“Experiences from the German land consolidation System” for the purpose of promoting China’s Rural Land System Reform

Presented by:

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Outline

- A short introduction to the German land consolidation system
- Land consolidation and environmental protection in Germany
- Ecological aspects and recreational value
- Impact of land consolidation on economic efficiency
- Strategies for solving conflicts related to land consolidation
- How transferrable is the German system to China and Asia in general?
- Experiences from international cooperation with Lao PDR
- Outlook: Which role will climate change play in the future of land consolidation?
Introduction to the German land consolidation system

Classical land consolidation
- processes of re-redistributing (mostly agricultural) parcels
- to allow more effective and efficient agricultural production
- de-fragmentation

Reasons for the necessity of land consolidation
- Regionally differing systems of land inheritance and ownership
- Selling and buying practices over centuries
- Structural change of agriculture
Different conditions for land use in East and West Germany

Division of Germany after World War II.

Reunification of Germany in 1990.

**Western** German agriculture: a mix of small, medium and large farms.
Scattered plots, inefficient agricultural roads: land consolidation needed

In **Eastern** Germany: Processes of expropriation, reallocation and collectivisation

After the **reunification of Germany**
the GDR land management has turned to an advantage for East Germany’s agriculture.

Source: [https://www.laiv-mv.de/static/LAIV/Abt4.Statistisches%20Amt/Dateien/Publikationen/Gemeinschafts%C3%96%20%28Auswahl%29/Agrarstrukturen/2010.pdf](https://www.laiv-mv.de/static/LAIV/Abt4.Statistisches%20Amt/Dateien/Publikationen/Gemeinschafts%C3%96%20%28Auswahl%29/Agrarstrukturen/2010.pdf)
Classic land consolidation: the whole area is surveyed, measured and registered. New and up to date land measurement is applied and replaces the old datasets.

Accelerated consolidation: little or no new land surveys. Only whole plots are exchanged. Much quicker implementation.

Voluntary land exchange: only whole plots are exchanged. Between owners on a voluntary basis: small scale.

Reduction of the number of plots e.g. from 40 to 1 to 5 plots
Plots need to be accessible and approximately the same size and value than before.
There is also Land consolidation for individual enterprises or projects.

Value estimation of agricultural plots and compensation
Related to agriculture

- rearrangement of fragmented rural land
- improvement of production conditions and labor efficiency (also forestry)
- to eliminate factors that impede investment
Goals related to development plans
- Preparation of large-scale infrastructure projects
- Implementation of regional development plans and village development
- Provision of land for infrastructural projects (e.g., roads and railways)
- Provision of space for renewable energy production (wind and solar parks)

Related to Environmental protection
Compulsory procedures: Environmental Protection Law and EU regulations:

An **environmental impact assessment (EIA)** should be carried out to determine the potential environmental effects of the planned project -> detailed mapping, point schemes

**Natura 2000** (European protected area network): need to meet site specific conservation objectives.

**Species conservation** test: highly-protected species will not be affected.

**Water Framework Directive** 2000/60/EC of the EU: member states have to achieve good qualitative and quantitative status of all water bodies. Upgrading of water bodies. (-> EU funding)
Changes through land consolidation

- Inefficient shape of plots
- Scattered property
- Plots not sufficiently connected to farming roads
- Unclear plot boundaries and ownership
- Low habitat diversity
- Low surface water retention capacity

- Plots consolidated
- Economically efficient plot shapes
- Plots accessible through farming roads
- Surveyed and registered boundaries
- Tree rows planted, stream renatured
- Provision of space for infrastructure and industrial activities

Old cadastral shapes are dissolved and ordered newly
Correction of old-fashioned strait line stream bed back to a naturally looking diverse stream

- Water retention and flood prevention
- Newly created habitat
- Buffer areas alongside the stream
- Flood management, water body enhancement, biodiversity increase.
- Resilient system
- Nice and interesting to look at
Land consolidation and economic efficiency of land use

Aggregated results from Individual studies from Bavaria and Lower Saxony

Plot size increased on all farms
Average increase per plot 1.4 ha

Variable machine cost
(Fuel oil, repair and maintenance)
Decrease between 10 and 144 €/ha
On average 54.4 € (over 420 CNY) saved

Source: Derived from Kapfer, M. Kantelhardt J. (2007): Quantifizierung ökonomischer Wirkungen der Flurneuordnung - ein Vergleich ausgewählter Studien
Land consolidation and economic efficiency of land use

Aggregated results from individual studies from Bavaria and Lower Saxony

Overall **profitability increased** in all studies, esp. in those with great savings in variable machine costs.

**Labor hours/ ha decreased.** Studies mentioned that free time was not used to generate additional income.

Studies focused on more efficient production.

Source: Derived from Kapfer, M. Kantelhardt J. (2007): Quantifizierung ökonomischer Wirkungen der Flurneuordnung - ein Vergleich ausgewählter Studien
Land consolidation and economic efficiency of land use

Cost reduction varied greatly between 20 and 150€/ha

Savings: reductions in machine cost and external work

In areas with a high share of pasture use, cost reductions were due to savings related to external work and variable machine cost. (Thann and Obergessertshausen)

Increase in plot size -> decrease of field margins -> reduces headland size -> higher yields and lower cost of inputs. (Gaukönigshofen)

Moderate increase of field size -> low cost reductions (Münchsdorf)

Quelle: Kapfer et al. (2006), S. 218.
Land consolidation and other parts of the economy

Wider economic impacts: increase of attractiveness of rural areas

- Infrastructural improvements
- Village renewal
- Ecologic quality of landscapes

Living in the countryside
- Build up of new enterprises
- Create off farm employment
- Tourism and recreational activities
- Counteract urbanization

EU and German Ministry BMEL: provide supporting initiatives to rural areas

Pictures from BMEL https://www.bmel.de/EN/RuralAreas/rural-areas_node.html
Strategies solving conflicts related to land consolidation

Conflict prevention is key to success → Participatory approach

A land use committee is elected to represent the whole community
- deal with the government officials,
- tender service contracts
- bring in local knowledge on behalf of the community

Village administration: village development and the biotope network development

Farmers
bring in their perspective and farm development goals
advise the representatives on common issues

Public interest groups
coordinate planning with land consolidation authority
contribute to the new design of the road and stream network and the Biotope connectivity network
Strategies solving conflicts related to land consolidation

Land owners: legal land security and resolving boundary conflicts
- Adequate measuring of plots
- Issuance of new land titles

Farmers and need access to the land
- Planning the rural road network in a participatory way.

Land owners need adequate compensation or exchange
- Land evaluation point system

Concerns of nature conservation
- Adequate planning of the biotope network
- Water retention areas and stream renaturation
- Purchase of high value habitats and their protection
Success factors of the German system:

- Participation of all stakeholders
- Creation of land security and legal security: measurement and cadastral registration
- Equitable compensation mechanisms
- Environmental concerns
- Improvement of the economic performance of farms
- Improvement of agricultural road networks
- Consideration of higher-level plans ensured

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\text{Success} = \text{Quality} \times \text{Acceptance}
\]
Can the German system be used in China and Asia?

General requirements
- Village and cluster village land use planning up to date
- Realistic regional plans from all sectors available
- Ownership and use rights of each plot to be known
- Capacities and understanding among the authorities to be defined
- Participatory elements tailored to Chinese circumstances

Additional elements for a Chinese system
- Irrigation infrastructure and water use regulations
- Terracing of agricultural land in mountain areas
- Customary land use practices
- Help to reverse urbanization by attractive living and working conditions in the countryside

Efficient infrastructure development with a good land consolidation system

Provide and plan for interesting and healthy leisure time areas for the population
Participatory Agricultural Land Management in Lao PDR

Training steps and implementation
- National level trainer pools of DALaM and DoL created
- PLUP/PALM tools were elaborated.
- District teams received intensive training and follow up.
Future role of climate change in land consolidation?

- Impact on spatial and temporal distribution of water resources.
- Problems in zones of marginal agricultural production

Some examples for future tasks for land consolidation:
- Water retention areas to prevent flooding
- Water storage: enable irrigated agriculture and water supply to the cities
- Use of wastewater for agriculture
- Expansion of irrigation land
- Terracing of land in mountain areas
- Areas for wind breaking vegetation and fire breaks
- Well managed conservation areas: survival of flora and fauna
- Good management of watersheds, with reforestation areas
Thank you very much for your attention!

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