Land Consolidation in China

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2016.11.09-11. Apeldoorn, the Netherlands
Land Consolidation in China

• Introduction
• China Land Consolidation Review
• Current Problems and Measures
• Prospects
Introduction

• Brief introduction of LCRC

• Founded in 1997, the Land Consolidation and Rehabilitation Center of the Ministry of Land and Resources (LCRC) is a public institution in charge of land consolidation, rehabilitation and land banking, directly subordinate to the Ministry of Land and Resources (MLR).

• 105 employees, 60% master’s degree or above, 50% senior professional title.
Basic Conditions in China

- Population---1.37 billion, No.1
- Continental area---9.6 million km², No.3
- Arableland---135.385 million ha, No.3
- Arable land per capita---0.101 ha, No.26
Land Resources

- Farmland: 14%
- Unused land: 28%
- Land for water conservancy facilities: 0%
- Land for traffic & transportation: 0%
- Land for city village & industry & mining: 3%
- Land for other use: 3%
- Orchard land: 2%
- Forestland: 27%
- Grassland: 23%

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The per capita arable land is less than 50% of the world average

- Per capita arable land in the world: 0.26ha
- Arable land per capita in China: 0.101ha
China Land Consolidation Classification

- Urban industrial and mining construction land consolidation
- Rural construction land consolidation
- Farmland Consolidation
- Land reclamation
- Land development on arable land reserves

Land Consolidation & Rehabilitation
China Land Consolidation Review

- Land consolidation development course

1986- Start stage---quantity---add arable land---unused land development+s ome land consolidation

1998- Growth stage---quantity +quality---improve farmland consolidation +capital farmland construction & protection

2008- Comprehensive development stage--- diversified goals--- Comprehensive land improvement---farmland consolidation, urban land consolidation, village renovation, ecological restoration

now- Green land consolidation stage--- comprehensive effect of economic, social and ecological landscape--- ecological farmland construction, damaged land restoration
China Land Consolidation Review

• Institution Building
  ---2229 land consolidation management agencies
  ---more than 21,000 staff members
China Land Consolidation Review

National Level Patterns

- Major land consolidation projects
- Rural land consolidation demonstration province construction projects
- Rural collective-owned construction land consolidation pilot projects

Local Level Patterns

- Farmers independent consolidation, financial budget subsidize pattern
- Shanghai countryside park pattern
- Hunan Province low-carbon land consolidation Pattern
China Land Consolidation Review

• Technical Standard

4 national, 22 industrial standards, 1 formal ministry document and a series of local supplementary standards issued
China Land Consolidation Review

- International cooperation and exchanges

 Signing ceremony of Sino-German cooperation and exchange

 Conference in Qingzhou, Shandong province
China Land Consolidation Review

- International cooperation and exchanges

**Signing MOU with Belgium Partner in Hainan Province**

**Visiting HSS Headquarter in Germany**
Case Study 1
"Combine Lots into Parcel" of Sanchuan Township in Yunnan Province

- Yongsheng County ---Northwest of Yunnan Province
- Traditional agriculture county, 15 townships, 147 villages/residents 'committees, population 0.399 million in 2014---85.3% agriculture population
- total arable land of 58513 ha, of which: paddy fields-18060, dry land-40453 ha, arable land per capita-0.146 ha.
Case Study 1
"Combine Lots into Parcel" of Sanchuan Township in Yunnan Province

• **Project Condition**
  - Sanchuan township has Sanyou Village and Zhongzhou Village. Before land consolidation project, the total farmland area in Sanyou Village was about 230 hectares with 6323 plots; and the total farmland area in Zhongzhou Village was about 98.7 hectares with 2916 plots.
  - After land consolidation project, the total farmland area in Sanyou Village increased to 252 hectares with 1150 parcels; and the total farmland area in Zhongzhou Village increased to 130.7 hectares with 1025 parcels.
  - Practice shows that land consolidation plays a key role to break the conflict of land use, to improve the life of farmers and to develop the countryside.
Case Study 1
"Combine Lots into Parcel" of Sanchuan Township in Yunnan Province
Case Study 1
"Combine Lots into Parcel" of Sanchuan Township in Yunnan Province

Before

After
Case Study 1

After land readjustment

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Case Study 2
Hunan Province Low-carbon Land Consolidation Project

• **Project Condition**
  
  The Low-carbon Land Consolidation Project in Jianshan Village in Jinjing Town, Changsha County, Hunan Province has a construction area of 277 hectares, including the capital farmland of 237 hectares, and with a total investment of RMB 14.18 million. Compared with traditional projects, the project reduces 400t carbon dioxide emission, with an average emission reduction of 6.43 kg per hectare of land.
  
  • Recycle use of recourses to reduce the consumption of raw materials.
  
  • Transform method and initiate low-carbon idea.
Case Study 2

- Research on ecological engineering technology

Diagram:

Waterlogging in farmland → Farm Furrow → Ditch → Purification Pond → Jinjing River

1st purification

2nd purification
1. Saving raw materials consumption

In project area, through the use of ecological measures, compared with conventional project, about 417.55t cement and 1420.29m$^3$ sand was saved. Calculating emission reduction from materials production, transport and other processing techniques, analysis of pilot project experience suggests that low-carbon land consolidation activities can reduce GHG emissions by approximately 1t CO$_2$ per hectare, and can also have benefits for hydrological processes and biodiversity protection.
Case Study 2

2. Prominent ecological benefit

Chemical oxygen consumption of farmland polluted water reflects reducing substances contamination level. Samples collected before and after clarification in project area by relevant authorities show that after purification by the farmland polluted water filtration system, the chemical oxygen consumption of farmland polluted water decreased to 24.2mg/L from 65.8mg/L, which implies less pollution to downstream river channels and better protect water security. The project not only decreases engineering work and relevant consumption, but also promotes the economic operation of ecology protection and carbon emission reduction.

Comparison of chemical oxygen consumption before and after purification

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<tr>
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<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Value</td>
<td>65.8mg/L</td>
<td>24.2mg/L</td>
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</tbody>
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Current Problems and Measures

• Farmland Quality Problems

- The acreage of quality grade of agriculture land in China

grade 1-4, excellent
grade 5-8, good
grade 9-12, medium
grade 13-15, low
Current Problems and Measures

Measures

• national survey on farmland quality should be carried out at regular intervals firstly;
• secondly, low-medium-yield farmland improvement and polluted soil remediation project should be implemented;
• thirdly, well-facilitied capital farmlands construction project should be vigorously push forward;
• and finally salinization and contaminated farmland recovery and utilization Project should be carried out.
Current Problems and Measures

• Eco-Land Construction Problems

• Besides soil erosion, land desertification, land salinization, soil pollution and land ecological decline in the region, there are also many ecological problems caused by some inappropriate measures in land consolidation and rehabilitation activities, such as the improper ways of land levelling, roads and ditches hardening, unreasonable land classification, and excessive man-made interference.
Current Problems and Measures

• Measures

• Ecological landscape factors should be introduced in all levels of the Land Consolidation Planning and take land use, infrastructure construction, rural landscape, the historical and cultural heritage protection, ecological network, soil and water security, rural leisure tourism as a whole. In 2015, the state started pilot projects of the comprehensive improvement of land and rivers, the Ministry of Land and Resources put forward the green mining demonstration area projects and the comprehensive land improvement projects. With the land ecological landscape construction science and technology support, to develop different levels ecological landscape construction planning and design is particularly important.
Current Problems and Measures

• Public Participation Problems

In the activity process from project selection, planning and design, construction to the check and acceptance, the farmers are little involved in which directly cause project infeasibility, planning and design out of practice, low-quality project construction, abused use of funds, inefficient project-after management, and unsustainable benefits as well.
Current Problems and Measures

• Measures

Creative public participation platforms and channels should be provided to the farmers to encourage them to be involved in the whole process of land consolidation and rehabilitation projects. At the same time, the public participation mechanism with legal basis for land consolidation and rehabilitation activities should be established to ensure the dominant position of the rural collective economic organizations and farmers, legally define public participation channels, ways, contents and procedures, etc. so as to improve public participation and promote the sustained and in-depth development of the land consolidation and rehabilitation work.
Current Problems and Measures

• Legal Construction Problems

There are relatively few laws and regulations concerning about land consolidation and rehabilitation activities, in which the relevant provisions of the land consolidation and rehabilitation activities are scattered in *The Constitution of the People's Republic of China, Law of the people's Republic of China on Land Administration, Implementation Regulations of the Land Administration Law of the People's Republic of China*. All these provisions are in simple and principle ways. Thus, its legal construction far lags in practice.
Current Problems and Measures

• Measures

Hunan, Guizhou, Shanxi, Zhejiang and other provinces have already enacted provincial land consolidation and rehabilitation regulations. Nowadays, land consolidation and rehabilitation activities have risen to the national level of strategic deployment, its legal construction is of priority. A national land consolidation and rehabilitation regulation is in formulating by the Land Consolidation & Rehabilitation Center of the Ministry of Land and Resources.
Current Problems and Measures

• Land Engineering Education
  • 1956, Northeast Agricultural University --- land use planning course
  • 1960s, Huazhong Agricultural University, Nanjing Agricultural University --- land planning and engineering courses
  • 1986, --- land system and policy, land property right and cadastral management
  • 1998, combined the land planning and utilization course and land management course into land resources management course

Now more than 70 colleges and universities have land resources management majors. But about land consolidation engineering techniques and methods are in different disciplines such as land, agriculture, soil, water conservancy, forestry, civil engineering, surveying and mapping etc. Its theoretical support system has not yet formed and its basic discipline theory needs to constantly improve.
Current Problems and Measures

- Measures

  land consolidation independently as a part of the land science discipline. In 2011 China University of Geosciences (Beijing) started Excellent Engineer Education Training Program on land consolidation engineering aspect, approved by the Ministry of Education. In 2015, land consolidation engineering technician was chosen as one of the Green Careers into the National Occupational Classification System.
**Prospects**

**Farmland consolidation.** 26.67 million hectares well-facilitited capital farmlands will be completed and 40 million hectares well-facilitited capital farmlands will be tried to conduct. 1.33 million hectares arable land will be increased through land consolidation activities and 20 million hectares low-medium-yield farmlands will be improved.

**Rural construction land consolidation.** The "hollow village" and "dangerous & old houses" rebuilding will be renovated to promote the coordinated development of urban and rural areas.

**Land readjustment of industrial and mining construction in cities and towns.** The old city, villages in the city, shantytowns, old factories, old industrial areas will be transformed and redeveloped so as to reduce the size of the Unit GDP construction land 30%.

**Land reclamation and ecological restoration.** Reclamation rate of historical damage lands will reach to 45%. Meanwhile, important waterhead areas and natural ecological areas will be in strong protection, and land ecological restoration and building will also be made on water systems like rivers, lakes, reservoirs, major traffic lines, natural forests, grasslands and so on.
Thanks!
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