

Modern Land Consolidation

- recent trends on land consolidation in Germany -

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SUMMARY:

By a statistical analysis of the land consolidation activities during the last twenty years in Germany, the actual relevance of land consolidation as well the changes in the objectives of land consolidation schemes are demonstrated; the "Land consolidation Agenda" for 2004 and later is described. The adoption of the land consolidation in the structure improvement of the European Union and the reform of the promoting principles of the German Federation concerning the common task "Improvement of Agriculture and of Coastal Protection" cause new methodical-procedural approaches; in the operative-technical implementation of the land consolidation schemes occur also crucial changes. Remarks on the organization of the state land consolidation authorities during the actual administration structure reforms recognize some new trends.

ZUSAMMENFASSUNG:

Anhand einer statistischen Analyse der Flurbereinigungstätigkeiten während der letzten 20 Jahre in Deutschland werden die gegenwärtige Relevanz der Flurbereinigung sowie die Veränderungen in den Verfahrenszielen aufgezeigt; die „Neuordnungsagenda“ für die Jahre 2004 ff. wird beschrieben. Die Einbindung der Flurbereinigung in die europäische Strukturförderung und die Neuausrichtung der Fördergrundsätze des Bundes zur Gemeinschaftsaufgabe „Verbesserung der Agrarstruktur und des Küstenschutzes“ bringen erweiterte methodisch-prozedurale Ansätze; auch in der operativ-technischen Durchführung der Flurbereinigung haben sich entscheidende Veränderungen vollzogen. Hinweise zur Behandlung der Flurbereinigungsbehörden in den Verwaltungsstrukturereformen in den Bundesländern lassen gewisse Trends erkennen.

1 Introduction

What does mean “modern land consolidation”? Is there also an “old-fashioned land consolidation”? Is there also an “old land consolidation”?

Before we deal with the recent trends in the German land consolidation, it is to define what is to comprehend as “Land Consolidation” in Germany and what is the distinction to the general task of land management and of sovereign land re-adjustment.

Land management is likely to bring current land use, land ownership issues and other land tenure (individual subjective property rights) in accordance with private and public requests on the land use (manifested in planning goals) and/or to eliminate disturbing effects according to plan (THOMAS 2004), (SEELE 1992). Measures of land management stretch from unpretentious land use agreement by contract and free-hand acquisition on to a legally enforced expropriation (THOMAS 1995). Within this area, all land management measures and also the means “sovereign or compulsory land re-adjustment” and “land consolidation” are located.

By a **Sovereign Land Re-adjustment** parcels situated in the area of a legally binding land use plan are adjusted to the planned and enforced land use; “land re-adjustment schemes” are common in settled areas of communities.

Land Consolidation – in sense of the German **Land Consolidation Act (LCA)** – is a mean with view to improving the production and working conditions in agriculture and forestry as well as promoting the general use and development of land and rural areas by re-arrangement of agricultural land (FLURBG 2001).

Thus, land consolidation contents on the one hand land re-adjustment measures, but goes beyond concerning its programmatic objectives; land consolidation is a mix of agrarian special planning and land re-adjustment (THOMAS 1995).

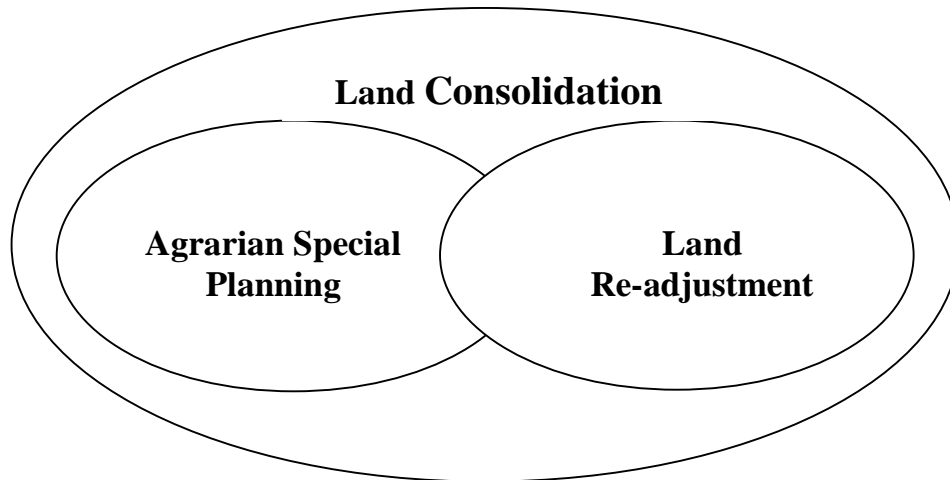


Figure 1: On the character of Land Consolidation

The so-called “Regelflurbereinigung” (**Comprehensive Land Consolidation**) on the basis of §§ 1 and 37 FlurbG has the most far-reaching planning approach and will be implemented for an “integrated rural development”. By this type of procedure holdings can be re-arranged with a view to improving the production and working conditions in agriculture and forestry as well as promoting the general use and development of land. The land consolidation area will be reshaped with due regard for respective structure of the landscape to serve the interests of the parties concerned as weighted against each other to further general use and development of land and to benefit the general public wealth. The area in question will be re-arranged, and scattered or uneconomically shaped parcels will be consolidated to meet modern managerial requirements, and reshaped to obtain units of a more favourable location, shape and size. Ways, roads, water bodies and other common facilities can be provided, soil-conservation, soil-improving and landscaping measures can be taken as well as any other measures improving enterprises, reducing the amount of work and facilitating farm management. Village renewal measures can be taken. The legal situation and relationships will be clarified.

A comprehensive land consolidation represents a long-term solution to agrarian structures. It aims to preserve and enforce the stability of farms, in parallel with the preservation of the environment and landscape and in harmony with agricultural production in countryside. It aims to enhance the non-productive functions of agriculture, to improve the physical rural infrastructure in general and to promote the creation of off-farm employment (THOMAS 2004).

In case that land consolidation only aims to reduce the fragmentation and to merge the scattered and uneconomically shaped parcels of farms, Voluntary Land Exchange (“Freiwilliger Landtausch”) (§ 103a FlurbG) or Accelerated Land Consolidation (“Beschleunigte Zusammenlegung”) (§ 91 FlurbG) are implemented:

Voluntary Land Exchange is the simplest and fastest land consolidation measure. Parcels of two (as a minimum) or more owners are exchanged and merged. The procedure is called “Voluntary” as the owners concerned have to file and to agree to all measures and decisions which are necessary to implement the exchange: comparative valuation of the corresponding parcels or shares of parcels, merging of parcels, transfer or extension of rights and the new boundary lines. The state authority or a consultant agency plays the role of middleman.

Is there a need to consolidate a lot of scattered and/or uneconomically shaped parcels in a community or in a part of it and is the creation of a new road system and water resources projects not required, the land consolidation procedure in type of “**Accelerated Land Consolidation**” can be concentrated on the merging and reshaping of parcels in conjunction. Within the given area rural land is to re-group or re-arrange in units of economic size and rational shape as well as possible in co-operation with all land owners concerned. In this case the land consolidation procedure has to be initiated by an administrative decision ordering and it has to be directed by an authority.

Because of the conjugation of all involved parcels and the multiple interdependencies between shape size, location, valuation etc. of all parcels and the different interests of all involved participants, it is unrealistic to get a full agreement of all participants to the land

consolidation plan with a conclusive re-arrangement of the land. Thus, the land consolidation plan has also to be enforced through decision ordering by the land consolidation authority on the basis of the Land Consolidation Act.

On the basis of the German Land Consolidation Act measures can be implemented to eliminate or to minimize the detrimental impacts on the agricultural structure caused by public request to land use. Classic examples are transport planning, communal land use planning, water management planning or planning concerning nature protection and landscape. Regularly, such tasks are solved by the **Simplified Land Consolidation** (“Vereinfachte Flurbereinigung”) (§ 86 FlurbG).

If, for special reasons, it is permissible to acquire land by compulsory purchase and if such a measure would affect agricultural land on a large scale, the authority responsible for the compulsory acquisition may apply for the initiation of a land consolidation procedure, if the loss of land to be incurred by the parties concerned is to be apportioned among a large number of owners or if disadvantages that the project may bring about for the general use of the land are to be avoided: **Land Consolidation in Case of Permissible Compulsory Acquisition** (“Unternehmensflurbereinigung”) (§ 87 FlurbG).

For the East German Länder (Brandenburg, Mecklenburg-Vorpommern, Sachsen-Anhalt, Sachsen, Thüringen) is – additionally to the German Land Consolidation Act – a „**Law on Adjustment of Agriculture**“ (**LAA**) since the German Unification in 1990 available (LWANPG 1991); it is a special regulation concerning re-arrangement and adjustment of farms and rural real property. That law is the basis for the regulation of restitution requests of former owners as well as the transformation of the law of property of the former legal system (before 1990) into the current legal system of the West German Civil Code concerning land ownership and building ownership.

Thus, in Germany are some sophisticated tools concerning land consolidation and land re-adjustment available:

Law	Types of Procedures		Legal basis	Applicable in
	(English)	(Deutsch)		
Land Consolidation Act (LCA)	Comprehensive Land Consolidation	Regelflurbereinigung	§ 1, 37	West and East Germany
	Simplified Land Consolidation	Vereinfachte Flurbereinigung	§ 86	
	Land Consolidation in Case of Permissible Compulsory Acquisition	Unternehmensflurbereinigung	§ 87	
	Accelerated Land Consolidation	Beschleunigte Zusammenlegung	§ 91	
	Voluntary Land Exchange	Freiwilliger Landtausch	§ 103a	
Law on Adjustment of Agriculture (LAA)	Procedure on Restitution of Ownership	Bodenordnungsverfahren zur Wiederherstellung des Eigentums	§ 56	East Germany
	Joining of Land and Building Ownership	Zusammenführung von Boden- und Gebäudeeigentum	§ 64	

Figure 2: German tools for land consolidation and land re-adjustment

2 Actual Trends

Land Consolidation in Germany is more than 150 years old. The legal instruments are as well concerning the legal system as the operational demand well pronounced. Substantial changes are neither planned nor needed. Thus, the following analysis of the actual trends in the German Land Consolidation is regarded to

- the **programmative objectives** which land consolidation schemes aim to,
- the **methodical-procedural approach** of recent land consolidation procedures,
- the **operational-technical implementation** of the schemes as well as
- the organization and the management of the schemes.

But at first a view on the statistics on land consolidation during the last 20 years:

2.1 Statistics

The actual relevance of land consolidation in Germany and of its changes during the last 20 years is obvious in Table 1 to 3 (AGRARSTRUKTUR 1980 ff.), (BMVEL-SMB 1992 ff.):

Year	Number of land re-arrangement procedures	Acreage in ha
1980	4.862	4.372.371
1981		
1982		
1983		
1984		
1985	4.257	3.885.686
1986		
1987		
1988		
1989		
1990	4.029	3.480.956
1991		
1992		
1993		
1994		
1995	3.944	3.135.366
1996	Land re-arrangement activities upon Law on Adjustment of Agriculture were yet introduced in the statistic since 1995	
1997		
1998	6.679	3.071.836
1999		
2000		
2001	6.934	3.006.134
2002	7.010	3.099.976

Table 1: Land re-arrangement activities in Germany upon German Land Consolidation Act (LCA) since 1980) and upon Law on Adjustment of Agriculture (LAA) (since 1996)

In 2002 in Germany 7.010 land consolidation schemes are in work with an acreage of 3.099.976 ha; with view to the special schemes concerning “Joining of Land and Building Ownership” (2.291 schemes with an acreage of 26.762 ha – Table 1), 4.719 traditional land consolidation schemes remain; that is the amount of the land consolidation activities in 1980 (Table 1). It is an impressive evidence for the unbroken need on land consolidation in the German rural areas.

Concerning the different types of procedures the Comprehensive Land Consolidation is of biggest importance, closely followed by the Simplified Land Consolidation. The Comprehensive Land Consolidation tends to decrease, the Simplified Land Consolidation tends to increase. In sum both procedure types are about constant.

The Land Consolidation in Case of Permissible Compulsory Acquisition stays since about 20 years nearly at the same level by about 730 schemes with an acreage of ca. 650.000 ha (Table 2).

Year	Comprehensive Land Consolidation upon § 1 LCA		Simplified Land Consolidation upon § 86 LCA		Land Consolidation in Case of Compulsory Acquisition upon § 87 LCA		Accelerated Land Consolidation upon § 91 LCA		Land Re-adjustment upon § 56 LAA		Joining of Land and Building Ownership upon § 64 LAA	
	Number	Areage (ha)	Number	Areage (ha)	Number	Areage (ha)	Number	Areage (ha)	Number	Areage (ha)	Number	Areage (ha)
1980	3.528	3.362.008	172	81.721	507	521.630	474	276.813				
1981												
1982												
1983												
1984												
1985												
1986	2.766	2.600.834	392	222.386	689	684.107	339	258.612				
1987												
1988												
1989												
1990	2.484	2.168.056	473	280.648	731	698.439	327	265.581	German Unification			
1991												
1992	2.359	1.969.884	490	296.676	737	690.454	351	274.762	- no data -			
1993												
1994												
1995	2.178	1.721.905	673	373.069	754	680.833	422	301.845	125	155.282	5.907	13.900
1996												
1997												
1998	1.821	1.360.981	851	441.337	741	642.798	420	270.066	253	272.767	2.716	20.670
1999												
2000												
2001	1.620	1.115.316	1.140	608.313	754	647.199	399	255.178	380	451.852	2.738	22.557
2002	1.586	1.044.921	1.214	671.185	749	644.088	383	262.560	568	486.501	2.291	26.763

Table 2: Land Re-arrangement Activities upon Land Consolidation Act (LCA) and Law on Adjustment of Agriculture (LAA) in Germany concerning Type of procedure

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Measures for	Agriculture and Forestry	Regional Transport	Regional Water-management	Communal Development	Environmental Protection / Supply and Waste Disposal	Nature Protection and Landscape	Leisure and Recovery	Sum of row 1 till 7	Sum of row 2 till 7
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
1986	3.922	2.277	644	1.240	812	1.604	1.134	11.633	7.711
1988	3.774	2.191	606	1.307	796	1.641	1.175	11.490	7.716
1990	3.914	2.207	580	1.333	819	1.911	1.099	11.863	7.949
1992	3.849	2.104	559	1.304	740	1.934	1.062	11.552	7.703
1995	3.669	2.096	560	1.536	1.165	2.891	1.305	13.222	9.553
1998	3.775	1.799	523	1.554	1.115	2.793	1.227	12.786	9.011
2001	3.409	1.694	534	1.512	1.077	2.786	1.217	12.229	8.820
2002	3.934	1.657	504	1.516	1.036	2.833	1.229	12.709	8.775

Table 3: Measures of rural development occasionally of land consolidation procedures upon Land Consolidation Act in Germany

Of importance are also the changes concerning the objectives of the land consolidation schemes during the last two decades: in the running land consolidation schemes is regularly surveyed, how many measures are implemented or rendered possible for improving of *agriculture and forestry (1), of regional transport (2), of regional water management (3), of communal development (4), of environmental protection / supply and waste disposal (5), of nature protection and landscape planning (6) and of leisure and recovery (7)*. By Table 3 it is obvious, which role measures of nature protection play in land consolidation schemes, today; an increase of more than 40 % during the last 15 years is to state. Additionally, the big importance of land consolidation for the improvement of the physical infrastructure in rural areas: since more than 10 years measures for infrastructure improving (measures without any immediate regard to agriculture and forestry) amount to 67 % till 72 % - an impressive evidence for the “integrated planning and implementation approach” of Land Consolidation.

2.2 Programmatic Objectives

Objectives, pursued by land consolidation, are always terminated according to the particular circumstances, especially by the economic and social situation and development.

After the both world wars, the increase of food production and settlement of refugees were the main targets of land consolidation. During the sixties the land consolidation was focussed on the improvement of competitiveness of agriculture on the background of the European Unification. Since the seventies environmental aspects and nature protection moved to the centre of land consolidation activities.

At time, in summer 2004, the “Land Consolidation AGENDA “in Germany is the following; an overview of the "strategic goals" is to find in ARGE Landentwicklung (2004):

2.2.1

- a) The need on allotment of fragmented parcels will more and more decrease. A new demand will arise from the ongoing changes in the agricultural structure by the decreasing number of farms; retiring farmers lease regularly their acreage to other farmers. By that, a new type of fragmentation arises; “lease exchange” is only restrained likely to balance or to compensate this type of “fragmentation”.
- b) Contrariwise is the situation in East Germany: here the need on merging and allotment of parcels in conjunction with restitution procedures will increase (Table 2) and stay on a high level for a long time (THIEMANN 2004).
- c) The need on creation of new and improving of existing physical rural infrastructure (rural roads, hedges, biotopes, water bodies etc.) is given, as much as ever, mostly initiated by agro-tourism or by the technological progress in agriculture.
- d) In some regions of Germany it is usual, to take the villages and settlements into the land consolidation schemes. Here, measures of village renewal and adjustment of land ownership or land tenure structures to the real land use are implemented. By this, an unobjectionable and legally sure planning base will be created for the communal development, very attractively for the municipalities.

Thus, the constant need on land consolidation results as the sum of a) till d). The development it new merely concerning the fact, that the initiation to such integrated land consolidation is not coming exclusively from the agriculture but mainly from municipalities and village communities.

2.2.2 At high level is the demand on land consolidation because of land use conflicts and the public need an land. At time, the most important releases are

- nature protection (figure 3),
- road or railway construction measures (figures 4 und 5),
- water management (figure 6).

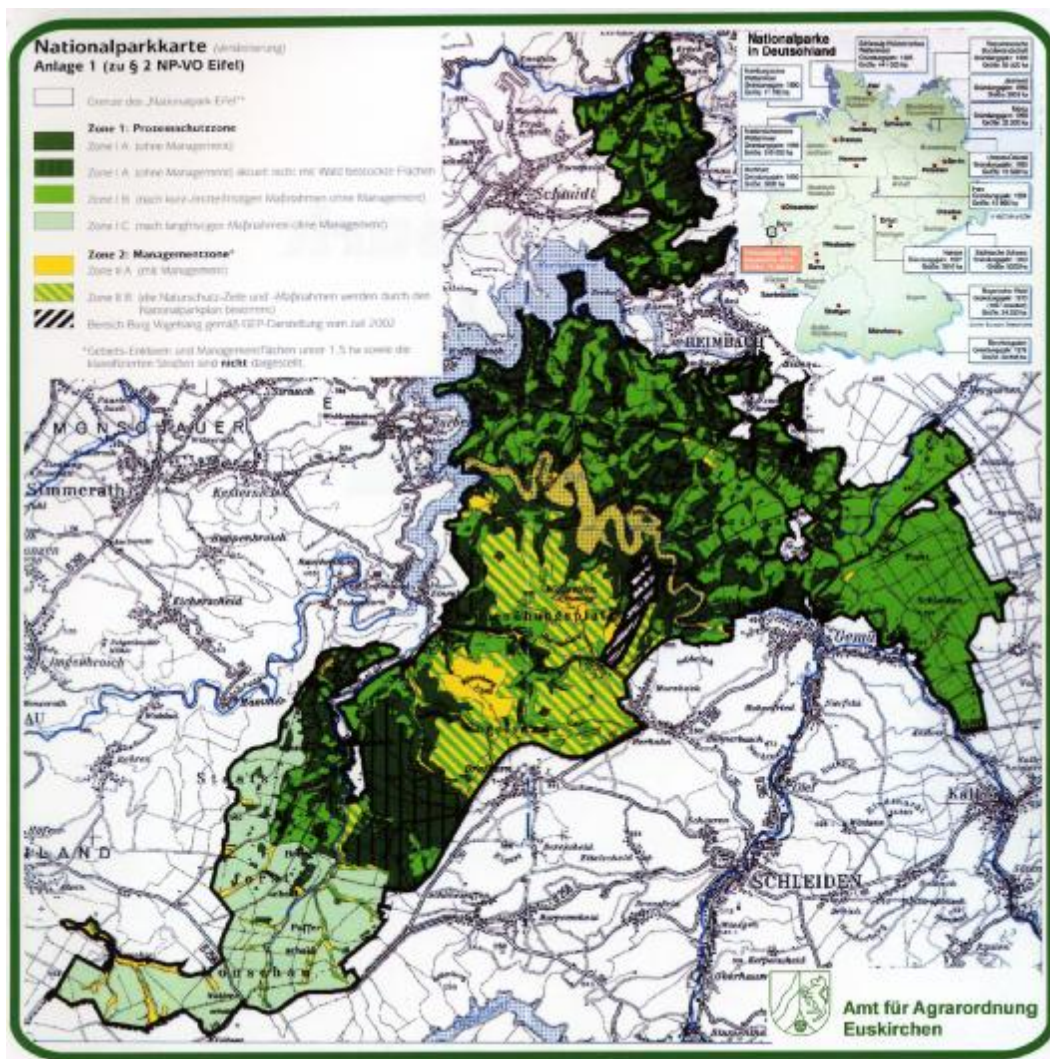


Figure 3: The establishment of the National Park Eifel causes a big demand on land management

Measures of nature protection may be released by (local) communal, (regional) state or transnational (“NATURA 2000”) activities.



Concerning transport and traffic, at first priority is the supraregional road construction of county roads, state and federation roads and highways. If such schemes have negative impacts on the agriculture concerned, the project will be pursued by land consolidation. That can mean, as shown in figure 7, a big challenge for the involved land consolidation authority. At second priority is the construction of new high-speed-railways in the European Traffic Network as well as the construction and/or enlargement of shipping-canals and airports.

Figure 4: The construction of the high-speed-railway Köln / Frankfurt is attended by a row of land consolidation procedures

Besides the utilization of agricultural land by the project, the demand for environmental compensation as balancing for the intrusion into nature and assault upon the landscape. This demand amounts regularly at a multiple of the demand for the project itself; a compensation of 1:4 till 1:5 (project: compensation) is no rarity.

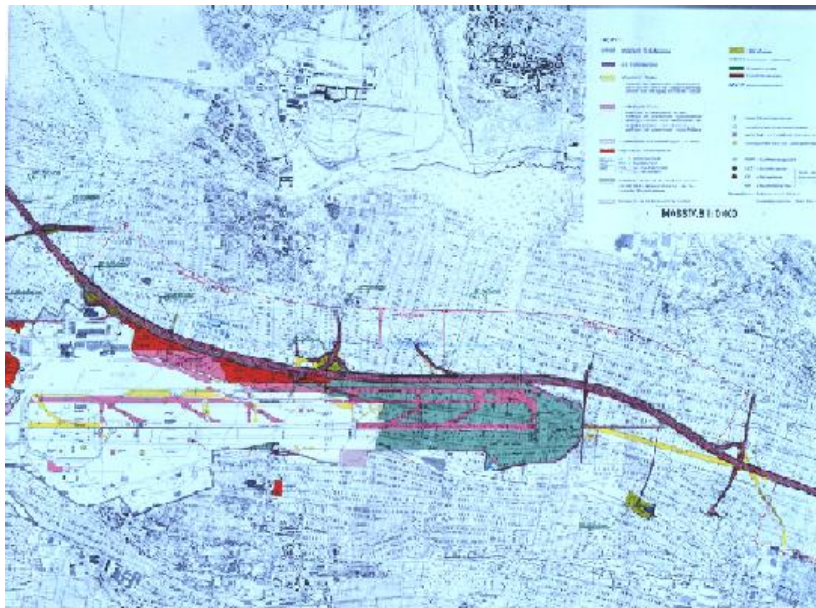


Figure 5: The need on land re-adjustment occasionally the enlargement of airport Stuttgart is obvious

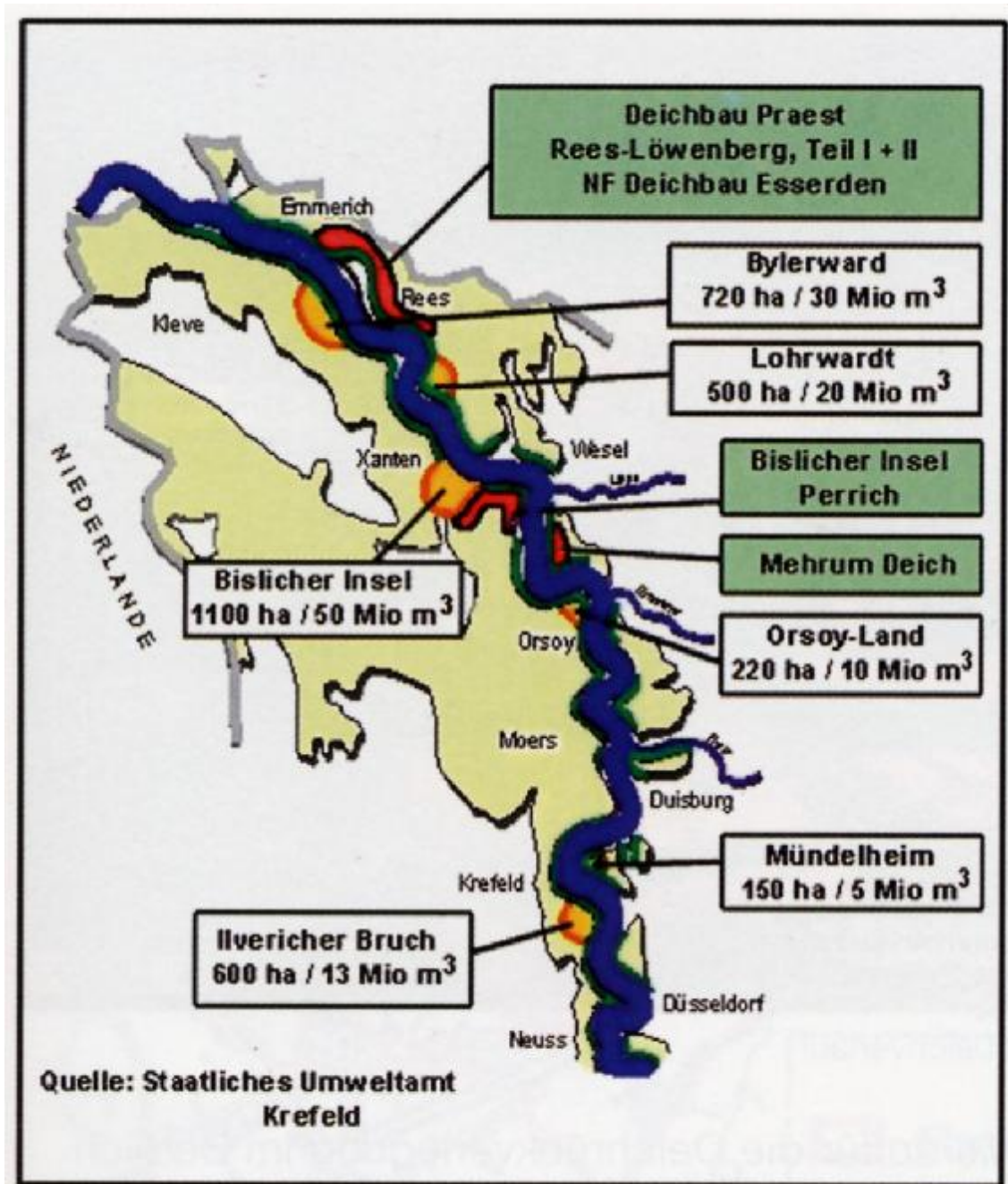


Figure 6: New retention spaces for flood cases along the Rhine, preparatory by land consolidation schemes

The flood events of the last years in Germany have brought again the need on flood protection in the public view. Over all, the land use pressure upon the water bodies has to be reduced and water retentions spaces for the flood case should be created. Thus, on the basis of the International Rhine Convention, at time the Rhine dikes of both sides of the river are

dislocated in the inland area from Düsseldorf until the Dutch boarder, to create flooding opportunities in German territories and to keep away flood peaks from the Netherlands.



Figure 7: An accumulation of road construction projects in a booming region is a big challenge for the land consolidation authority concerned

All these measures will have comprehensive influence on the agricultural farms in that region and are attended by land consolidation schemes.

Finally, by the EU Water Framework Directive (with respect to the obligation to achieve good status for all waters by 2015 and to prevent further deterioration of quality) high economic consequences will arise for the farms along the waters. In most of the German Länder there is a political consensus to flank the implementation of the EU Water Framework Directive by land consolidation.

All these tasks is common to avoid or to reduce the immediate affecting of the agricultural farms concerned by land consolidation. For that, the German Land Consolidation Act is an excellent legal and procedural base, as much as ever.

2.3 Methodical-procedural approach

2.3.1 In Germany land consolidation with its integrated, environmental and participatory approach experiences and awaits a renaissance (THOMAS 2002):

Since year 2000 all promotion measures for the development of rural areas are introduced in the so called **Second Pillar of the Common Agricultural Policy (CAP)**. The relevant EU-ordinance 1257/1999 is the base for a fully covering, sustainable and integrated promotion of rural areas for the period 2000-2006. The promotion is essentially concentrated in the sectors

- promotion of attraction and comprehensive development of rural areas (rural development),
- making accessibly of development potentials in the agrarian sector as economic factor in rural areas (improvement of competitiveness),
- improving of environmental protection by agriculture as well as social flanking of structural change (environmental and compensation measures).

The Land Consolidation is expressively called in article 33 of EU ordinance 1257/1999 in chapter IX as a measure on “promotion of adjustment and development of rural areas”.

In Germany the promotion of rural development is based on development plans of all 16 Länder, which are notified by the EU-Commission and financially supported (BMVEL 2002). In these development plans the German Länder refer to the promoting principles of the federal frame of the “Common Task Improving of Agricultural Structures and Coastal Protection”, **the** central federal instrument for the policy of an integrated rural development in Germany since more than 30 years. Important promotion measures of rural development are

- village renewal,
- land consolidation,
- rural road construction,
- sustainable water management.

All 16 Länder have adopted such development plans, consequently even the municipal states Berlin, Bremen and Hamburg, with respect to specific regional particularities; nevertheless all programs contain the Land Consolidation as a central development tool (THOMAS 2002).

2.3.2 Because of the EU-funding and the integration of the land consolidation in the relevant ordinances and guidelines of the EU, all funded measures have to be systematically evaluated, too. Concerning land consolidation the **Mid-term-Review of the “NRW-**

Programm Ländlicher Raum”, elaborated by external and independent experts and scientists, states the following evaluation (FAL 2003):

“The land consolidation is a very manifold instrument, as well concerning attaining of objectives as its impacts. Besides the improvement of agricultural structures in a narrow sense, recent schemes focus more and more on a harmonization of different land use requests in rural areas. By the connection of multiple existing legal procedure alternatives, land consolidation represents, because of its integrating and co-ordinating planning, an unique instrument for solution of land use conflicts concerning multiplicity and impact depth.”

“By measures on improving of infrastructure and by a positive influence in the landscape, land consolidation has particular importance for the improvement of touristic potentials, leisure and recovery function in rural areas and of settlement quality in villages. Beside the solution of land use conflicts by land management, land consolidation provides an important contribution on the development of rural regions and the increase of their attraction”.

This evaluation of external experts points out the economic value added of land consolidation to the GDP, as an important contribution in an industrial, leisure and knowledge society!

2.3.3 In land consolidation the participation of land owners has a long tradition. An immediate participation occurs before the beginning of the land consolidation scheme and at all relevant procedure steps; generally, the land owners are also institutionally represented, that is the “Body of Participants”; it is a body corporate of public right and comes into being when the Land Consolidation Decision takes effect. The Body of Participants attends to the common affairs of the participants. Their main function is to construct and maintain common facilities and to execute the decisions in the land consolidation plan. On that issue, there is no need on changes, at time; such changes are not predictable, too.

An extension of the “bottom-up-approach” occurs by the **new promotion principles of the Federation concerning “Common Task Improving of Agricultural Structures and Coastal Protection” from December 12, 2003** (PLANAK 2003).

The funding of the project concerned can be raised by up to 10 percent, if the project is part of implementation of an “Integrated Rural Development Concept” (IRDC) (“Integriertes ländliches Entwicklungskonzept – ILEK”). On the basis of an analysis of regional strengths and weaknesses concerned, such IRDC shall

- define the development goals of the region,
- state areas of activities,
- describe the implementation strategy and
- preference development projects.

The population concerned and all relevant actors have to be participated in the elaboration of such IRDC.

By this enlarged approach the responsibility for the structural development of the region will be transferred into the region (“principle of subsidiarity”). The relevant actors and citizens are

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not only participated **in** the implementation of development measures, but are able to decide over the “if”, “what” and “how” of the measures. That is a new big challenge for the state land consolidation authority; nevertheless, this approach may have positive influence on the acceptance of land consolidation measures in future.

2.3.4 Keyword "Voluntarily": the Voluntary Land Exchange as a mean of land management is known in many European countries; the German Land Consolidation Act knows also that tool for the exchange of parcels between few partners on voluntary basis (see Chapter 1).

When at the beginning of the eighties problems arose concerning acceptance of land consolidation, the operative practice of land consolidation was changed: instead of an officially land consolidation decision (ex officio) land consolidation schemes were started with the assurance to implement re-arrangements or allotments of parcels only in case of the agreement of all participants. That practice has also been extended in other European countries; and in countries in transition in Central and East Europe it is under consideration, too, to introduce a voluntary type of land consolidation (FAO 2001a), (FAO 2001b), (FAO 2003), (DLP 2004).

Though the lacking practicability is obvious particularly concerning goal attaining and temporal planning, this practice is – depending of the political circumstances in the Länder concerned – ever wanted, as much as ever. That is particularly for land consolidation schemes on realization of objectives of nature protection. For example, in Land Nordrhein-Westfalen (with a red-green government) all land consolidation schemes with objectives of nature protection and landscape management are principally implemented only on voluntary base; at time 107 land consolidation schemes in kind of Simplified Land Consolidation or Accelerated Land Consolidation are pending, about one third of all pending land consolidation schemes in this Land.

2.3.5 Within the recent federal promotion principles, mentioned above (PLANAK 2003), a **new tool for land management** was introduced, the **"Voluntary Lease Exchange"** ("Freiwilliger Nutzungstausch"). The Voluntary Lease Exchange is a procedure of land management by contract on the legal base of the Civil Code. Under moderation of the land consolidation authority or other qualified experts/consultants the scattered land tenure (not only the owned real property) of the working farms are re-arranged by contracts, as well as possible (MWVLW 2000), (KRAM 2004). The Voluntary Lease Exchange on contract base is flanking the structural changes in agriculture and amends the instruments of land consolidation.

2.4 Operational-Technical Implementation

2.4.1 Re-arrangement of rural real property affects changes concerning land tenure and ownership rights and thereby reshaping of parcels and boundary lines. Comprehensive

land surveying work is necessary which cause considerable costs. Therefore, at all times land consolidation engineers are requested to keep the surveying costs at low level, as low as possible.

Large rationalism progress occurs by the **GPS-technology** (Global Positioning System); now, this technology is established in the implementation of land consolidation schemes, wherever possible and available, also particularly on the cadastral surveying level for setting out and survey of the new boundary lines.

A second rationalism progress was done by establishment of **Digital Stereo Photogrammetry**: before, the geometric fixation of the common and public facilities of the Road and Water Resources Plan was executed by expensive local surveying work. Now, the boundary lines of these facilities are fixed and coordinated in the digital stereo model by the photogrammetric operator accompanied by the responsible land consolidation engineer. The results are the basis for the drawing of the new cadastral maps and the creation of new parcels in the land consolidation plan. The planned facilities and the new boundary lines are laid out and marked in context with the publication of the land consolidation plan, without any loss in accuracy; the costs reduction amounts at about 3:1 for that work section (FEHRES; TESSMER 2000).

2.4.2 The **digital data transfer** from Real Property Cadastre and land consolidation authority at the beginning of a land consolidation scheme and from land consolidation authority to Real Property Cadastre at the end has already a long tradition and is operationally well functioning concerning register data as well as mapping data. Nevertheless, the data transfer from and to the Land Register at court occurs analogously, as much as ever. Since some time, at the ministry for justice pilot projects are in work to make possibly a digital data transfer from Land Register at court to real property cadastre and back. In case of success there would be given a digital access of the land consolidation authority to the property register and property ownership register of Land Register; but a digital exchange of other real property rights in section II (real rights) and section III (hypothecs and mortgages) of the Land Register may let wait for even some years.

2.5 Organizational Aspects

Under the conception of state and constitutional principles, sovereign land re-adjustment and sovereign land consolidation is regarded to the state core task; that is also in consensus by all actual organizational reforms in the German Länder. Nevertheless, concerning organization in implementation of land consolidation procedures a large federal variety exists among the land consolidation authorities:

2.5.1 Land consolidation is carried out, as it is legally regulated, "**under the direction of the responsible authority**". But the authority is allowed to authorize another competent and entitled institution/agency/bureau with the implementation of some services and/or legally defined processing stages.

Most of the land surveying and cadastral surveying work is normally executed by contract through "Licensed Surveyors" ("Öffentlich bestellte Vermessungsingenieure – ÖbVerm Ing."), Bayern excepted, where "Licensed Surveyors" are not authorized till now and all cadastral surveying work is done by the cadastral authority itself. It is foreseeable that engagement and activities of Licensed Surveyor will increase in the sphere of land surveying and cadastral surveying.

The most comprehensive authorizing regulation is to find in the "Law on Adjustment of Agriculture" (see Chapter 1). It is only restricted to East Germany and regarded to the Restitution Procedures (§ 56 LWANPG) and procedures for Joining of Land and Building Ownership (§ 64 LWANPG). Under § 53(4) LWANPG the responsible state authority (Ministry of Agriculture) is allowed to authorize "non-profit agricultural settlement agencies" and other appropriate agencies by entitling with sovereign competence to implement restitution procedures; exceptional are

- the Implementation Order after validity of the Land Consolidation Plan / Land Re-adjustment Plan,
- the request on updating the Land Register,
- instructions on provisional or final possession.

2.5.2 At time, in all Länder organization reforms of the public state administration are pending with objective to restrain the activities and responsibilities of the administration and to reduce the unalterable state core tasks. **Sovereign land consolidation** and procedures under LAA belongs to that **state core takes**.

Till now, the land consolidation authority was organized as "Special (Planning) Authority" on base of § 2 LCA. Now the governments of the Länder tend to incorporate these "Special Authorities" in the general administration, preferably into the Administration for the Interior, occasionally organizationally joint with the cadastral authority, but concerning responsibilities strictly separated.

On the background of the development of land consolidation in Germany, shown in Chapter 2.1 (that is a development from an "administration for agriculture" up to a "structure authority for rural areas") there is – seriously – nothing to object to such considerations.

3 Conclusion

From the all described developments and trends of land consolidation in Germany the following is to argue:

1. Land Consolidation is and remains a crucial instrument of sovereign regulatory and structural policy.
2. In context of the EU structural policy Land Consolidation awaits a renaissance in West Europe; therefore Land Consolidation is recommended as a tool to accomplish the structural problems in Central and East Europe.

3. Land Consolidation has different and temporized designs; that is expression and consequence of the concerned national economic and social objectives and challenges.
4. Land Consolidation is likely to reduce fragmentation of agricultural land tenure; it is likely to improve rural infrastructure. But Land Consolidation is also likely to become the gate for a sustainable improving of general livelihoods in rural areas.
5. Thus, "Modern Land Consolidation" doesn't have a general standard and should not be uncritically transferred to other countries. The design of "Modern Land Consolidation" is only defined by the national circumstances and challenges concerned.

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