



## Analysis and demonstration of investment implementation model and paths for China's cultivated land consolidation



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### ABSTRACT

Cultivated land consolidation (CLC) is essential for ensuring rural development and for optimizing national territory arrangement in China. The investment and implementation for CLC have been basically led by governments in China. And the introduction of social organization into CLC investment implementation is a significant experiment in CLC investment implementation models under new conditions of China, it is also an important supplement to traditional land consolidation models and is conducive to innovating land consolidation investment model and improving capital efficiency. Taking Suixi County in Guangdong province as a study area, this paper explores the investment implementation models and paths for China's CLC projects. An evaluation index system is established from three perspectives of cultivated land quality, consolidation potential and investment implementation condition based on the analysis of the executors and influencing factors of CLC investment implementation. Then, China's CLC investment implementation models are divided into three types, named new-type agricultural operation organization leading model, government leading model and farmer leading model, and a systematic analysis of implementation paths for varied models is conducted. Results show that it can instruct regional CLC investment implementation and enhance implementation efficiency of cultivated land investment.

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Land consolidation began in the 14th century with the emergence of legislation in the middle of the 18th century (Hartvigsen, 2014; Niels, 2015). Traditionally, it is the most favorable cultivated land management approach for solving land fragmentation and increasing land process efficiency (Sklenicka, 2006; Niroula and Thapa, 2007; Jiang, Wang, Yun, & Zhang, 2015). The connotations of land consolidation have been constantly expanded. It has gradually turned into a comprehensive social project from a natural project, an important object and basic platform of maintaining development, guarding the red line of cultivated land, promoting transformation and benefiting livelihood (Jia, 2012; Jin, Li, Tang & Zhou, 2010). The number of inspected and accepted Land consolidation project has been over 150,000; the scale of land

consolidation is 8.29 million hm<sup>2</sup> and added cultivated land achieve 2.7 million hm<sup>2</sup> (Yan, Xia, & Bao, 2015) since about 2006. The implementation of these land consolidation projects play a critical role in safeguarding China's grain safety, enhancing land utilization efficiency and facilitating social and economic development. At present, studies on China's land consolidation mainly focus on land consolidation potential measurement (Fan, 2006; He, Chen, & Yao, 2008; Tang, Chen, Zhang, & Gu, 2012; Wu, 2013; Yu, Feng, & Yang, 2010), land consolidation evaluation (Gao, Zhang, & Zhao, 2011), land consolidation planning and design as well as land consolidation effect evaluation (Lu, 2002; Long, 2003; Liu et al., 2013; Gao et al., 2011; Ye, Wu, Liu, Cheng, & Zheng, 2002; Wang, Yan, Bai, Yu, & Guo, 2012; Luo, Wu, & Wu, 2011; Zhu, 2014), etc. For a long time, China's land consolidation projects especially site selection, planning & design and investment implementation for cultivated land consolidation (CLC) have been basically led by the government. The basic process is to have government invest and conduct land consolidation and after land consolidation projects are completed, land is handed over to farmers. Build-Transfer model

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was explored in some places; however, it faced problems such as lack of policy basis and supervision mechanism, and difficulty in participation and coordination (Guo et al., 2015). Project implementation effect of Build-Transfer model was a far cry from farmers' actual requirements. In terms of public capital nature of project investment, the investment model of land consolidation projects can be divided into traditional financial investment model and social investment model. On the whole, currently, land consolidation projects are included in the scope of public products; public participation is not desirable and there's little social capital. All these lead to insufficient implementation and management incentive of land consolidation projects; besides, with problems such as difficulty in land leveling and ownership adjustment, the traditional land consolidation model led by governments can no longer meet with current demands. Social organization should be encouraged to join in land consolidation to reasonably invest in and carry out land consolidation projects and proactively adjust land management right, which is the inevitable trend of promoting intensive management of land and boosting agricultural modernization.

### 1. CLC-investments, implementation, & potential problems

CLC is an important content of land consolidation (Tayfun & Mevlut, 2013), an important means of realizing cultivated land quantity regulation and quality management, and the inevitable road of transformation to a resource-saving society under the new situation. As the core content of land consolidation, CLC plays an important role in improving infrastructure and farming environment in fields, promoting scale operation and intensive utilization of cultivated land, increasing effective cultivated land area, enhancing cultivated land utilization efficiency and quality, guaranteeing national grain safety, boosting new rural construction and coordinating urban-rural development, etc. During 2001 to 2010, 2.761 hm<sup>2</sup> cultivated lands were newly added through land consolidation; over 13.3330 hm<sup>2</sup> (two hundred million mu) High-standard farmland were established. During the 2010–2015, 1.6 million hm<sup>2</sup> cultivated lands were newly added through land consolidation and over 26.6670 hm<sup>2</sup> (four hundred million mu) High-standard farmland were established.

CLC is closely related with modern agriculture. Contiguous cultivated land is the basic condition for the mechanized production, CLC is an important means of vitalizing stock land, intensifying intensive land use, timely supplementing cultivated land and enhancing land capacity. Its ultimate purpose is to establish a long-term regulation mechanism to drive rapid development of regional modern agriculture model. The combination of land consolidation and modern agriculture development is helpful to promoting transformation of agricultural structure and realizing modernization of agriculture development mode, thus providing a long-term mechanism for solving China's problems of agriculture, farmers and countryside. China and foreign investment implementation model of land consolidation have a large gap because of different backgrounds (Angrist, Imbens, & Rubin, 1996; Clark, Poulsen, Malonga, & Elkan, 2009; George, 2014; Schroeder, Gocht, & Britz, 2014; Schoneveld, German, & Nukator, 2011; Shete, 2013; Stefan & Jochen, 2015). At present, the common model is to introduce leading agricultural enterprises or establish rural cooperatives to conduct land transfer after completing land consolidation projects investment and implementation. Afterwards, governments redevelop land consolidation projects according to demands so as to develop modern agriculture. The investment implementation party is usually inconsistent with the actual user of CLC, which will lead to "secondary consolidation" because construction design and project quality cannot meet with actual demands. It affects land

consolidation effect and causes certain waste in time and resources. Currently, before arranging land consolidation projects, governments will first analyze natural, social and economic influencing factors from a qualitative perspective, and set some necessary conditions such as soil, terrain and space layout (Wang, 1997a,b; Wang & Zhu, 2015; Wei & Zhang, 2012). Some scholars used Delphi method and AHP to conduct feasibility evaluation of land consolidation projects to inspect whether site selection is scientific or not (Zhang, 2007; Huang, Li, Chen, & Li, 2011; Jia, Liu, Yu, & Wang, 2009; Cai, Lin, & Zhu, 2008). However, a unified and scientific project evaluation system and selection models fall short so relevant departments are random in the process. Land consolidation projects are too scattered. Blind project construction impedes economies of scale of land consolidation. If social organization can be introduced to the CLC investment implementation process in areas which are suitable for development of modern agriculture and the model of "whoever uses consolidated land", land consolidation efficiency and effect will be greatly enhanced and modern agriculture development will be expedited. Generally speaking, participation of social organization in land consolidation is to realize maximized benefits of land consolidation in areas with favorable natural resources, infrastructure, social and economic conditions while taking into account land use status, land use limitation factors and favorable conditions, water resource conditions, land consolidation potential and land consolidation capital (Wang, 1997a,b).

In recent years, China's government encourages innovative reform of land consolidation. It's explicitly proposed in "Notice of Further Strengthening Land Reclamation Development Work" issued by Ministry of Land and Resources that it would proactively explore marketed operation and guide social capital such as companies to participate in such projects. In April 2012, Ministry of Finance and Ministry of Land and Resources jointly announced "Notice of Accelerating Compiling and Implementing land consolidation Plan to Greatly Promote High-Standard Basic Agricultural Field Construction" (Guo Tu Zi Fa [2012] No. 63) and pointed out: when conditions permit, provincial national land and resources departments can work together with finance departments to come up with detailed methods, explore "replacement of investment by supplement and promotion of construction with supplement" which was proposed for the first time and encourage rural collective economic organizations and farmers to conduct high-standard prime farmland construction according to the plan. Different provinces have conducted plenty of studies and formed their own characteristic land consolidation investment and implementation models: for example, Changsha Land and Resources Bureau conducted a pilot of the model in Chunhua Town, Shangsha County and carry out "Yutian" farmers' professional cooperative land consolidation project in 2011; Guangxi Land and Resources Department issued "Opinions about Encouraging Farmers to Implement Provisional CLC Methods" in 2012; Hubei Jingmen Land and Resources Bureau introduced "Implementing Methods for Leading Agricultural Enterprises and Farmers' Professional Cooperatives to Conduct land consolidation Self-Construction Pilots" in 2014; Fujian announced "Provisional Methods for Encouraging Fujian Farmers to Voluntarily Conduct Land Integration" in 2015. All these policies are beneficial studies on the new model. However, most of them are instructive and it's to be studied as to what kind of model should be adopted for land consolidation projects investment and implementation according to different regional conditions.

In order to probe into reasonable investment implementation models of CLC and instruct compilation of land consolidation plan and modern agricultural development plan, this paper takes Suixi County, Guangdong, China, for example, establishes an evaluation index system from three perspectives of cultivated land quality,

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