are organized around key villages as nodes. Through organizational restructuring and institutional supply, resources are integrated across villages, industries coordinated, and gains shared, forming a functional development community. The concept has three layers of meaning. In terms of units, the development unit expands from a single administrative village to a functional cluster. In terms of mechanisms, decision-making shifts from dispersed village self-governance to inter-village collaborative governance. In terms of objectives, development outcomes move from being enjoyed by each village alone to being shared across the cluster.

This definition can be distinguished from several related concepts. Industrial clusters take firms as units and focus on production efficiency. Rural clusters take administrative villages as units, and their core issue is governance arrangements. Regional integration operates at the city or county level and mainly involves inter-governmental coordination; rural clusters operate at the village level and deal with cooperation among collective actors. Village mergers are changes to administrative establishment; rural clusters leave administrative boundaries and collective asset ownership unchanged and belong to functional integration. Boundaries fixed and recombined functions are the institutional features that distinguish rural clusters from these concepts.

The three-dimensional mechanism framework

Drawing on the classification logic of cooperation mechanisms in the ICA framework and the definition of process variables in collaborative governance theory and combining these with the practice of rural clusters in China. This paper proposes a three-dimensional mechanism framework of mobilization, coordination, and distribution.

The mobilization mechanism answers how collaboration is initiated and kept running. It has three analytical elements. First, the formation of an interdependence base refers to the interest linkages that arise among villages from factor complementarity, market demand, brand sharing, or the injection of external resources. Second, the role of mobilizing actors consists of the parts played by core-village leaders, returning youth, outside firms, and externally embedded agents initiating collaboration. Third, the conversion of initial momentum into sustained momentum concerns whether the mobilization effect can withstand market fluctuations, policy adjustments, and personnel changes. Theoretically, the stronger the interdependence base and the more credible the mobilizing actors, the lower the perceived collaboration risks and the higher the willingness of villagers to participate.

The coordination mechanism answers how decisions are made and how actions are aligned. It has three elements. The first is organizational devices: the establishment of coordination carriers such as joint deliberative bodies, development councils, operating companies, and special cooperation platforms. The second is deliberation and decision rules, including collective deliberation, tiered deliberation, and rotating chairmanship. The third is information and trust infrastructure: institutional arrangements such as joint planning, co-built brands, and regular exchanges that reduce transaction costs and accumulate inter-village trust. Stable entry points for deliberation and enforceable adjudication-and-execution loops correspond to the institutional conditions for face-to-face dialogue and commitment development in collaborative governance theory.

The distribution mechanism answers how the gains of collaboration are distributed. It has two elements. The first is property rights arrangements: How ownership of assets, rights to return, and supervisory rights are allocated among actors. The second is distribution rules: the combination of guaranteed returns, dividends by share, performance incentives, and risk sharing, and whether this combination is compatible with incentive. The distribution dimension is the focal point of our dialogue with international literature: collaborative governance research rarely touches on this dimension. While practice in China shows that the credibility of distribution rules directly affects whether collaboration

survives.

Analytical propositions

On this basis, this paper puts forward three propositions. Proposition 1: The driving-force structure determines the initial form of mechanism configuration; the externally guided, market-driven, and community-activated types differ systematically across the three dimensions of mobilization, coordination, and distribution. Proposition 2: The degree of institutionalization of the distribution mechanism is the key variable distinguishing substantive integration from formal association; the more explainable, enforceable, and predictable the distribution rules, the more sustainable the collaboration. Proposition 3: When external resources shrink or key actors exit, clusters with low coupling in the mobilization mechanism are more likely to decouple, and collaboration degrades from substantive cooperation to formal maintenance.

Research design and methods

Choice of method

This study uses a comparative case study method. There are two reasons. First, the research question is a process-mechanism how-question; the phenomenon is embedded in a specific institutional context with fuzzy boundaries, which suits the case method. Second, the comparison follows the logic of most similar systems: The thirty clusters share the institutional environment of Zhejiang Province, with similar policy frameworks and factor market conditions, so differences in driving-force structure become the main comparative variable. This design helps control background variables and brings out mechanism differences.

Case selection

The case base draws on eight official models and thirty rural clusters released by Zhejiang Province in 2025. It covers eight categories: renowned-village-led, industry-integration, youth-return-driven, project-and-platform-driven, ancient-village-development, state-capital-driven, village-enterprise-cooperation, and joint-company-led types. The clusters span eleven prefecture-level cities and include plains, mountainous, and island areas, with industries ranging from agriculture to cultural tourism to mixed forms. Three criteria guided case selection: Typicality, since all cases are officially announced provincial practice cases; diversity, covering different driving-force structures and industry types; and

data availability, as case information, policy documents, and performance data are all publicly accessible.

Data sources

This study adopts data triangulation, drawing on four types of evidence. First, policy documents: more than thirty documents issued between 2018 and 2026 at national, provincial, and municipal levels, including guiding opinions, regulations, and implementation plans. Second, case materials: officially released case descriptions, construction plans, and annual progress reports. Third, public reporting and statistics: in-depth media reports on the clusters and officially published performance data such as average per-village collective operating revenue. Fourth, observation notes and interview material accumulated during field research by the research team, used as supplementary evidence. Overall, the study relies mainly on public and secondary materials, with field material as a supplement; this point is discussed further in the limitations section of part eight.

Analysis strategy

The analysis proceeds in two stages. The first stage is coding and classification: Open coding extracts mechanism concepts from case materials, such as brand spillover, joint deliberation, and guaranteed dividends, and axial coding assigns them to the three-dimensional framework. The second stage is comparative analysis: Cross-case comparison identifies commonalities and differences in mechanism configurations across models. For typical clusters such as Da-Xiajiang, Datahou, Baxianjidao, and Xingfu Badujie, process tracing reconstructs the causal chains of how collaboration formed and operated. Three measures protect validity. For evidence, triangulation requires that the same fact be corroborated by at least two types of sources before it enters the analysis. For coding, open-coding categories were revised in two rounds, and rival explanations, for example that performance differences stem from location rather than mechanisms, were checked against the case materials one by one.

A typology of models: Practice in Zhejiang

Background of the evolving practice

Rural cluster development in Zhejiang has gone through a continuous process. In 2018, Tiantai County was the first to propose cluster-based development at the county level and drew up a three-year action plan. Since 2020, cluster development has appeared every year in

Zhejiang's top-priority annual policy document on rural affairs, becoming a regular policy orientation for rural work across the province. In 2024, the Zhejiang Provincial Regulations on the Green Rural Revival Program were promulgated, requiring for the first time in local legislation that working mechanisms for cluster development be established. In 2025, Zhejiang issued the Guiding Opinions on Promoting Rural Cluster Development and officially released eight models with thirty practice cases, setting the target of building five hundred provincial key-village clusters by 2027 and driving more than three thousand surrounding villages. During the same period, Taizhou City enacted the first local regulation in China promoting rural cluster development, and the provincial government set up special funds to support cluster construction. By this point, rural cluster development had evolved from grassroots innovation into an institutionalized arrangement with legal basis and fiscal support.

Reconstructing the typology of eight models

The eight models were officially named after their leading features. This study regroups them into three types by driving-force structure, forming a more analytical typology.

Externally guided models take external capital and platform resources as their initial driving force. A typical project-and-platform-driven case is the Dacacun cluster in Rui'an City, which integrates project resources relying on a national modern agricultural park. From 2021 to 2024, the average collective operating revenue of its fourteen villages rose from 1.04 million to 1.68 million yuan. A typical state-capital-driven case is the Baxianjiao cluster in Jindong District, Jinhua City. A district-owned enterprise constructed a shared development corridor by adopting a design-and-operation integrated model. It also established a professional operating company with four participating parties, including village collectives, social investors, professional operators, and industrial alliances. The pattern is state companies handling development and construction, village collectives taking equity shares, and villagers receiving rent through land transfer; since opening on New Year's Day 2024, the corridor has received more than 2.10 million visitor trips. This type has strong mobilization capacity, but linking construction with operation is the test of its sustainability.

Market-driven models are led by market actors or market organizations. A typical industry-integration case is the Dacacun cluster in Tiantai County. Guided by the principle of "one village, one positioning", eight villages in this cluster focus on the mugwort industry. They develop differentiated business forms including homestays, orchard picking and cultural experiences, building a complete industrial chain that integrates planting, processing, sales, tourism and health care. From 2020 to 2024, the average collective operating revenue of each village increased from 120,000 yuan to 510,000 yuan. A typical joint-company-led case is the Xingfu Badujie cluster in Changxing County, where five villages founded a cultural tourism company following the principles of voluntary association, joint participation, shared risk, and democratic management. In 2024, the collective operating revenue of the five villages was 115.8 percent higher than in 2019, and per capita disposable income of villagers grew by 62.0 percent. The village-enterprise-cooperation model is represented by the Xiejing'an cluster in Xiaoshan District, where an enterprise and villages established a rural operating company to manage collective assets, forming a multi-channel income structure of wages, dividends, and land rent. The ancient-village-development model is represented by the Lakeside Six-Villages cluster in Wuxing District, Huzhou City. Relying on the Taihu Port polder agricultural heritage, the cluster set up a scenic area company to implement unified planning and integrated operation. Adhering to the "one village, one business format" principle, the six villages carry out differentiated development. This type has the tightest benefit linkages but is constrained by operating capacity and market fluctuations.

Community-activated models take the activation of endogenous elites and human capital as their initial driving force. A typical renowned-village-led case is the Da-Xiajiang cluster in Chun'an County, where Xiajiang Village joined surrounding villages to form a rural revitalization consortium with an organizational structure of consortium, council, and village development company. In 2024, the collective operating revenue of the consortium was 360.9 percent higher than in 2018. A typical youth-return-driven case is the Dalizu cluster in Yiwu City. The cluster has built co-creation incubation platforms and established a partnership

system consisting of village collectives, village-owned joint companies, rural entrepreneurs, and professional operating companies. It has attracted over 500 returning youths and nurtured more than 240 entrepreneurial formats, generating an annual visitor volume of over one million trips. This type has high community embeddedness but is sensitive to key individuals and policy continuity.

Discussion of the typology

The boundaries among the three types are not fixed; mixed forms exist in practice. The Da-Xiajiang cluster combines features of renowned-village leadership and village-owned joint companies, and the Xiejing'an cluster combines village-enterprise cooperation with platform driving. Model choice should match the resource endowments, actor conditions, and location of each cluster: Clusters with a strong core village or scarce human capital fit the community-activated path. Clusters with a foundation in distinctive industries fit the market-driven path; and clusters with weak endowments that can attract external investment often start from the externally guided type. This typology provides the basis for the comparative mechanism analysis that follows.

Comparative mechanism analysis

This section examines, in turn, how the mobilization, coordination, and distribution mechanisms differ across models and how they work.

Comparing mobilization mechanisms

Mobilizing actors and initial driving force. The mobilizing actors differ markedly across development models. Community-activated models are mainly driven by core village elites and returning youth. Specifically, the cadres of Xiajiang Village initiated the village consortium by drawing on the organizational resources of the village collective and their social prestige among villagers. In contrast, the operation team of Lizu Village attracts young talents through extensive entrepreneurial networks. Market-driven models rely on firms and marketized organizations: The Transfar Group mobilized the Xiejing'an cluster with capital and market channels, while the five villages of Xingfu Badujie mobilized themselves by pooling collective funds to found a company. Externally guided models rely on externally embedded agents and state capital: The Dacacun cluster draws on the project resources of a national modern agricultural park, and the Baxianjidao cluster on the

comprehensive development capacity of a district-owned enterprise.

The way endogenous and exogenous driving forces combine determines the quality of mobilization. Observation suggests that the clusters with the best mobilization outcomes are usually those in which the two forces complement each other: External resources provide start-up capital, while local participation determines how efficiently those resources are converted. Conversely, when external mobilization is excessive while local initiative remains insufficient, clusters risk falling into a pattern in which collaboration ends with the project. This is the mobilization-side root of the decoupling risk described in proposition 3.

The sustainability of cross-village joint mobilization rests upon whether the mutually dependent industrial foundation can withstand shifts in the external operational environment. Based on the multi-village cluster case discussed in the referenced Nie et al. article, the cluster originated from voluntary cross-village industrial cooperation and formed formalized organizational institutions as it expanded. However, external pressures have led to divergent industrial development among member villages. Such changes have undermined interdependence across villages. Following the exit of core coordinating organizers, the substantive cross-village collaboration has deteriorated into superficial and formalized operations [21]. This process shows that the sustainability of a mobilization mechanism lies not in the momentum at launch but in the resilience of the interdependence base against external shocks. Among the eight models in Zhejiang, the interdependence base of industry-chain-division and joint-company types is relatively resilient because the interest linkages are embedded in daily operations. Clusters that depend heavily on a single project or key individual face higher risks of mobilization decay.

Comparing coordination mechanisms

(1) Organizational devices

The coordination organizations of the thirty clusters roughly take four forms. Joint deliberative bodies handle cross-village consultation and decision-making, such as the council of the Da-Xiajiang rural revitalization consortium, which is composed of representatives from all member villages and decides major cluster affairs. Operating companies serve as market-oriented executive

bodies, such as the cultural tourism company of Xingfu Badujie and the shared-development project operating company of Baxianjidao, undertaking asset management and project operation. Development councils and special cooperation platforms serve coordination in specific domains, such as the village-enterprise joint operation structure of the Xiejing'an cluster.

The four types differ in sources of authority and the allocation of powers and responsibilities. The authority of joint deliberative bodies comes from the delegation of member villages, and the effect of their decisions depends on voluntary implementation by each village. The authority of operating companies comes from property rights and contracts; their executive force is stronger, but they may sideline the voice of village-level bodies. The authority of special platforms comes from the task itself, and the platform often dissolves once the task is completed. There is a tension to be managed here: If a coordination organization oversteps and handles village affairs on behalf of member villages, it may compress the space for village self-governance. If it exists only as a deliberative formality, it cannot carry out substantive coordination. Scholars point out that functional coordination organizations within a cluster should focus on strategic guidance, overall-level governance and cross-entity coordination, rather than interfering with the day-to-day operations of individual villages [22]. Properly defining such boundaries is a prerequisite for the effective operation of coordination mechanisms.

(2) Deliberation rules and conflict resolution

The design of deliberation rules directly affects the voice of weaker villages. Three typical arrangements exist in practice. Under collective deliberation, representatives of all villages participate equally; this favors weaker villages being heard but reduces decision-making efficiency. Under tiered deliberation, routine affairs are delegated to the core village or operating company while major matters go to a joint meeting, balancing efficiency and representativeness. Under rotating chairmanship, villages take turns presiding, which strengthens a sense of equality but weakens continuity of coordination.

Whether channels for conflict resolution exist matters greatly for the survival of collaboration. The effectiveness of a coordination mechanism lies in whether it provides stable entry points for deliberation,

clear written rules, and an enforceable adjudication-and-execution loop. At the same time, the exit of key individuals and personnel turnover are major triggers for the decay of coordinating authority. The degree of institutionalization of a coordination mechanism, that is, how far rules substitute for personal authority, determines its ability to withstand personnel changes.

(3) Information and trust infrastructure

Joint planning, co-built brands, digital management platforms, and regular exchange activities form the trust infrastructure of a cluster. The Dasanxing cluster links seven villages through a bus route called Common Prosperity 101 and a regional brand; the Dalizu cluster provides cross-village exchange space for entrepreneurs through its co-creation platform. These arrangements reduce information asymmetry among villages, allowing each village to observe the inputs and gains of the others and thereby lowering the collaboration risks emphasized in the ICA framework. The accumulation of trust is path-dependent: Early successes in cooperation reinforce expectations of future cooperation, while a single mishandled distribution dispute can exhaust years of accumulated trust.

Comparing distribution mechanisms

(1) Property rights arrangements

Distribution mechanisms rest on property rights arrangements. The joint-company model adheres to the principle of not altering the original ownership, rights to returns, and supervisory rights of village-level collective property. Villages contribute capital to form company equity held in common by shares, as the Xingfu Badujie cluster did. The state-capital model forms a three-party structure of development and construction, equity shares, and rent from transfer: Village collectives contribute ecological resources or land as equity, and villagers receive rent through transfer. Both the Baxianjidao cluster and the Maoyang cluster around Xieqiang Port in Xiangshan County adopt this arrangement. In the village-enterprise-cooperation model, village collectives contribute land, housing, and ecological resources as equity to an operating company led by an enterprise. The Xiejing'an cluster has formed a multi-channel income structure of wages, dividends, and land rent. The clarity of property rights allocation directly shapes the long-term expectations of all stakeholders. Ambiguous ownership arrangements are prone to triggering conflicts

once economic returns increase. By contrast, clear ownership and standardized share distribution stabilize expectations and underpin sustained cross-village cooperation.

(2) Distribution rules

Distribution rules across the clusters are different combinations of guaranteed returns, dividends by share, performance incentives, and risk sharing. Joint-company types rely mainly on dividends by share, supplemented by reserve funds decided through democratic deliberation. Village-enterprise-cooperation types mostly adopt a guaranteed-plus-dividend structure, with the enterprise bearing operating risk and the village collective receiving guaranteed returns. State-capital types combine rent with equity returns.

The incentive compatibility of distribution rules is key to sustaining collaboration. Whether rules accurately reflect resource inputs, risk bearing, and actual contributions directly determines each actor's motivation to keep participating. Meng et al. identify layered social frictions emerging within rural tourist clusters, which manifest as disputes between indigenous villagers, tensions between village committees and local residents, and rivalries among native households. Rooted in mismatched living customs, divergent leisure preferences and zero-sum competition over tourism commercial gains, such multi-stakeholder tensions intertwine and escalate across different development phases. These overlapping, mutually reinforcing contradictions constitute a core governance challenge facing cluster-style rural revitalization projects [23]. When a village believes its contribution has not been properly rewarded, willingness to cooperate declines even if the objective returns are positive. This requires distribution rules to be not only technically sound but also procedurally explainable: The process by which rules were formed, the grounds for adjustments, and records of execution should all be open to members. Accordingly, this paper reinforces proposition 2: The degree of institutionalization of the distribution mechanism, namely the explainability, enforceability, and predictability of the rules, is the key variable distinguishing substantive integration from formal association.

(3) Protecting weaker parties and inter-village equity

Distribution mechanisms must also address the tension between efficiency and equity. Distribution based on

contribution may exacerbate developmental disparities among villages. Under the dividend distribution mechanism linked to shareholding, disadvantaged villages with lower capital input obtain fewer benefits. Without supporting compensation mechanisms, a Matthew effect may emerge, in which advantaged villages grow stronger while weaker ones gain relatively less; if left unaddressed, such a trend would run counter to the original goal of cluster development, namely the common advancement of all member villages. Responses in Zhejiang include tilting cluster development funds toward weaker villages, favoring weaker villages in project placement and employment arrangements, and allocating public services evenly across the cluster. The four-gold sharing distribution system of the Jiudaozheli cluster in Qujiang District, for example, attempts to add inclusive income channels for farm households on top of distribution by share.

The distribution dimension is the core of our dialogue with international literature. Traditional collaborative governance literature mainly focuses on collaborative processes while paying limited attention to benefit distribution. In contrast, empirical evidence from China's rural cluster practice indicates that the design quality of distribution rules directly determines the sustainability of cross-village collaboration. From this, a general proposition can be drawn: in the institutional design of inter-village collaboration, credible commitments and procedural fairness in distribution are at least as important as the collaborative process itself.

Discussion

Dialogue with existing theory

This study extends the Institutional Collective Action (ICA) framework. Its empirical findings validate the core proposition of the ICA framework. In the context of fragmented village-level authority, formal institutional mechanisms can effectively mitigate collaborative risks and facilitate sustainable inter-village cooperation. However, the practice in Zhejiang also reveals contextual features that the original ICA framework does not fully address. Rural cluster collaboration typically incorporates vertical integration and policy facilitation. Specifically, policy target formulation, special fund injections, and the establishment of assessment mechanisms serve as critical conditions for initiating cross-village collaboration. This practical logic diverges

somewhat from the ICA framework. This study argues that in resource-scarce rural settings, a combination of structured coordination and interest-based incentives can initiate collaboration more effectively than voluntary cooperation alone. This finding represents a contextual refinement of the ICA framework and echoes Feiock and colleagues' discussion on the variation of mechanism choice across different institutional contexts.

This study adds a distribution dimension to collaborative governance theory. Ansell and Gash's collaborative governance model centers on the collaborative process as the core variable. By comparison, this analysis reveals that the distribution mechanism acts as a key variable governing collaborative sustainability. Even a well-functioning collaborative process can be completely undermined by flawed distribution rules. This study therefore suggests incorporating the design of distribution rules into the analytical framework of collaborative governance, placing how collaboration gains are distributed on the same footing as how the collaborative process unfolds. This addition is particularly relevant for research on rural collaboration in developing countries, because where collective returns form an important income source for villages, distribution issues are more sensitive.

This study responds to rural restructuring theory. Rural cluster development offers a new sample of state-guided restructuring of rural space. Compared with the rural restructuring process summarized by Halfacree, Zhejiang's rural cluster practice presents distinct characteristics. Its spatial restructuring is decoupled from administrative boundary adjustment. Specifically, villages rebuild functional interconnections while maintaining stable administrative divisions and collective property rights. How is this low-cost restructuring possible? This study explains such uniqueness as follows. The functional restructuring of rural development units avoids the high political costs incurred by administrative adjustment. It replaces boundary redrawing with institutional mechanism reconstruction, thereby realizing spatial reorganization under stable institutional expectations. This empirical experience also supports the core proposition of neo-endogenous development theory concerning the interplay between external support and community activation. A persistent tension between external

institutional supply and endogenous community autonomy permeates the whole process of mobilization, coordination, and benefit distribution within rural clusters.

Boundary conditions and comparative implications

(1) Boundary conditions of the mechanism framework

The framework this paper has extracted is rooted in the Zhejiang context, and its applicability is constrained by several conditions. The first is the level of economic development. The collective asset base, market development, and fiscal capacity of Zhejiang's countryside provide the resource precondition for cluster operation. In areas with weak collective economies and severe factor outflow, the interdependence base is hard to form and the cost of collaboration is high. Cluster-based development in less developed regions often shows the features of weak piling on weak and shortcomings resonating, a structural gap relative to eastern regions [24]. The second is location. Clusters close to towns and well connected by transport gain market opportunities and talent inflow more easily, while remote clusters rely more on transfer inputs. The third is the institutional environment. The coordinating capacity and policy continuity of local governments affect the sustainability of externally guided models. Zhejiang's experience, therefore, offers a reference for mechanism design rather than a replicable template. This qualification is a requirement of academic honesty and a precondition for extrapolating the conclusions.

(2) Comparative implications

From a comparative perspective, the Zhejiang case offers three reference points for understanding inter-village collaboration in developing countries. First, different from the EU LEADER approach that relies on the self-organization of local action groups, Zhejiang's practice offers an alternative path. In contexts where village-level organizational capacity is relatively weak, external institutional supply can help establish an initial cooperative framework. Interest linkage mechanisms then gradually foster endogenous self-organizational capacity. Accordingly, collaborative governance is not limited to the single bottom-up initiation model. Second, unlike administrative mergers and other institutional boundary adjustments, the development model of "fixed boundaries and functional recombination" restructures rural development units at a lower institutional cost. This

approach provides valuable implications for rural contexts featured by sensitive administrative boundaries and complex property relations. Third, the central role of distribution mechanisms reveals critical implications. For any form of inter-village cooperation targeting collective revenue growth, a standardized distribution rule framework should be formulated at the initial stage of cooperation, rather than being temporarily negotiated after economic benefits are generated.

Implications

Theoretical implications

The marginal contributions of this study appear at three levels. At the conceptual level, this study proposes the concept of rural cluster development and defines its three layers of meaning, providing an analytical category for a meso-level governance phenomenon for which international literature lacks corresponding tools. At the framework level, this paper builds a three-dimensional mechanism framework of mobilization, coordination, and distribution, extending the application of the Institutional Collective Action framework to the village scale and the Chinese institutional context. At the empirical level, this study systematically presents the typological framework of eight developmental models and thirty rural cluster cases in Zhejiang to international academia. It further addresses the research gap in existing collaborative governance literature by highlighting the pivotal role of distribution mechanisms as a core analytical perspective.

Practical implications

Our findings carry reference value for mechanism design. First, mechanism design should prioritize establishing distribution rules that are explainable, enforceable, and predictable, placing them on the same footing as organizational construction. Second, model choice should match the resource endowments, actor conditions, and location of each cluster, avoiding the transplantation of models detached from local conditions. Third, it is essential to implement dynamic observation on the degree of mechanism coupling. Specifically, three core indicators should be continuously monitored: the foundation of inter-village interdependence, the operational status of coordination platforms, and the enforcement of distribution rules. This mechanism helps identify formalization risks at an early stage. Fourth, externally guided clusters should cultivate local

operating capacity during the investment period to reduce long-term dependence on external resources. These implications are based on the mechanism analysis, and their concrete implementation still depends on local conditions.

Limitations and prospects

This study has three limitations. The case material is mainly public and secondary, and the depth of field interviews is limited. The sample is confined to Zhejiang Province, so conclusions should be extrapolated with caution. The analysis is mainly cross-sectional; depicting long-term evolutionary trajectories relies on process tracing of individual cases. Future research can extend in three directions. First, it can collect first-hand material through village-based field research and follow typical clusters over several years. Second, it can conduct cross-provincial comparisons to test the applicability of the mechanism framework in regions at different development levels. Third, it can introduce quantitative methods to measure the degree of mechanism coupling and cross-validate the qualitative findings of this study.

Conclusion

Using the eight models and thirty clusters in Zhejiang as cases, this study answers four research questions. On the conceptual question, a rural cluster is a functional development community organized around key villages without changing administrative boundaries, with three layers of meaning: restructuring of units, rebuilding of mechanisms, and sharing of returns. On the typology question, the eight models can be reconstructed by driving-force structure into three types, externally guided, market-driven, and community-activated, which differ systematically in initial driving force, mechanism features, and risk structure. In terms of operational mechanisms, the mobilization mechanism revolves around interdependence foundations and core mobilizing actors. The coordination mechanism focuses on organizational carriers and deliberative rules. The distribution mechanism centers on property rights arrangements and benefit allocation rules. The coupling level of these three interrelated mechanisms fundamentally determines the overall performance of inter-village collaboration. On the evolution question, the sustainability of collaboration depends on the resilience of the coupled mechanism structure against external shocks; the decay of any single mechanism may trigger a

regression from substantive integration to formal association.

The sustainability of rural cluster development does not depend on whether organizational platforms are established, but on whether the three mechanisms of mobilization, coordination, and distribution form a mutually reinforcing coupled structure. All three propositions receive support from the case evidence, among which proposition 2, that the degree of institutionalization of the distribution mechanism is the key variable distinguishing substantive integration from formal association, receives the strongest support.

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Conflicts of Interest

The author declares no conflict of interest.

References

- [1] Konečný, O. (2019) The leader approach across the European Union: one method of rural development, many forms of implementation. *European Countryside*, 11(1), 1-16.
- [2] Onitsuka, K., Hoshino, S. (2018) Inter-community networks of rural leaders and key people: case study on a rural revitalization program in Kyoto Prefecture, Japan. *Journal of Rural Studies*, 61, 123-136.
- [3] Pathak, V., Deshkar, S. (2026) Optimising resources and localising sustainability through hierarchical village clustering in Nagpur Metropolitan Region, India. *Scientific Reports*, 16(1), 5749.
- [4] Ansell, C., Gash, A. (2008) Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543-571.
- [5] Feiock, R. C. (2013) The institutional collective action framework. *Policy Studies Journal*, 41(3), 397-425.
- [6] Tavares, A. F., Feiock, R. C. (2018) Applying an institutional collective action framework to investigate intermunicipal cooperation in Europe. *Perspectives on Public Management and Governance*, 1(4), 299-316.
- [7] Porter, M. E. (2000) Location, competition, and economic development: local clusters in a global economy. *Economic Development Quarterly*, 14(1), 15-34.
- [8] Markusen, A. (2017) Sticky places in slippery space: a typology of industrial districts. *Economy*, 177-197.
- [9] Perroux, F. (2017) The pole of development's new place in a general theory of economic activity. *Regional Economic Development*, 48-76.
- [10] Gargano, G. (2021) The bottom-up development model as a governance instrument for the rural areas. The cases of four local action groups (LAGs) in the United Kingdom and in Italy. *Sustainability*, 13(16), 9123.
- [11] Xin, S., Gallent, N. (2024) Conceptualising "neo-exogenous development": The active party-state and activated communities in Chinese rural governance and development. *Journal of Rural Studies*, 109, 103306.
- [12] Halfacree, K. (2007) Trial by space for a "radical rural": Introducing alternative localities, representations and lives. *Journal of Rural Studies*, 23(2), 125-141.
- [13] Sun, P., Ge, D., Yuan, Z., Lu, Y. (2024) Rural revitalization mechanism based on spatial governance in China: a perspective on development rights. *Habitat International*, 147, 103068.
- [14] Ge, D., Lu, Y. (2021) A strategy of the rural governance for territorial spatial planning in China. *Journal of Geographical Sciences*, 31(9), 1349-1364.
- [15] Gusmanov, R., Stovba, E., Kuznetsova, A., Gusmanov, I., Taipov, T., Muhametshina, G., Akhmetova, L. (2022) Rural area sustainable development strategies on the basis of a cluster approach. *Regional Science Policy & Practice*, 14(4), 778-795.
- [16] Liu, J., Yi, M., Du, X., Zhao, H., Ma, Z. (2025) Spatial reconstruction of rural settlements oriented towards agricultural and rural modernization in China. *Geographical Science*, 45(2), 326-338.
- [17] Fu, X., Zhang, P., Yang, B., Li, Z. (2026) Spatiotemporal performance evaluation and

- synergistic optimization of rural living environments (RLE): a regional clustering perspective in the metropolitan fringe. *Sustainability*, 18(11), 5403.
- [18] Sun, Y., Chen, C., Yang, H. (2025) Exploring the spatial patterns of rural multifunctionality in China's metropolitan hinterland and its driving forces: The case of Shanghai-Suzhou-Jiaxing-Huzhou region. *Habitat International*, 165, 103562.
- [19] Xu, J., Teng, J. E., Wang, Z., Gan, C. (2025) Research on models and policy optimization for integrated development of agriculture, culture, and tourism in metropolitan suburbs: a case of study of Cihui Subdistrict, Wuhan City, China. *Journal of Landscape Research*, 17(6), 32-36.
- [20] Geng, Y., Yang, X., Zhang, N., Li, J., Yan, Y. (2024) Sustainable rural development: differentiated paths to achieve rural revitalization with case of Western China. *Scientific Reports*, 14(1), 31507.
- [21] Nie, Y., Lei, Q., Lu, Y. (2026) Village classification and development strategies based on SOFM neural network: a case study of Hubei Province. *Sustainability*, 18(5), 2489.
- [22] Medeiros, E. (2021) Development clusters for small places and rural development for territorial cohesion? *Sustainability*, 14(1), 84.
- [23] Meng, W., Wang, H., Wang, S. (2025) Who owns the rural space? The social contradictions between immigrant entrepreneurs and native individuals under China's rural revitalization. *Land*, 14(2), 420.
- [24] Iammarino, S., Rodriguez-Pose, A., Storper, M. (2019) Regional inequality in Europe: evidence, theory and policy implications. *Journal of Economic Geography*, 19(2), 273-298.