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Property rights, land fragmentation and the emerging structure of agriculture in Central and Eastern European countries

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Abstract*: This paper offers an overview of land reform processes in the CEECs and their outcomes and impacts and analyzes current and emerging structures in rural areas. Different types of land consolidation are defined and their potential impacts are assessed. The paper then looks in depth at land consolidation processes, especially in the context of land management, and outlines preconditions and cornerstones for various approaches. Environmental aspects and principles for land funds and land banking are also drawn in. The paper argues the need for an integrated and sustainable rural development which includes a role for land consolidation.*

Keywords: *Transition economies; land tenure; land fragmentation; land consolidation; rural development*

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Introduction

Rural areas continue to undergo transformation in most of the Central and Eastern European countries (hereafter, the CEECs) and the Commonwealth of Independent States (CIS), in the area of the former Soviet Union. Land reforms were enacted during the shift from a centrally planned to a free market economy, and while those processes have progressed (albeit in differing degrees), economic development has often been blocked. Economies in rural areas are marked by stagnating or even decreasing agricultural production, which leads to food insecurity, unemployment, migration and increased rural poverty.

In spite of the remarkable progress and success of land reform, one of its side effects – land fragmentation – has become a crucial issue, with detrimental implications for private and public investments, sustainable economic growth, social development and natural resources.

FAO has identified its current priorities in Europe for the short- and medium-term (to 2007) as: poverty reduction through support for sustainable rural livelihoods and food security; food safety and quality; sustainable management of natural resources; and institution and capacity building to support the process of transition to market economies in the rural sector (FAO, 2001d). Within that context, this paper discusses property rights, land fragmentation and the emerging structure of agriculture in CEECs.

The paper's first section offers an overview of land reform processes in the CEECs, including their results and impacts. The second section provides an analysis of current and emerging structures in rural areas. The third section goes into more depth on land consolidation processes, especially in the context of land management. The paper concludes with a discussion of land consolidation as a key component of sustainable rural development.

Land reform processes in the CEECs

After the collapse of the communist and socialist regimes in the CEECs, the new governments quickly took steps to transform centrally planned market economies into market economy systems. One of the first measures taken, at the beginning of the 1990s, was the privatization of enterprises, land and buildings. Legislation permitted individuals to own private property and allowed for land and buildings to become private property. The approaches to

privatization and the methods chosen by governments for achieving it varied according to the existing conditions and historical background of each country.

Property rights, privatization and land reform issues

Under the former socialist regimes, real estate was not wholly nationalized. There were multiple types of partial land tenure that went so far as to guarantee private property and its free availability.

Real estate includes, by definition, land as well as immoveable property attached to the land for permanent use (buildings, public utilities, constructions, trees, etc.). All persons and legal entities have the right to possess, use and alter real estate. (In some countries there are limits on the rights of foreign citizens and foreign legal entities to own land.) The owners of real estate also have the right to exclude others from their property and to sell or mortgage their property. In the countries under discussion here, issues related to land access, including land ownership and land use, are generally regulated by the following legislation:

- The national Constitution in question. It recognizes and protects the right of ownership of land and other real property, and guarantees free development and equal protection of all forms of property, including land and real estate. Under exceptional circumstances the Constitution provides the state with the power to acquire private property for public purposes; such acquisition (expropriation) should be accompanied by compensation to the owner.

- A new Civil Code regulating private commerce and governing of private property, encouraging free-market activities and guaranteeing individual property rights. It regulates relationships to land and contains provisions on ownership, use, preservation and control over the land. It promotes the goal of securing the conditions for free development of all forms of ownership and for all subjects of ownership on the basis of multiple forms of economic activities as well as the goal of ensuring legality in the realm of land relations. The respective Civil Code also contains rules concerning land leasing and mortgages; in some cases it includes special laws on leasing and loans.

- The law on the privatization of state property. It regulates all activities relating to transfer and sale of state property. State property includes state land, shares of state-owned enterprises with state participation and state real estate, including attached land.

- The law on state registration of rights to property pertains to registration of property rights, use rights, pledges, mortgages and servitudes as well as other rights affecting moveable and immoveable property. Subjects of registration are natural persons (individuals, co-owners), communes, citizens, legal entities, foreign countries (diplomatic missions and consular offices), international companies, foreign citizens, stateless persons and foreign legal entities.

The above acts are usually supplemented by a series of state decrees, presidential orders, statutory regulations and administration regulations.

In all the countries under discussion, a land register and/or unified cadastre of real estate were established and are at various stages of completion. The key objective of state (first) title registration is to grant and protect property rights, allowing individuals and legal entities full enjoyment of property rights, including sale, use, donation, inheritance and exchange. Title registration is also a means to collect relevant, reliable and consistent data for registry purposes and for establishing a tax policy on real estate. In some countries an appraisal system for mass valuation of real estate is already established by law.

The current situation of real estate and land tenure issues in the CEECs is mainly a result of land reform processes that occurred during the last ten years, but former private land tenure structures also survive.

Privatization

In countries with nationalized (or state-owned) property, the process of privatization of the agricultural sector began in the early 1990s with privatization of land, cattle and agricultural equipment and machinery. The former large-scale farms (e.g. state farms, or *sovkhozes*, and agricultural cooperatives, or *kolkholzes*) were dismantled. Cattle, agricultural equipment and machinery were distributed among the former employees; almost all land was transferred to private ownership and to small holders. Farmland as well as single-family houses and flats in apartment blocks were rapidly privatized.

The land distribution process was executed on the basis of previously determined principles. Generally the size of land units to be distributed was calculated by classifying the area on the basis of different soil qualities and/or land use qualities and then by dividing the portions by the number of individuals concerned (for example those living in a particular village). In many cases, the villagers chose (or the responsible agency decided) to classify agricultural land into “bad”, “average” and “good quality [or irrigated] arable land” and “non-irrigated arable land”. Individuals’ claims depended on the family size. The allocation of the land parcels to families was generally determined by lottery, with families receiving parcels from each quality category. The property transfer occurred without any charge and fees. Special land areas, mainly pastures and forests, remain under state ownership.

In some countries land parcels were initially registered to heads of families, although it was intended that all family members born before a legally-fixed date hold rights to the land. Now land ownership certificates contain all eligible family members as co-owners of the parcels. It can be expected that further fragmentation will occur in the future as most adult family members will want to use or transfer their shares themselves. While further fragmentation has its disadvantages, there are advantages in how it promotes the emerging land market.

In most of the countries in transition several hundred large farms (of a few hundred hectares) were left in state ownership or as cooperatives with status as legal entities. These farms were reserved for extension services, breeding selection, seed production and research purposes. In some countries a part of this land is being privatized within the framework of the European Union’s Food Security Programme (UNECE, 2001a).

Restitution

Restitution is the reinstatement to owners of their former rights of ownership; it cancels the confiscation of private property by the state or its organs during the period of communism or in previous times, or it compensates the expropriation. Former owners include natural and legal persons (including religious communities) as well as their lawful and legal successors. Objects of restitution include land, forests and buildings as well as enterprises and property rights.

Through restitution the former agricultural structure is restored strictu sensu, regardless of its suitability. An owner’s parcels are rebuilt at the same location within the same boundaries.

The result is many small farms, fragmented as during the period prior to communism, when it became one motive for the collectivism that followed.

Restitution as used here always means restitution in land or compensation if restitution in land is impossible: the former object of ownership is to be given back and former owner rights are restituted. Thus, the most important difference between privatization and restitution is that in the case of restitution people have a claim on their former property in terms of extent, size and location. One precondition for restitution is the existence of land registers, titles or other documents giving evidence of a justified claim by the owner.

In some countries restitution in kind is not allowed in particular cases, especially if the current circumstances do not allow for restitution in land. In the former East Germany and in Bosnia-Herzegovina, for example, third parties that in good faith obtained property subject to restitution are protected against restitution in land. Also in Bosnia-Herzegovina, enterprises established before a specified date, along with the land and buildings necessary for their present and future operation, are not subject to restitution in kind (Thomas, 2000b). If property cannot be returned in kind, full and effective compensation is awarded based on the current market value of the property in the condition it was at the moment of seizure.

In rural areas expropriation or seizure of private farms during the communist/socialist period occurred through land reform, colonization or collectivization. In this context it should be noted that such land reform followed by expropriation was limited where large-scale agricultural farms and forest farms were concerned. For example, in East Germany the limit for private property was 100 hectares, in Lithuania 30 hectares, and in former Yugoslavia, 10 hectares for agricultural farms and 25 hectares for forest farms (Thöne, 1995; Rose, Thomas and Tumler, 2000; Thomas, 1996b). Only real estate surpassing that limit was expropriated. The remaining agricultural property was subject to collectivism.

Reinstatement

In regions with a civil war or ethnic disputes the phenomenon of refugees and displaced persons led to the necessity of reinstatement of abandoned real estate to the proprietors, owners, users (and occupancy right or tenancy right holders of flats) who lost their property as a consequence of legislation and executive practices enacted during the war. During the war in Bosnia, for example, it was legally admissible for local authorities to declare as

“abandoned” those socially-owned flats left behind by their owners and to allocate temporary occupancy rights to other people; under certain conditions property was declared “permanently abandoned” and could be definitively allocated to the current user. These regulations were also applicable to agricultural property in rural areas. After peace agreements were signed the original owners, users or tenancy right holders of real estate they had abandoned were allowed to return with all the rights they had possessed before leaving. The owner, user or tenancy right holder of abandoned real estate must file a claim for reinstatement attaching the appropriate documents; in the case of justification, the responsible (normally local) authority has to reinstate the claimant.

In the case of reinstatement, as with restitution, the former legal situation is re-established. If there was small and/or fragmented farming property abandoned and allocated to other persons, reinstatement restores the former, fragmented agricultural structure.

Existing former agricultural structures

In some CEECs, small commercial and agricultural activities were permitted and, particularly during the last period of socialism and communism, even encouraged because of supply problems in the centrally planned economy. In rural areas people could own up to 2, 3, 5 or more hectares of agricultural land per household as private property; the limit was somewhat higher for forest land. On that land people were allowed to engage in agricultural activities for self-sufficiency and for improvement of the family income through sale of agricultural products in street markets. In Poland, for example, private agricultural production was in marked competition with the state-led agricultural production in sovkhozes and kolkhozes. In former Yugoslavia (Bosnia region) more than 90 percent of the farms and farmed area were private (FAO, 1999a; FAO, 1999b); the situation in Slovenia was similar. These agricultural structures have been preserved and are functioning to a certain degree.

In Bosnia-Herzegovina the existing agricultural structures are not influenced by land reform procedures. During the war in Bosnia the government was not able to deal with agriculture; and, as shown in Table 1, there is minimal need for restitution: eventual claims to restitution concern a maximum of 6.1 percent of the agricultural areas. Thus, the country inherits agricultural structures determined mainly by the situation during the first half of the twentieth century.

Table 1
Private and state-owned farms in Bosnia-Herzegovina

	Private *(%)*	**State-owned *(%)***
Number of farms	571 207 *(99.95)*	300 *(0.05)*
Total farmed area in hectares	2 376 000 *(93.9)*	155 000 *(6.1)*
Average farm size in hectares	2.9	517

In Slovenia, agricultural policy following World War II focused on the formation of cooperatives and state-owned agricultural land. The more prominent features at that time were:

- expropriation
- implementation of a land tenure maximum for landowners
- land consolidation in favour of state holdings.

Under the laws establishing land tenure maximums, non-farmers were allowed to own up to 3 hectares of land or 5 hectares of forests and farmers up to 10 hectares. Eighty-six percent of the farmed agricultural areas stayed in private hands. Given land fragmentation there was a need for land consolidation. Even under the socialist regime, land consolidation procedures were implemented: until 1973 by funds and loans from agricultural organizations, and after 1973 by the state on the basis of the Agricultural Land Act.

As a result of the various historical reasons described, there is an extraordinary fragmentation of farms and parcels in all the countries under discussion.

Results and impacts of land reform processes in CEECs

As outlined above, land fragmentation is the result of cultural and legal traditions. In western Europe, land reforms with ensuing land fragmentation, inspired by the ideas of the French Revolution, were initiated more or less at the beginning of the nineteenth century as part of a transition from feudalism to a civil society (on Germany, see Weiss, 1982). Legislation based on faith in the liberal model of economic capacity grounded in secure property rights, together with freedom of transfer (selling, buying, dividing/subdividing, inheritance, gifts and other

transfers inter vivos) promoted land fragmentation. Land fragmentation is an issue not only in countries in transition; rather, it has been a general problem for all capitalist, free market-oriented countries since the nineteenth century (as demonstrated by Kopeva, 2002). Land reforms in the CEECs during the 1990s can be compared in principle with changes that took place 200 years ago, aside from the details of the privatization measures.

Despite certain common aspects, land fragmentation patterns differ from country to country. Distinctions should be made between fragmentation of farms, land tenure and parcels. The varying historical and legal backgrounds of the Central and Eastern European countries mean that their land reform processes differ in type and extent, and the details of the processes' results and impacts differ as well. But all of the emerging agricultural structures in question have in common a high fragmentation of farms and land and a massive decrease in agricultural production, with negative effects on the rural population. Former large-scale state farming or collective farming has been transformed often into an economy of "farming a garden" (UNECE, 2001a).

Current agricultural structures

There follows a picture of some results of land reform processes in Armenia and Georgia, especially in relation to land fragmentation.

Armenia

As a result of the privatization programme in Armenia, 324 000 family farms have emerged, along with just 265 collective farms belonging mainly to groups of kinsfolk. The total number of farms in the country is 328 893 (FAO, 2001a) and the total area of privatized agricultural land is 399 275 hectares. The total number of farmers may be considerably higher due to subdivisions resulting from inheritance; the figure could be 370 000 or more (UNECE, 2001a). On the basis of official statistics, the average holding size is currently 1.21 hectares. The largest average size of farms are in Syurig Marz (2.87 hectares/farm), while the smallest are found in the fertile but over-populated Ararat Valley (0.48 hectares/farm). None are as large as the former collective farms during the time of the Soviet Union (FAO, 2001a).

According to the State Cadastre Committee there are 1.3 million land parcels in the country. Every farm has three to four parcels of land in different locations and for different uses: arable land, irrigated and non-irrigated; grassland; vineyard; perennial (UNECE, 2001a). If

subdivisions by inheritance were taken into account, the real number of parcels and the degree of land fragmentation would be even higher.

Some farmers cultivate land in addition to their own. Not all rural land was privatized; in every community, 25 percent of agricultural land was kept as state property and pastures (a total of 695 000 hectares) were generally excluded from distribution. That land was farmed out, and about 15 percent of farmers lease from village councils, usually for a period of between one and three years. So in fact, farmers work an average of 3.2 hectares of land (leased land included).

Georgia

In the former Georgia there were 1 750 large farms which cultivated all agricultural land, 1 100 as kolkhozes and 650 as state-owned sovkhozes. At present there are only 200 to 300 joint stock cooperatives.

The territory of Georgia covers 6 949 000 hectares, of which 3 020 000 hectares (44 percent) are agricultural land. The remaining area (56 percent) is covered by such things as mountains or rocks, forests or urban settlements. Of the land previously owned by the state, 942 000 hectares were transferred into private ownership free of charge; 762 000 hectares of that were suitable for agricultural use, which amounts to about 25 percent of the country's total farmland. Meanwhile, 2 256 000 hectares of agricultural land (75 percent) remain in state hands, of which 940 000 hectares (31 percent) are currently leased.

Table 2
Land use in Georgia

Type of land use	Area		Privatized		Leased from government		State-owned	
	ha (1000s)	ha (1000s)	%	ha (1000s)	%	ha (1000s)	%
Total agricultural land	3 020	762	*25*	940	*31*	1 318	*44*
Arable land	793	434	*55*	258	*33*	101	*12*
Perennials	269	183	*68*	32	*12*	54	*20*
Hayfields	142	42	*29*	57	*40*	43	*31*
Pastures	1 796	85	*5*	594	*33*	1 117	*62*

Sources: UNECE, 2001b; FAO, 2001b

Georgia's land reform allotted 25 percent of the total agricultural land to privatization. The land reform process was carried out on the basis of three categories:

- Citizens who were directly involved in farming had the right to receive 1.25 hectares of land per household.

- People who lived in rural areas but were not involved in farming had the right to 0.75 hectares.

- People from urban areas had the right to 0.25 hectares.

In regions where the land available in the vicinity of the settlements was not sufficient to cover demand, households received less than the specified 1.25 hectares.

As a result of this massive transformation process, 1 055 200 Georgian families – an estimated 4 million citizens – have become owners of small land parcels, with an average of 0.9 hectares per household; because of the kind of allocation chosen and the different types of land use, each family was given four to five land parcels located in different areas. The average parcel size amounts to only 0.25 hectares; the distance between the various parcels of one owner and his homestead varies from one to several kilometres.

There is a second type of approximately 32 000 farmers who have about 10 hectares. These farms pooled land between relatives, friends and neighbouring landowners or leased additional land from the state or applied both strategies to upgrade their farming operations in size and quality. This group has a certain potential for development and has an increasing interest in measures regarding the re-allotment of plots.

A third group of roughly 6 300 commercial farms with an average size of about 90 hectares (often legal entities as cooperatives) have leased large units of adjoining plots of former sovkhozes or kolkhoz land from the state (UNECE, 2001b; FAO, 2001b). This group has a strong interest in preventing further purchase of state land and in avoiding further fragmentation.

Tables 3 to 10 provide information on farm structures in Albania, Bosnia-Herzegovina, Bulgaria, Hungary, Romania, Slovenia and Germany.

Table 3
Farm structure in Albania

Farm structure by size (ha)	Number of farms	Average farm size (ha)	Mean parcel size (ha)	Mean number of parcels per farm
< 0.5	142 600			
0.5 – 1	101 600			
1 – 2	126 200			
> 2	49 600			
Total	420 000	0.97	0.23	4.2

Share of land leasing in agriculture land : 5 %
Source: ASP 2001

Table 4
Farm structure in Bosnia-Herzegovina

Farm structure by size (ha)	Number of farms	%	Farmed area (ha)	%
< 1	186 445	34.5	81 709	5.3
1 – 2	105 146	19.5	152 462	9.8
2 – 5	159 260	29.5	521 878	33.6
5 – 10	73 774	13.7	511 055	32.0
10 – 15	9 499	1.8	118 738	7.6
15 – 20	2 664	0.5	46 620	3.0
> 20	3 506	0.6	122 710	7.9
Total	540 294	100	1 555 172	100

Share of of land leasing in agriculture land: irrelevant
Source: Ministry/FAO, 1999

Table 5
Bosnia-Herzegovina: Livestock in an elected *Obstina* (Novigrad)

Animal	Total	Average per household	Maximum per household
cows	3 415	1	13
sheep	3 624	1	29
goats	127	<1	5
pigs	8 636	3	17
poultry/hens	49 549	15	100
horses	1 194	<1	12
donkeys	12	0	1
beehives	1 228	<1	80

Corresponding number of farm households: 3 376
Source: Thomas, 2000a

Table 6
Farm structure in Bulgaria

Farm structure by size (ha)	Mean no. of parcels per farm	Number of private farms	Average farm size (ha)	Number of parcels	Mean parcel size (ha)
< 1	5				
1 – 5	11				
> 5	13				
Total	10	2 600 000	0.38 – 0.51	12 000 000	0.20 – 0.47

Share of land leasing in agriculture land : Empirical data not available but a common practice in large-scale farms
Sources: Riddell and Rembold, 2002; Kopeva, 2002

Table 7
Farm structure in Hungary

Farm structure by size	Number of farms	%	Total agricultural land area (ha)	%	Avg. farm size (ha)	Number of parcels (app.) (millions]	Mean parcel size (ha)
< 1	978 101	81.4	231 665	16.8	0.2	1.6	
1 – 5	173 182	14.5	378 912	27.4	2.2	2.4	
5 – 10	28 723	2.4	198 303	14.3	6.9	1.1	
10 – 50	18 922	1.6	359 588	26.0	19.0	1.9	
> 50	2 087	0.1	214 737	15.5	102.9	1.1	
Total	1 201 015	100	1 382 205	100	1.2	8.1	0.15-0.2

Relevance of land leasing (arable land) in agriculture: 10 %
Source: Development of food production and processing industry, CSO 1995

Table 8A
Farm structure in Romania in 2000 after land reform

Family farms	63 %
Family associations	8 %
Formal associations	13 %
State-owned farms	16 %
Total	100 %

Source: Rusu, 2002

Table 8B
Farm structure in Romania in 2000 after land reform

Farm structure by size(ha)	%	Average farm size (ha)	Mean parcel size (ha)	Mean number of parcels	Mean distance to nearest parcels (km)	Mean distance to farthest parcels (km)	Average age of household head
< 1	} 70%		0.40	1	1.92	4.50	45.5
1 – 3			0.79	3	2.06	7.04	60.2
3 – 5			0.88	4	1.70	7.20	63.8
5 – 7			0.91	6	1.95	7.56	67.9
> 7			0.92	8	1.82	7.46	74.8
Total		2.3	0.85	4.39	1.88	7.15	64.0

Share of land leasing in agriculture land : No empirical data available but according to ad-hoc information a widely used instrument to increase farm size
Source: Rusu, 2002

Table 9
Farm structure in Slovenia

Farm structure by size (ha)	Number of farms in 1991	%	Number of farms in 2000	%	Rate of increase per year	Average farm size (ha)	Mean parcel size (ha)
< 1	15 576	13.9	7 998	9.3	- 5.4		
1 – 3	41 062	36.7	27 251	31.6	- 3.7		
3 – 5	22 868	20.4	18 128	21.0	- 2.3		
5 – 10	24 251	21.7	22 053	25.5	- 1.0		
10 – 20	7 251	6.5	9 158	10.6	+ 2.9		
> 20	923	0.8	1 732	2.0	+ 9.7		
Total	111 931	100	86 320	100	- 2.54	5.1	0.4

Source: Ministry of Agriculture, Forestry and Food

Table 10
Farm structure in Germany (for comparison)

Farm structure by size (ha)	Number of farms in 2000	Number of farms in 2001	% in 2001	Rate of increase (%)
< 2	37 300	36 900	8.2	- 1.0
2 – 10	148 500	142 200	31.8	- 4.2
10 – 20	87 000	84 100	18.8	- 3.4
20 – 30	46 200	44 200	9.9	- 4.3
30 – 50	59 400	58 200	13.0	- 2.0
50 – 100	54 600	55 000	12.4	+ 0.7
> 100	25 300	26 200	5.9	+ 3.7
Total	458 400	446 900	100	- 2.51

Relevance of land leasing in agriculture: 68.5% of all farms have additional leased land; rate of leased land per farm is 63.9%. Average farm size in 2000/2001 was 42 ha.
Source: BML, 2002

Effects of privatization on the rural population

The rapid privatization of real estate in the CEECs since the beginning of the 1990s should be recognized as a significant achievement. It put private real estate in the hands of citizens. Legal protection of rights to land ownership and other real estate guarantees freedom and free development of the personality. Already, people attach high sentimental value to the land they received just a few years ago.

A further result of these processes has been the systematic surveying of real estate. In the context of title registration programmes, boundaries and buildings were systematically surveyed with a hearing for the owners, cadastral maps were produced and parcels and legal rights were registered in the land register and/or real estate cadastre. Fairly accurate drawings of buildings and flats were also made. Upon completion of the survey process, each country will have a modern, effective digital database for administrative, economic and planning purposes. This is of vital importance for economic growth in a market economy and is linked to all facets of land market development (buying, selling, leasing, subdividing, mortgaging, etc.). Land registers and/or real estate cadastres are able to provide citizens with evidence and security of their ownership (UNECE, 1996).

In most cases, agricultural land was privatized without any economic or environmental analysis of the newly-established private farms. Most of the former large-scale farms were dismantled. The livestock sector was particularly affected: livestock was allocated to private

farmers and a significant proportion of the breeding stock was slaughtered in the transition phase because of shortages of animal feed.

The result of the massive privatization process is that millions of families in countries in transition became peasants and owners of small plots with an average of about one hectare per household spread over different parcels and located in different areas in the vicinity of settlements, an incredible fragmentation. It is not uncommon for a person to be the owner of ten fruit trees in a garden or half a row of grapes (UNECE, 2001a).

The degree of co-ownership is likely to cause major problems in creating a viable, efficient land market. It is particularly important to take into account that a large number of shareholders live outside the villages or even outside of the country. When shares are separated, the consequence is increasing land fragmentation.

Previously existing land ownership patterns that persist in some cases are not able to support the development of commercial and professional farming. Agricultural production (both food and animal) decreased by more than 50 percent of pre-1990 production (Tillack and Schulze, 2000). For the CEECs, the general thesis that "privatization and liberalization have no doubt produced gains in the overall efficiency in agriculture" (Viciani, Stamoulis and Zezza, 2001) cannot yet be confirmed.

The current forms of agriculture are on the whole suitable merely to sustain the livelihood of farm families. Most peasants use their agricultural products mainly for their own subsistence; only a small share (on average less than 40 percent) is produced for the market (UNECE, 2001a; UNECE 2001b; Thomas, 2000a). In the process of privatization former marketing channels collapsed completely, particularly the export market within the Soviet Union. It was largely left to farmers to find access to the market for any disposable share of production. As a result farmers and traders have developed a variety of ways to market, including bartering in the villages and selling at street markets. Marketing through wholesale markets in the large cities is very uncommon for most of them (FAO, 2001a). Nevertheless, small-scale farming fulfils an important function for household subsistence in rural areas and must be taken into account as a social buffer.

A large number of food and agricultural processing enterprises are not operating or are working only at a very low level. This further reduces competitiveness of the products as well as employment possibilities for rural people. In CEECs agriculture continues to play an extremely important role in the labour market; the sector accounts for 20–40 percent of all employment (UNECE, 2001a; FAO, 2001a).

The real unemployment rate should be calculated as extremely high. But the official statistics show quite a low unemployment rate for rural areas in comparison to urban areas. The reason lies in the fact that in cases of unemployment, rural people switch from part-time farming to "full-time farming", even though there is no concrete farming demand (Thomas, 2000a).

Table 11
Development of full-time and part-time farming in Bosnia-Herzegovina

Year	Full-time farm	Part-time farm
1991	50 %	50 %
1998	80 %	20 %

Source: Thomas, 2000

Because they are based on agricultural subsistence farming, rural incomes have remained practically stagnant and some countries are considered by the World Bank to be "low income countries". Rural poverty is a problem. Many rural dwellers pool income from different sources. Additional income is received from the salaried work of at least one family member, mainly for public services (e.g. teachers, nurses, irrigation attendants, jobs in retail or other trading outlets or in agro-processing enterprises, cash remittances from family members abroad).

In most of the CEECs more than half of the population's food supply has to be imported. Due to the comparatively high share of national GDPs represented by agricultural production and post-production (often more than 30 percent), decreases in agricultural production had immediate effects on the overall GDP.

Farms with small equipment have low-scale economies of agricultural production and do not allow for an effective use of the land. That general problem will be aggravated by shortages and disadvantages resulting from the transformation process, including the reality that:

- Rural physical infrastructure is decrepit. The infrastructure planned and constructed for large-scale farming is now totally ineffective for the small-scale structures of current farming. During the process of privatization new field roads were built to facilitate accessibility to parcels, but these roads are unpaved and in poor condition. Frequently, access is possible only through neighbours' parcels; many field roads now have a location different from that recorded in the real estate cadastre a few years ago.

- The existing irrigation and drainage systems established during the period of large-scale farming are on the whole insufficiently adapted to the new land tenure structures and the new system of rural and field roads. The former Water Users Associations are no longer active, and re-establishment with the new landowners is difficult, due not least to lack of funds.

- In several countries (e.g. Bulgaria, Bosnia, Armenia and Georgia), significant amounts of land, at times up to 30 percent, is fallow or unused, salinized and waterlogged by inappropriate management of irrigation and/or drainage.

- There is a serious lack of agricultural machinery and the existing machines are not effective on small parcels.

- The provision of services to small farmers is poor. Most farmers do not have access to agricultural extension or other services such as insurance systems or agricultural credits. A low level of farming knowledge is widely evident amongst the farmers (peasants). The small farmers in particular do not aim to become professional farmers; they are just trying to survive with their families by way of subsistence farming. They are not able to – but also not willing to – invest in agricultural equipment.

Given their experiences during the collectivism period, there is widespread mistrust and reservations about all types of cooperation and association, particularly among small farmers. Production cooperatives are more common between relatives, with cooperatives limited mostly to the shared use of farm equipment.

The land market is very weak and underdeveloped, especially in rural areas. Registered secondary land transactions are rare. Land transactions involve notary and registration fees,

and since most of the small holders live below the poverty line, they tend to avoid the payment of transaction fees and, if transactions take place at all, prefer to make verbal agreements with relatives, friends or neighbouring landowners. Although figures indicate a slow increase in land transactions during recent years, the total number of transactions related to agricultural land amounts to less than 10 percent of all transactions. Reasons are often of a psychological nature and also include: high transaction fees; low prices for agricultural land; uncertainty about the real value of land; the feeling that it is too early to dispose of land at this stage. Even migrants and emigrants rarely sell their parcels. People do not sell without a strong need. People who leave their villages temporarily or permanently give their parcels to fellow villagers to cultivate. Occasionally a compensation or informal rent is paid for the land use, usually only the amount of the land tax (FAO, 2001a).

The existing credit systems are not favourable to agriculture: usually only short-term credits (sometimes less than one year) are available at high interest rates (15 percent and more). Furthermore, neither land nor a farm house – even if registered in the Land Register – is normally accepted as collateral by the banks because the values of real property concerned are low and a land market does not really exist.

During the socialist period, it was generally the management of kolkhozes that was responsible for many issues concerning everyday provision and supply. The collapse of these institutions created a large gap that was to be covered by the communities, but communities are not yet functioning adequately in that regard. Inhabitants of rural areas who were interviewed complained about the poor conditions of essentials such as roads, water supply, energy supply, sewage treatment systems, etc. There is a lack of small-scale enterprises and handicrafts in the villages and inhabitants complain about the departure of young people (FAO, 2001b). In rural areas with ethnic disputes, the migration process (chiefly consisting of young people) will be accelerated due to lack of future prospects (Thomas, 2000b). Many peasants – very realistically – do not see small-scale farming as a long-term prospect and will not participate in farming in the future. The rural population, particularly in mountainous and border areas, is shrinking (UNECE, 2001a; Rose, Thomas and Tumler, 2000; FAO, 2001b). As a consequence the average age of the rural population is increasing. Rural people are aware of the problems but are hopeless and apathetic, without possibilities and skills to change the situation. They have negative attitudes toward the community and to government-driven activities. One widespread opinion is, “They granted us the land but nobody told us

what to do" (FAO, 2001b). Rural people feel isolated. The smaller the village the more definitive the isolation.

A first conclusion is that land reforms in CEECs have caused far-reaching economic and social changes for the rural population that influence personal livelihoods now and in the longer term.

Analysis of current and emerging structures in rural areas

Traditions and customs, the overall approaches used in the transformation processes and specific modes of proceeding have all contributed to the current situation in rural areas of the CEECs. Rural poverty and a decrease in agricultural production are not solely a result of the transformation process since 1990, but that process has aggravated the situation.

López and Thomas (2000) posit a way to express the relationship between rural poverty and total net household income. They estimate an income function where total net household income is expressed as:

$$Y = Yf + Wo \quad Lo + N,$$

where Wo is the off-farm wage rate, Lo is the level of off-farm work and N is non-labour off-farm income. Yf is net farm income defined as a function of output and input prices, as the factor endowments of the household (education, age, family size and the dependency ratio), land owned and rented, a vector of variable purchased inputs, the stock of capital by the household, location and the infrastructure (roads, electricity, etc.) available to the household (see also Valdés and Mistiaen, 2000). This function, developed for Latin America, is also well-suited to modelling the situation in the countries under discussion here. Also transferable is the result showing that the effect of income on education is much greater than the effect of education on income. With a lack of income alternatives, young, well-educated people emigrate.

In terms of farm revenue, the approach applied to data from Brazil by the World Bank (2000) also seems to be relevant to Central and Eastern European countries: farm revenue is defined as a function of land, labour, farm equipment, a dummy for technical assistance, purchased

inputs, education, family size and other variables, including age of farmers and location. These factors permit conclusions to be made about successful and effective use of instruments like land management and land consolidation. However, measures to prevent land fragmentation are focused not only on land consolidation. To obtain larger production units and to mobilize investments in agriculture, additional strategic and legal measures are needed (see Additional measures required, below).

The following trends should be taken into consideration for farms in all countries discussed here (see also Annex E):

- The number of farms will decrease rapidly.
- Farms will become larger (through leasing and/or buying).
- Most surviving farms will be predominantly commercial, e.g. buying most of their inputs and selling most of their output.
- Leasing share will increase.
- Part-time farming will become increasingly important to the livelihood of rural people (but not to national agricultural production).
- Most rural income will be non-agricultural in origin (though with linkage to agriculture in many cases).
- Input and output marketing systems will be integrated, industrialized and sophisticated.
- More and more rural people will lease or sell their real estate.
- Agriculture's contribution to the GDP will increase in the short-term but decrease in the mid-term and end up as no more than 10 percent (Maxwell and Percy, 2000; Thomas, 2001).

These features may be more the result of mid-term and long-term trends than sharp discontinuities; the progress of the development will depend on overall economic development and on the availability of off-farm employment in rural areas. The effects of land-consolidation measures (discussed in the following sections) will have to support economic and social development as described and help rural people to organize their affairs for maximum personal and common wealth.

Land consolidation schemes cannot solve the migration problem (refugees, displaced persons, internal migrants (rural–urban) and external migrants); migration has its roots in ethnic or economic circumstances. But there are interdependencies between the current economic situation in rural areas and existing agricultural structures and employment. As Taylor (2000) shows, migration causes a loss of labour capacity on the one hand; on the other hand the remittances flowing back to poor family households is an important source of family income and for small investments among the people remaining (Rose, Thomas and Tumler, 2000; FAO, 2001a; Thomas, 2000a). Therefore any strategy for agricultural and rural development should take into account the recent high levels of labour supply in rural areas and low prospects for a mid-term reversal of migration flows, not least of all given the previous situation of agricultural employment and problems with creating sufficient non-farm employment in rural areas (UNECE, 2001a; Rose, Thomas and Tumler, 2000). Land consolidation has an effect on the emigration problem.

Land consolidation and land management

Land management is appropriate for bringing current land use and other land ownership issues, including individual property rights, in accordance with private and public interests concerning land use as they are manifested in planning goals, and for eliminating effects that disrupt rational land use (Seele, 1992). Land management measures extend from straightforward land use agreements by contract and free-hand purchase of land to legally-enforced expropriation (Thomas, 1996a). Land consolidation is one means employed to manage land.

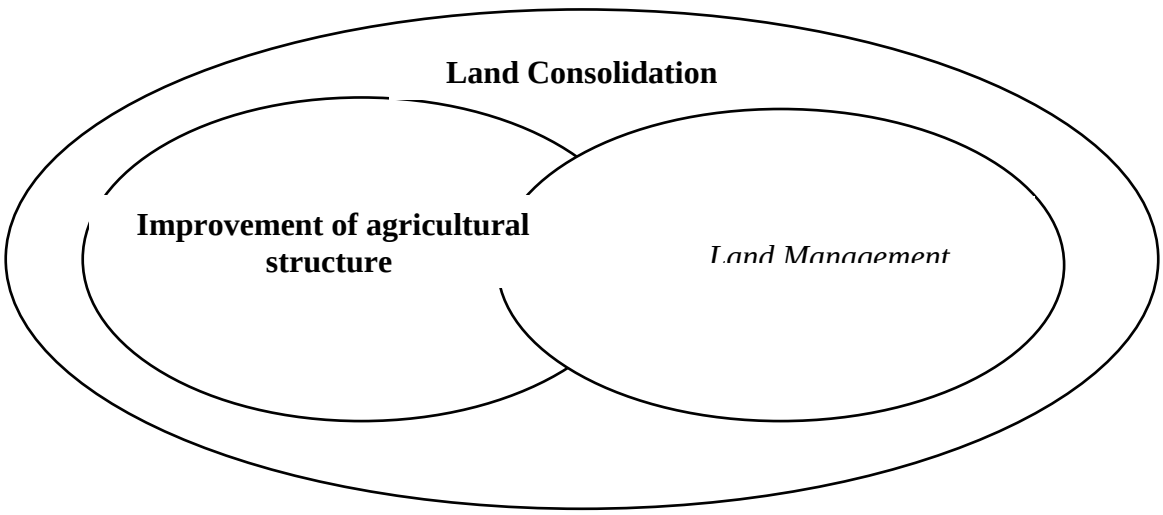
In all the countries in transition discussed here, land consolidation is one of the most important elements for helping to solve the structural problems in agriculture and agricultural production. International advisors and consultants recommend land consolidation procedures as a “secret weapon” for economic growth and shared wealth. Many people are surprised,

however, if after finishing the initial projects the touted or expected gains have not materialised. Land consolidation procedures can be successfully carried out only if the decision to take such measures is the outcome of attentive diagnosis and comprehensive analysis, with precisely-defined goals, the use of special instruments and with careful attention paid to specific structural conditions.

Types of land consolidation

Land consolidation can be carried out in a variety of ways, ranging from the simple re-organization of parcels to sophisticated rural development projects including community renewal. In its most pronounced form land consolidation is a concerted effort towards sustainable rural development at the local level; the term “concerted” implies that many actors are involved and various interventions can take place in the process of land consolidation. Agricultural land holdings may be rearranged 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 and rural areas. Land consolidation procedures contain elements of special planning in addition to the methods of land management. Both elements are closely intertwined (see Figure 1).

Figure 1
On the character of land consolidation



In the literature and among experts there is a tendency to differentiate between land consolidation in a narrow sense ("simple land consolidation") and land consolidation in a broader sense ("comprehensive land consolidation" or "complex land consolidation"). Both types of land consolidation can be done in a simple or a sophisticated way depending on the technical implementation standards and the desired outcome. Another differentiation made is between land consolidation executed voluntarily, on a legal base through a special law (possibly voluntary), or as a compulsory administrative procedure or legally-enforced land consolidation.

Simple land consolidation is commonly perceived as consisting of the amalgamation and re-allotment of plots and parcels. The simplest and fastest land consolidation measure is the *voluntary land exchange*. In a voluntary land exchange scattered and/or uneconomically shaped parcels of two or more owners are exchanged and merged. The land exchange is called voluntary because the owners concerned have to file and agree to all measures and decisions necessary to implement the exchange, including comparative valuation of the corresponding parcels or shares of parcels, merging of parcels, transfer or extension of rights and new boundary lines. The state authority or a consultant agency plays the role of middleman. In order to implement a voluntary land exchange, a land consolidation law may be helpful but is not necessary; in most cases the national civil codes permit such measures.

If there is a need to consolidate many scattered and/or uneconomically shaped parcels in a community and the creation of a new road system or a water resources projects is not required, the land consolidation procedure can be concentrated on the merging and reshaping of adjoining parcels, a form of *accelerated land consolidation*. Within the given area rural land is regrouped or rearranged in units of economic size and rational shape, in cooperation (to the extent possible) with all landowners concerned. In this case the land consolidation procedure has to be initiated by an administrative order and has to be directed and implemented by an authority or agency. Because of the interconnection of the parcels involved, the multiple interdependencies between shape, size, location, valuation, etc. and the different interests of all participants, it is unrealistic to expect the full agreement of all participants to the land consolidation plan and its consequent re-arrangement of parcels. Therefore this type of land consolidation has to be enforced through decisions and orders made by the land consolidation authority on the basis of a land consolidation law.

Through **comprehensive (or "complex") land consolidation**, holdings can be re-arranged with a view to improving the production and working conditions in agriculture as well as promoting the general use and development of land. The land consolidation area will be reshaped with due regard for the structure of the landscape to serve the interests of the parties concerned, to further the general use and development of land and to benefit the general public good. The area in question is rearranged, with scattered or uneconomically shaped parcels consolidated to meet modern managerial requirements and reshaped to obtain units of more favourable location, shape and size. Byways, roads, water bodies and other common facilities may be provided; soil conservation, soil improvement and landscaping measures may be taken as well as any other measures that better the basic conditions of the farming enterprises, reducing the amount of work and facilitating farm management. Village renewal measures may be taken. The legal situation and relationships are then clarified.

A comprehensive land consolidation represents a longer-term solution for agrarian structures. It aims to preserve and enforce the stability of farms, in tandem with the preservation of the environment and landscape and in harmony with agricultural production. It seeks 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. Possible interventions of such a land consolidation scheme are shown in Annex B (FAO, 2001b).

A comprehensive collection of measures requires a legal base in a land consolidation law, effective planning and coordination instruments, well-educated and competent experts to execute the land consolidation procedure and clear-cut financing. A comprehensive land consolidation project is normally planned and executed by a state authority or agency, but with the active participation of the landowners concerned, who choose a representative Board of Participants to attend to the shared concerns of all participants. A conclusive strategy to determine whether simple or comprehensive land consolidation should be implemented is proposed in FAO, 2001a (see Annex B).

Potential results and impacts of land consolidation procedures

The results of land consolidation procedures vary according to the type of land consolidation chosen and the funds invested. In the case of voluntary land exchange, only minor economic

advantages can be achieved for the farmers concerned, with only local impact. It is also often difficult to find corresponding farmers willing to exchange their parcels. Farmers tend to prefer a voluntary land exchange that lasts only a few weeks or months.

The potential results of accelerated land consolidation include parcels that are merged, enlarged and better-shaped. The number of parcels per owner can be reduced with a resulting reduction in the types of agricultural activities engaged in during the year and particularly a reduction in traffic. In cases where the distance between farm location and parcel(s) is reduced the result is a saving of work time, energy and operating costs. Field research in western Europe has shown that through land consolidation it is possible to reduce running costs by up to 20 percent.

The potential results of comprehensive land consolidation include all those gained by simple land consolidation measures: scattered and uneconomically shaped parcels and plots are consolidated by amalgamation and re-allotment. The new units are of more favourable location, shape and size. Existing or expired lease contracts and cooperation between farmers are taken into consideration in connection with the re-allotment. Land consolidation can promote land leasing. Through re-arrangement of parcels, farmer-owned land can be merged with leased land in the same block if both the lessee and lessor agree. Future leasing contracts between family members or people intending to give up agricultural production may be taken into consideration during the land consolidation procedure, and in fact the procedure is often an event that motivates such decisions.

Land consolidation is likely to support an awareness of cooperation and to promote the willingness of farmers, particularly peasants, to cooperate. During implementation of the land consolidation procedure farmers learn what cooperation in the more recent sense – represented by the Board of Participants – can signify. In contrast to their former experiences farmers may see that cooperation freely chosen has advantages for all parties concerned.

State-owned land, which was reserved during the privatization process (see Privatization section, above), may also be allocated to adequately-sized farms with development potential and merged with private land. Road distances to the fields are minimized with a resulting reduction in energy costs and time worked. Plot boundaries are surveyed and marked out in a permanent manner by land markers; land registers and/or real estate cadastres are updated.

Existing agricultural roads are rehabilitated and/or new field roads are built to order to provide optimal accessibility to parcels and to adjust to the new patterns; both external and internal traffic patterns are optimized. Main roads are paved with hard surfaces. Irrigation and/or drainage-systems may be rehabilitated and adjusted to the new plots and parcel patterns. Further measures may be considered for flood protection and rehabilitation of water bodies and sources, soil conservation and soil improvement, including erosion control.

Landscape development measures (hedges, tree rows, field biotopes, bodies of water, etc.) are often implemented and measures to protect nature protection are taken. The ownership of nature areas are transferred to the public domain if necessary, with land for compensation taken from state-owned land. All these measures create optimal conditions for rational land use and permit access to modern farming equipment and managerial techniques. In the short term they make possible more extensive application of existing technologies in farming, while new technologies may be adapted if agricultural production systems were identified and taken into consideration during the land consolidation procedure. Appropriate technologies may differ considerably for large-scale farms and small agricultural producers. The running costs per farm may decrease up to 40 percent and more per year, as demonstrated by evaluations of land consolidation measures in western Europe. Keymer et al. (1989) found that among parcels merged through land consolidation from 3.5 to 1, work time could be reduced by up to 40 percent; productivity of full-time farmers increased up to 44 percent, of part-time farmers by as much as 49 percent. In addition, consolidated farms and parcels have higher market values and so help to promote the land market.

Including village areas in the land consolidation makes it possible to establish or improve communal and other public facilities, including village infrastructure such as interior roads, motorways and bypasses, pathways, footpaths, public areas, water supply, sewage systems, energy supply, sports facilities and so on. This may all be included in the context of national planning, communal development planning, land use planning and building development plans, if they exist. As demonstrated through a comprehensive study in German Bavaria (Schlosser, 1999), municipalities that implement comprehensive land consolidation procedures have a 15 percent advantage in general development progress over those who do not implement such procedures.

In a study focusing on Bavaria, Germany, the IFO-Institut (1991) found that investments in the context of comprehensive land consolidation and village renewal measures led to increases in direct and indirect off-farm employment averaging 25 percent. While these findings are not directly transferable to economies in transition, in any case positive effects from investment can also be expected in the CEECs.

If the people concerned are directing involved in whatever type of land consolidation process is undertaken, it can lead to generalized motivation and activation of both people and institutions. Land consolidation processes can create widespread acceptance of the implemented measures and a high level of identification of the people concerned with the places they call home. The processes can function as public awareness campaigns on farm efficiency and rural development in general.

Areas for research

Explore the potential increases in agricultural productivity and the impacts on employment given specific conditions in the CEECs. What are the current real rates of employment and underemployment in rural areas of the CEECs? How should employment/unemployment be defined under current conditions of fragmented, subsistence agriculture? What is the real demand on the labour force of small-scale farming? How to perform targeted activities for promoting off-farm employment? What role does part-time farming play now and what role should it play in the future? Under what conditions do people switch from farming activities to non-farming employment? What are the current factors of food insecurity (equipment, managerial availability, access to resources, capacity building, marketing) and how are they related to land equipment and land fragmentation? How to facilitate access to capital and credit for agriculture in the CEECs? This is all related to agriculture and farming!!!

The costs and duration of land consolidation processes depend mainly on the size of the area to be consolidated and the extent to which the single consolidation measures mentioned above are implemented. The duration varies from a few weeks for voluntary land exchanges to about two years for accelerated land consolidation and up to five years for higher intensity comprehensive land consolidation in a large area.

Experiences in western Europe show that for a comprehensive land consolidation process of limited duration, the area covered should not surpass about 1 000 hectares; if a larger area must be consolidated, more than one process should be implemented.

Land consolidation procedures with the sole aim of improving agricultural production and working conditions are likely to have negative impacts on the environment. Measures for increasing agricultural productivity during the 1960s and 1970s in western Europe and large-scale cultivation during the communist period in the CEECs destroyed natural structures, biotopes, waterways, vegetation belts and other landscape features. The ecological stability of landscapes was disturbed and biodiversity reduced.

Current land consolidation procedures should guarantee the principles of sustainability as established at the Rio Conference and contribute to compliance with the International Convention on Biological Diversity (see **Environmental aspects**, below).

Preconditions for land consolidation

Land consolidation processes delve deep into the private sphere of landowners and their private property. The effectiveness and gains of these procedures depend on the various administrative, economic and social framework in the CEECs and on the psychological nature of the people involved. Each country must find its own way and its own solution. Nevertheless, some common preconditions have to be met in order to take a successful approach.

As general preconditions, land consolidation requires a suitable political and social climate and the awareness of political opinion leaders of the crucial role land consolidation plays in rural development, in a healthy land market and in land administration in general. There must be recognition and acceptance of state responsibility for land consolidation at the national level, along with the political will to establish land consolidation as a tool and to create the appropriate legislation and administrative infrastructure. Land consolidation should be an essential part of on-going national development programmes (see Thomas, 2002). In cases where land consolidation is missing from the programmes of European Union accession candidate countries (SAPARD is one example), it should be inserted as an addendum.

Given the history of widespread lack of trust in state institutions and activities within the CEECs, land consolidation initiatives must strive to provide comprehensive information and transparency. Land consolidation has to be participatory, legitimated democratically and community-driven. It must be implemented through principles of good governance and by institutions with integrity. Landowners fear losing their private property again, and this fear has to be overcome.

As a national challenge, land consolidation cannot be initiated exclusively "top down" by state authorities nor solely "bottom up" by the communities and landowners. It has to be configured as a synthesis of a state-led and supported public offer and locally-accepted opportunity. The legislation has to ensure the constitutional and legal basis and the principles of legality, equal treatment, equality of rights, participation and transparency. State-designed conceptual and methodological guidelines must guarantee equal standards at the operative level.

A law on land consolidation is required in all cases. Legal issues and aspects for inclusion in a law on land consolidation is collected in FAO, 2003; using existing legislation as a baseline, it provides a guide for determining which issues must be taken into consideration and which changes and amendments may be necessary.

Areas for research

Determine which existing laws should be reviewed and taken into consideration in the context of drafting a new land consolidation law in the countries concerned. An overview of the likely interdependencies of commonly existing laws may be helpful. A "pathfinder" through the legislation directly affected should be developed. In that context, research should be done to determine which legislation is necessary for supporting the "additional measures" required (see section on **Additional measures required,** below); these may include pre-emptive rights for farmers, permissions for subdividing plots, land leasing, inheritance law, cooperative organizations and so on.

In order to develop the appropriate national policy, legislation and guidelines should be developed step by step using current national land consolidation pilot projects. They should:

- be coordinated by an interministerial working group;
- take into consideration existing institutions;

- involve private consultant companies; and

- respect informal land consolidation practices.

Within the context of the immense national challenges posed by land fragmentation and emerging agricultural structures, within a period of two to three years decisions must be made concerning operational land administration structures. Principles for financing land consolidation procedures must be determined; they may include self-financing by the participants through long-term credits financed by external donors and fundraising, financing fully or in part through state subsidies – or a combination of these.

During land consolidation processes psychological aspects concerning security and availability of private real estate must be taken into account. Therefore it is crucial to secure existing property rights. A functioning and efficient Land Register System at the national level is a critical administrative precondition.

Areas for research

Collect experiences and develop financing models for land consolidation costs, taking into consideration the various national frameworks and conditions. Perform cost-benefit analyses for different land consolidation models. What are the real transaction costs? What are the savings in running costs and work time among the special agricultural structures in the CEECs as a result of land consolidation? Analyse the multiplying effects.

In the CEECs there is a huge lack of knowledge and skills for managing land consolidation projects. Land administration issues did not form part of the academic curriculum in previous years. The government and universities must make closing this gap an urgent task. Knowledge exchange among partners in the CEE and western European countries would promote capacity building. Specific proposals are included in Rose, Thomas and Tumler (2000) and UNECE (2001a).

The government should provide and finance different types of land consolidation pilot projects in various regions. Short-term funding from international donors must be sought as a stimulus but not as a permanent fixture. The pilot projects would demonstrate advantages and risks and help with the development of legislation and guidelines.

The more specific conditions for land consolidation processes are determined by the local community level and the needs and desires of the local people. The ascertained necessary concrete measures have to be embedded in the communal land use and development planning, as well as the regional spatial planning, and must comply with the national legal and administrative framework.

Preparation and implementation must be executed through the close participation of all people and institutions concerned. It is not only a matter of public meetings and hearings, it is a more general question of knowledge, information and the awareness of the participants. People must become able to be adequate partners of the implementing experts. At the beginning of each land consolidation procedure there must be a campaign on capacity building in order further understanding of the structural and economic situation in the community, restrictions and opportunities for change and the procedure itself.

No land consolidation procedure should be permitted without an environmental assessment. There should be an impact assessment of areas of ecological value or sensitive to ecological damage; cultural aspects must also be taken into consideration. Land consolidation must support environmental protection and natural resource management (see section on Environmental aspects, below).

During the implementation phase, the issue of the technical standards of the land management procedure is extremely relevant and important: high technological standards with sophisticated working steps (meaning high costs) versus quick and simple solutions (with low costs). These issues have to be addressed by the local actors involved (agency, community and participants) on the basis of a cost–benefit analysis and with consideration for standards established by national legislation and guidelines, particularly those concerning the land register and real estate cadastre. Operational tasks should be regularly outsourced to private companies and engineering firms.

Areas for research

Determine the appropriate technical standards for the implementation of land consolidation schemes. What are the requirements for land consolidation procedures, taking costs and benefits into consideration, particularly with regard to existing and foreseeable equipment needs at the communal and state levels (land registers, real property cadastres).

The re-allotment and exchange of parcels in case of land consolidation should always be implemented on the basis of accurate land value appraisal. The land exchanged must be equivalent. In most of the CEECs there is widespread uncertainty concerning appraisal in the broader context of land appraisal in general, as well as in the particular context of land consolidation; there is a lack of appraisal schemes. Two main types are generally considered: appraisal of soil quality and of market values. While a more in-depth discussion of appraisal schemes is beyond the scope of this report, in the author's opinion a combination of both approaches should be applied in land consolidation procedures.

Areas for research

Ascertain the most appropriate land valuation schemes for land consolidation in the CEECs. Are the results of land taxation suitable for valuation in land consolidation procedures? What is the experience from western European countries for making fruitful use of taxation appraisal for land valuation (or vice versa)? Develop detailed guidelines for valuation on the basis of western Europe's best practices. How should valuators be designated; should valuation be performed by individual experts or by committee?

Each land consolidation procedure should be accompanied by supervision and quality control. A conclusive monitoring and evaluation system delivers the needed feedback for policy, legislation and donors and guarantees best practices in the short term. An evaluation must consider the implementation's effectiveness, the effects of actual measures and an analysis of commercial value. It must be performed by external experts and executed according to comparable evaluation schemes in order to permit benchmarking with other land consolidation procedures within the country or in other countries. Ongoing monitoring ensures collection of the data base needed for the evaluation that follows.

Areas for research

Develop a non-burdensome monitoring and evaluation system that takes into account the underdeveloped administrative infrastructure in countries in transition.

Additional measures required

Further issues not directly related to land consolidation but nevertheless necessary for supporting and guaranteeing its positive impact include those discussed here.

Legal measures must be taken to avoid further fragmentation. There is no sense in consolidating scattered and fragmented parcels if the traditional modes that originally led to fragmentation continue. In western European countries it is common to define a legal minimum plot size below which no land can be subdivided, and generally special permission must be granted when a plot is to be subdivided. Division among heirs in case of inheritance or division of co-ownership are often the reasons given for further fragmentation of land. Through legal restrictions the state can ensure that plots under a certain size are not subdivided; in addition, in the case of purchase of agricultural land due to legally pre-emptive rights, active farmers could be supported for enlarging and consolidating their farms.

Land leasing must be revitalized. Land consolidation is one measure (among others) for reducing the fragmentation of parcels, but land consolidation is not suitable as a means to transfer land from peasants and small-scale farms to expanding farms. Nor is it suitable for reducing the number of farms, which is generally possible only through the purchase of land. In addition to the selling and buying of land, land leasing is a means for enlarging the farmed area of an individual farm for a defined period. Land leasing creates opportunities for increased production and income for the leasing farmers; and leasing promotes the (desired) process of reducing the number of farms and increasing farm equipment per farm (see Annex E). Land leasing should therefore be promoted via liberal legislation, information campaigns and government incentives. A functioning leasing market (along with the sale market) is an important instrument for reducing the negative impacts of land fragmentation and providing for the expected development of small-scale farming in the CEECs.

Comprehensive statistical surveys on land leasing and research on the relevance of rental issues in the transformation process in the CEECs do not exist.

Areas for research

Perform systematic surveys of leasing and rental issues in rural areas of the CEECs and of the legal bases and traditional informal practices of land leasing. Evaluate rental issues and practice in western Europe and look at the transferability of experiences into countries in transition, particularly in relation to internal and external effects on agriculture and land markets. How may land leasing be promoted in the CEECs.

A variety of farming ideologies should be considered. Individual private farms (strongly promoted by the World Bank and USAID) should be complemented by other kinds of farms

such as privatized corporate farms, individual entrepreneurial family farms and homestead farming (Graefen, 2002; FAO, 2001c; Rusu, 2002). Legal agricultural associations and cooperative organizations have an important role to play in emerging agricultural structures and can be justified on the basis of the need for sufficient food production. Associated members put their land in the entity as a share but keep their ownership rights to it. These associations also act as leaseholders in order to enlarge their production units and they contribute to lessening of fragmentation.

Access to capital is a weak point in all countries in transition. Access to capital is the major factor for improving the material conditions of small farmers and other rural poor. Greater access of the rural poor to credit would entail improvements in a whole range of financial services, including appropriate savings facilities, banking standards and management, forms of insurance and the use of innovative financial practices that may reduce transaction costs and risks (Viciani, Stamoulis and Zezza, 2001). Farmers are underrepresented among credit customers and farmers in the lowest income group have less access to credit than better-off farmers. The availability to farmers of both capital and credit is severely limited.

The land market does not yet function in countries in transition, particularly in rural areas. Banks do not permit agricultural land to be used as collateral (UNECE, 2001a; Thomas, 2000b; FAO 2001a; FAO 2001b). The development of efficient, transparent and secure land markets is an essential element in the construction of a dynamic market economy and is regarded as one of the major mechanisms for wealth creation (UNECE, 1996). In order to promote the land market gains in land productivity must be increased, which can be done through land consolidation. Land buying and leasing must become more attractive.

Investments are greatly needed in all countries in transition. Investment is particularly important for seeds, livestock, machinery and other agricultural equipment, the collapsed irrigation systems, marketing and post-processing industries. Land policy concerning state-owned land should be examined: further sale of land to farmers is likely to decrease investments in agriculture, as farmers would have to use their scarce resources (savings) to buy land rather than to invest in the production sector. Some governments have been advised to postpone any decisions on further land privatization until the farming sector is in a better economic position (UNECE, 2001a; UNECE, 2001b).

Credit, especially long-term credit, is sorely needed. An inflow of capital as foreign direct investment attracted inter alia by a competitive cost structure generates opportunities for expanded economic activities but may only be relevant for a few specialized agricultural or agro-industrial branches like wine, tea, brandy or aromatics. For most farmers the only sources of credit are domestic financial institutions. Access to long-term credit is necessary for financing land consolidation measures (e.g. for farms with development potential) and to buy state-owned land.

Diversification and agromarketing strategies should be promoted. In order to increase the net added value of agricultural production and to enhance the competitiveness of small farmers and other rural operators, strategies should be elaborated on rural diversification, development of small-scale processing facilities, promotion of agro-marketing and group-based agribusiness (Viciani, Stamoulis and Zezza, 2001). Poorer rural families acquire greater income-diversification opportunities as a result of the expansion of rural non-farm employment (Valdés and Mistiaen, 2000; FAO, 2001a), and this applies to the CEECs as well.

Areas for research

Explore how to re-orient agricultural research to changed economic contexts; the CEECs pose questions which are very different from those of other regions and deserve to be examined in depth (see Viciani, Stamoulis and Zezza, 2001); take into account the difference between inward- and outward-oriented agricultural production (*see* UNECE, 2001a).

Professional extension services are crucial. The former services have collapsed in many of the countries in transition; in general there is no way to reach peasants and poor farmers. Valdés and Mistiaen (2000) found that the participation of small farmers in extension programmes in Latin America did not significantly increase their total net household income (because of a reduction in off-farm income). In the situation under discussion here, however, given an utterly changed agricultural economy, extension services for both small-scale and large-scale private farmers are indispensable. New ways of delivering such services (e.g. through schools, local shops, broadcasting on television and via the internet) should be analysed from a cost/benefit perspective (see Viciani, Stamoulis and Zezza, 2001) and viewed as capacity building. Individual managerial capacity is an unknown factor. But there exists a significant correlation between quantity of farmed land and income, and the quantity of farmed land and managerial capacity: even with a small amount of land but a solid

agricultural education and high managerial capacity, rural income can be improved (Valdés and Mistiaen, 2000). Developments in countries in transition will probably confirm this thesis.

Special aspects of land consolidation

Participation aspects

Participation of citizens in planning and development processes is a sign of democracy and of communal self-government. The kind and intensity of participation are indicators of the relationship between the state and its citizens and of the status of civil society.

In the CEECs in general a culture of participation has yet to develop. Negative experiences during the socialist period, weak new administrations and recently-completed land reform processes all led to resentments of state measures and fears concerning real estate. The challenge is how to remove stakeholders' doubts, scepticism, fears and other emotional barriers and how to create awareness among people that they are responsible for their own future. What ways can be found to encourage people's active participation and to reconcile their thinking, feeling, needs and visions with the new realities?

One suitable and appropriate means is a "SWOT analysis". People gather in working groups to investigate and collect information at their local and regional levels concerning Strengths, Weaknesses and Opportunities with regard to social, economic, ecological and cultural aspects; and to ask, "What are the Threats (and risks)?"

The advantages of such a "bottom–up" approach (see Annex C) include the high levels of motivation and identification of the people involved; citizens contribute their private local knowledge and experiences and become actors and developers of their community. SWOT analysis is familiar to the "LEADER philosophy" in the European Union development programme, where it is seen as the beginning of "dialogical development and planning".

First it must be decided which people should be involved. Target groups of stakeholders include landowners, farmers, legal farm entities and all others who want to participate and cooperate, which may further include local politicians, pressure groups, farmer associations,

local opinion leaders and NGOs. Issues to face include what to do about citizens living outside the village and/or abroad or who do not want to participate.

The gender issue is part of the participation topic generally, but is particularly important in the CEECs and CIS societies. There is a large lack of knowledge of gender issues in the CEECs, especially in relation to sustainable development, and there is an urgent need for sophisticated approaches to encourage full participation for everyone.

Another important issue is how to deal with open or latent disputes between various participating ethnic groups. In some of the CEECs there are complicated relationships between the groups and efforts are often made by one ethnic group to gain a majority over another group, sometimes within the same village. Should such confrontations be considered a snag or an opportunity for development and participatory processes? Experiences in settling land conflicts have been reported in GTZ (1999). For specific strategies concerning rural development mediation issues in Germany see Thomas (1999).

Areas for research

Determine which experiences and tools of participatory processes are applicable to the CEECs and which have to be modified because of the specific economic and social situations in countries in transition. How may open or latent disputes be dealt with in rural development? How should disputes in land consolidation schemes be dealt with? Will disputes be allowed to delay schemes? Explore mediation strategies for different kinds of disputes.

How may disputes between different participating ethnic groups be dealt with? What are some approaches for turning ethnic disputes at the local level into constructive development challenges? Propose a gender specific participation approach: How may women be encouraged to participate in rural development? What role do women in rural societies play with regard to opinion leadership? What approaches are effective?

A comparison of regulations included in different Land Consolidation Acts may be helpful for making decisions while drafting a new law; a comparison of legal regulations should include statistical research into the duration and results of disputes.

In order to be a truly democratic process, participation must be a thoroughly interactive bargaining process. Participants must have an idea of the possibilities, restrictions, policies and directives and must see the potential impacts of their proposals, be willing to change their proposals and be given a chance to think about the implications. Participatory and interactive

processes can be supported by Geographical Information Systems (GIS), digital spatial data techniques which can demonstrate and calculate each variation of “what if?” scenarios during the discussion process. Consultants moderating participatory processes should be equipped with such computer technology.

In addition to “informal participation”, a land consolidation scheme requires formal, legally-regulated participation. Formal participation is limited to the landowners themselves and their community, represented by a Board responsible for communal affairs and facilities. (See section **Cornerstones** for a land consolidation procedure, below.)

Environmental aspects

As pointed out earlier, land consolidation can influence the environment negatively or positively. On the one hand, the landscape may be plundered by an environmentally unfriendly land consolidation plan that fails to give any consideration to existing landscape structures and ecologically sensitive areas. Intensive agriculture is likely to have negative impacts on the environment through careless use of fertilizers, liquid manure, pesticides and fungicides that pollute water and decimate biodiversity. Large-scale farming changes the landscape, eliminating many landscape structures (e.g. borders, hedges, walls, bodies of water, biotopes) and promoting water and wind erosion.

On the other hand, the landscape can be enriched with additional elements, bodies of water can be revitalized, ecologically sensitive areas can be protected in a sustainable manner. Erosion control measures can be implemented. Through the careful shaping of parcels and plots, soil cultivation can be optimized; fertilizer and pesticide use can be organized to avoid overlapping areas in the corners and along the boundary lines. Land consolidation properly managed can contribute to water protection in the immediate and longer terms.

In order to settle and balance contradictory aims and antagonistic goals, each land consolidation process must be equipped with a two-phase environmental assessment. In the first phase a study of the landscape and its ecologically sensitive areas must be conducted. Photogrametric tools are able to deliver rapid, preliminary results at low cost. If available, National Biotope Registers should be evaluated; local ecological surveys may also be necessary. The results are meant to mesh with the national and regional strategies for

environmental protection. Taken together, they form the framework and lay out the restrictions for local land consolidation planning.

The second phase is a environmental assessment conducted by the state agency in the context of the planned measures (see Annex D, Phase Two). The purpose of this assessment is to determine whether principles of environmental protection and specific restrictions have been considered, and to assure that an environmentally friendly, sustainable land consolidation process can be designed and fully implemented.

Forestry is a special concern for land reform and land consolidation processes. In the CEECs and CIS two basically different policies have been applied: privatization similar to that of agriculture, with the same fragmentation of parcels; or leaving forest areas under state ownership, managed through a governmental forest administration. In both cases general management questions arise, as well as access issues for harvesting. Extensively managed and cultivated forests with a natural capacity to rejuvenate are of high ecological value. Often forests, particularly in mountainous regions, are uninterrupted natural areas. On the other hand, in mountainous areas forestry plays an important role in employment and value-added production.

The first priority is to take a political decision on whether forests should be privatized or remain permanently under state ownership. It must be determined how to use timber as a natural resource and how to mobilize forest capital as national wealth. In the case of privatization and fragmentation, new types of forest management and forest enterprises should be established to guarantee rational, but environmentally friendly, forest exploitation.

Areas for research

Explore to what extent experiences with corporate forest enterprises and forest land consolidation in western European countries (e.g. the former West Germany, Austria, Sweden) are transferable to privatized forestry in the CEECs. Assess economic, social and environmental actions and repercussions of land fragmentation in forest areas. Is there a need for forestry consolidation? How should it be done? To what extent are experiences from western Europe transferable to the CEECs?

Land funds / Land banking

As previously mentioned, a large amount of both agricultural and forest land remains under state ownership in the CEECs (sometimes called “state reserve”), awaiting the progress of

privatization or even the political decision to privatize at all. Even in the former East Germany, where there was a process to restitute former landowners' rights, most of the land presently owned by the state has been retained in order to allow for the settling of any future restitution claims. In most cases the state land is leased to cooperative farms, farm enterprises and family farms. Some countries have decided to transfer state land to the municipalities concerned, but the land remains under public ownership.

Some aspects to be considered in relation to the decision whether to privatize may be derived from experiences in western Europe. In a free market economy the state should not in principle function as an agricultural entrepreneur; agricultural land should be managed by private farmers who are free to choose which type of farm to run. (Exceptions include forests and pastures; for forests, see Environmental aspects section above.) Pastures in mountainous countries all over Europe are used in traditional ways, through lease or common use rights, and is owned by communities or municipalities. It would seems logical if some countries (e.g. Armenia, Georgia) transfer or plan to transfer state-owned pastureland to the municipalities (FAO, 2001a; FAO, 2001b).

Nature protection areas or other ecologically sensitive areas should be retired from agricultural use (for instance through a European Union project such as Flora-Fauna-Habitat); in special cases it may even be necessary to take forests out of forestry use and protect them. In these cases land must remain in state ownership or be transferred into state ownership with state land given as compensation.

In addition, there is an already existing or foreseeable public need for land for physical infrastructure or other public facilities at local, regional and national levels, including for water supply, sewage systems, water drainage, flood protection, sports facilities, highways, railways and roads, etc. The necessary land must be ceded to the central government or municipality if it is in private hands. In general, the demand for land is satisfied through free-hand purchase of land by the public hand or by expropriation (compulsory relinquishment). The situation in the CEECs is further complicated by the fact that since the land was allocated to owners only a few years ago in the context of privatization or restitution, there is great reluctance on the part of policymakers to acquire it back by means of expropriation. A fund of state land would be helpful for solving these emerging problems by allowing compensation to be offered via land exchange between governments and private owners.

Farmers need to be able to acquire agricultural land. Farms with development potential and farmers willing to increase their farming area should be able to purchase state land at market value. This should improve the economic basis of some farms and promote the development of the agricultural structure. It would also have positive impacts on the land market.

In summary, privatization of state land should be continued (with the restrictions mentioned above); land should not only be given away but also sold at market values. Appropriate tracts of state land should remain in public (national, municipal or communal) hands in order to cover present and future needs for land. Occasionally or through land consolidation procedures, state land may be transferred when needed via land exchanges with private owners or, in the case of sale, merged with other land held by farmers (see Thomas, 2003).

National-level land funds and land banks exist at the national level in many countries (David, 1995), usually in relation to nature and environmental protection (e.g. United States, France) or with cultural aims (United Kingdom) such as the National Trust of Public Land Trusts. In the Germany a land fund exists at the state level ("BVVG") in order to liquidate the legacies of the former German Democratic Republic.

In recent years land funds have emerged at local or regional levels as "land pools" or "öko pools" to compensate for the ecological consequences of large infrastructure projects, in accordance with nature protection legislation (Bücking, 2001; Israel, 1995). These funds are equipped with only a few or several hundred hectares of land at the local level and several thousand hectares at the national level. Interaction costs of the land funds are covered through additional capital endowment. In the western German state of Northrhine-Westphalia there is a revolving fund for structural targets in agriculture (Thomas, 1992). The fund is allocated to a state agency and given a clearly-defined capital stock of several million euros, with which agricultural and forest land may be purchased throughout the country and transferred permanently to interested farmers. Allocation to the new owners occurs frequently through a land consolidation procedure. Interaction costs and loss of interest gains are covered by appropriate sale prices; revenues are put towards new purchases. Purchased land may also be devoted to public infrastructure projects or environmental protection (Thomas, 2003). The revolving land fund may be seen as a structural buffer that promotes changes in the agricultural structures by cushioning some of the potential negative effects.

Areas for research

Analyse national political and economic opportunities and restrictions concerning use of state land in the CEECs in order to allow for the design of an appropriate national land banking system. Compare existing national approaches to land funding and land banking as they apply to solving agricultural structural problems and public demand for land; explore transferability to CEECs. Develop an appropriate design for land banking that takes into account national demands and preconditions.

Cornerstones for a land consolidation procedure

Each country must develop its own method for drawing up and implementing land consolidation procedures as a means of rural development. In order to guarantee minimum legal and technical standards (principles of legality, participation, legal security and environmental aspects), the cornerstones outlined in Annex D should be taken into consideration, leaving out Phases 2 and 4 in case of simple land consolidation. The references to responsibilities and leadership (on the right side of Annex D) are intended to free the state agency of most operational actions in order to allow it to concentrate on strategies for land consolidation and supervision tasks. Finally, each land consolidation procedure should be accompanied by a monitoring and evaluation system, implemented primarily by external experts.

Areas for research

Explore the right mix of state agencies, private companies and public-private partnerships for executing land administration tasks, taking into account national legislation and the density of private companies and consultants in each country.

Compare the implementation of land administration tasks with regard to public-private partnerships in some western European countries against the background of national legislation and institutional equipment and the transferability to CEECs. Who should have the ultimate authority in land consolidation procedures? What are the core tasks of the state? What are the necessary administrative structures in the CEECs?

Land consolidation as a doorway to sustainable rural development

Sustainable rural development in the CEECs is focused on reducing rural poverty, diminishing unemployment and improving livelihoods overall. The comprehensive rural

development strategy focuses on rural infrastructure, creation of off-farm rural employment opportunities, reduction of labour mobility costs and increase in education and skills (see FAO, 2003; FMFAF, 1999). Land consolidation measures, better land management and improvement in the functioning of land markets, in particular the rental market, are important components of this strategy.

Land consolidation should be viewed as a tool to promote the primary production of food staples, improve working conditions in agriculture and the living conditions of people living in rural areas. A comprehensive land consolidation programme, including village renewal, is a first step towards sustainable rural development and can become one of its cornerstones. It launches the so-called endogenous potentials and contributes to the willingness of rural people to remain on the land. Land consolidation works best when embedded in agricultural and rural development policy and accompanied by additional measures for economic and social improvement that take into account the multipurpose function of rural areas, in the CEECs as well as elsewhere. As expressed succinctly by Riddell and Rembold (2002), "Complex land consolidation processes provide an excellent opportunity to integrate land tenure services into a broader framework of rural, regional development – and substantial synergy effects, e.g. joint activities concerning rural institutions, can be expected."

The financial means necessary for full implementation of such a policy are not currently available in the CEECs. In the mean time, two important steps may be taken: the formulation of a policy approach at the national and/or regional level; and discussion at the communal or local level of the type of development desired for the community. These initiatives will prepare the ground for a land consolidation process that can play a crucial and positive role in sustainable rural development.

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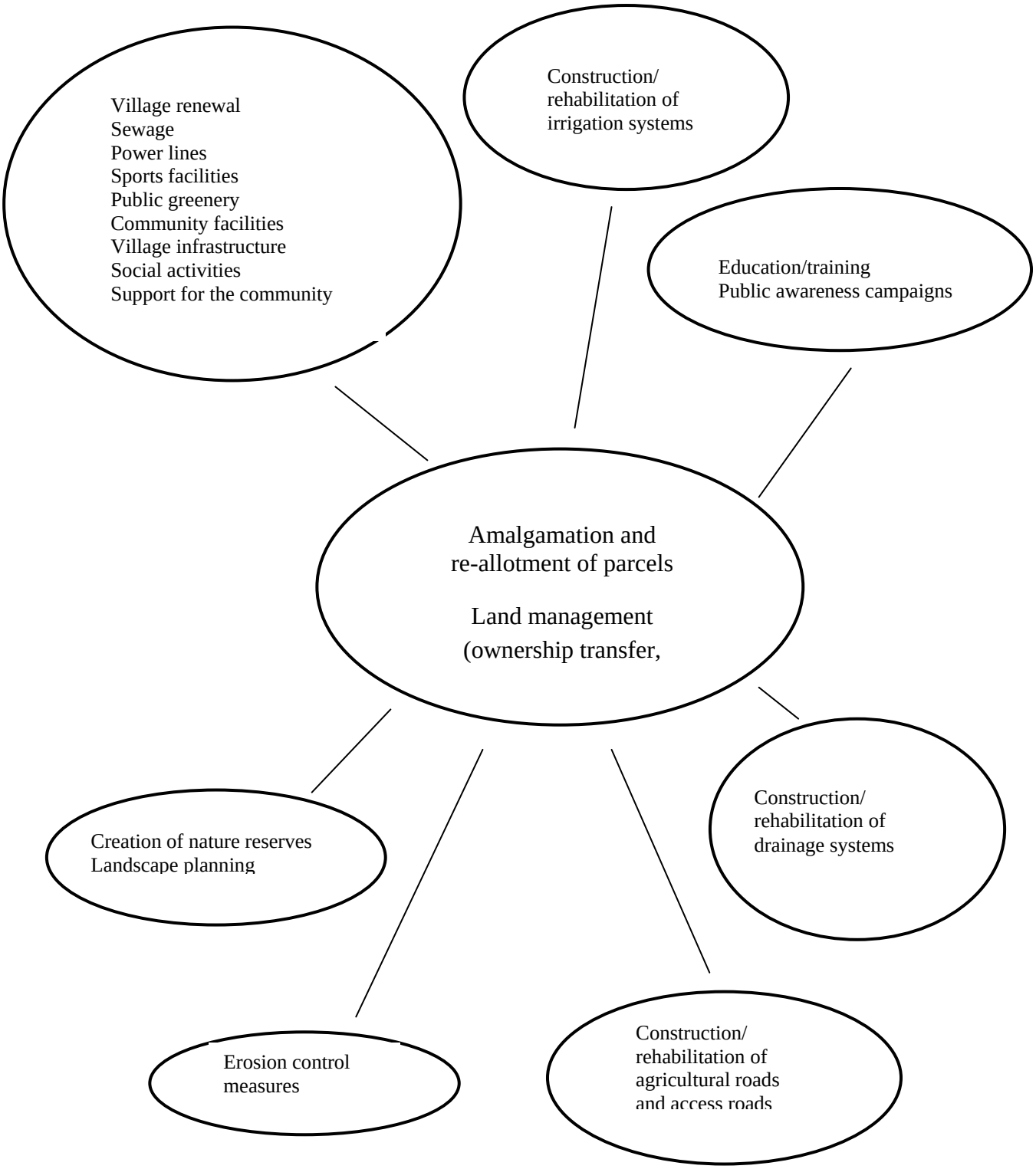
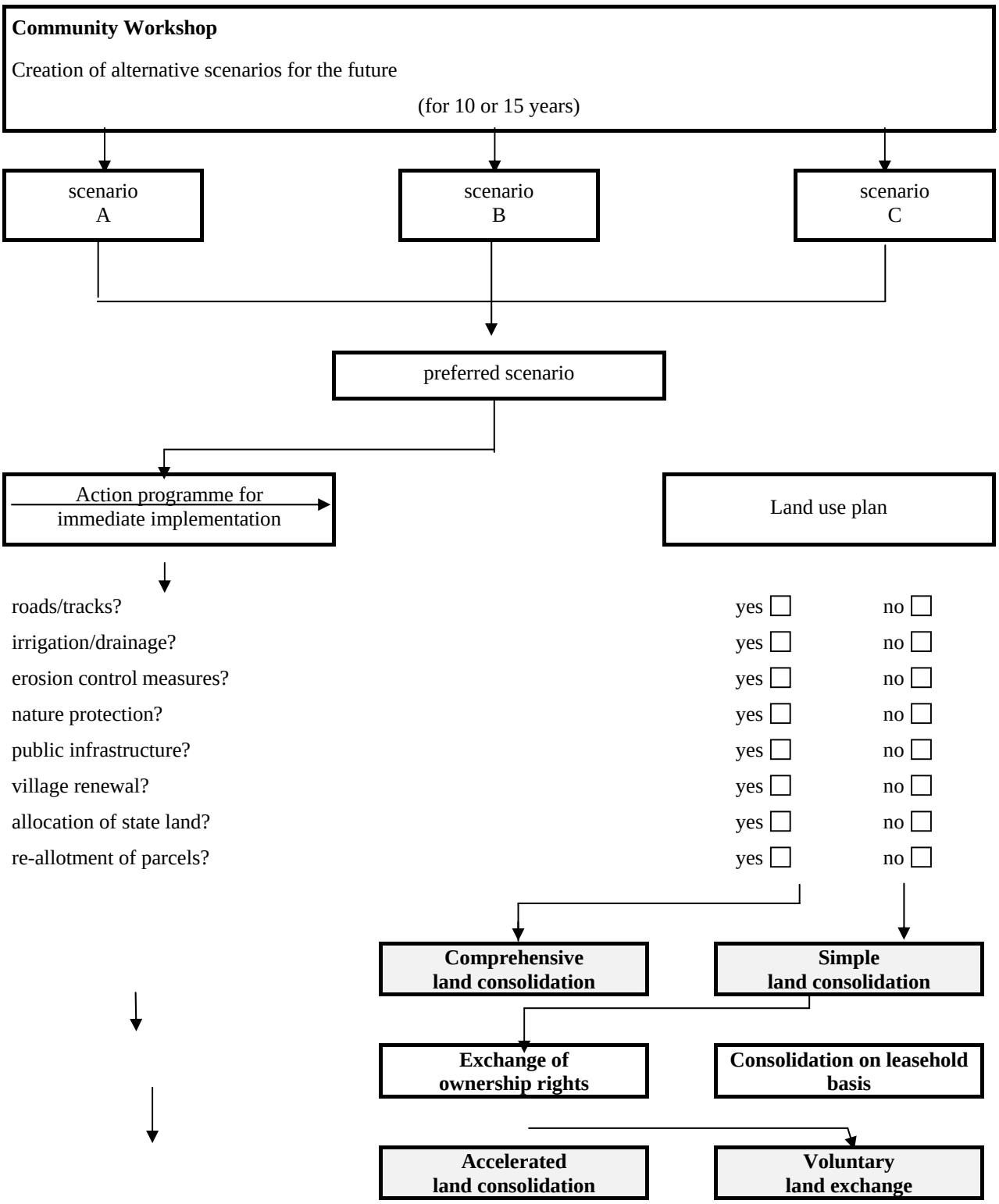
Annex A
Possible interventions in land consolidation



Annex B
Decision on comprehensive versus simple land consolidation



Annex C
The “dialogical process”

Steps in an open, flexible and permanent public awareness process and consultancy procedure: "Dialogical Process"

Ask people what they want and what they understand about land consolidation (LC) – questionnaires, meetings with the public and with farmers, associations and informal groups

Ensure information exchange (asking, responding and listening):

Input of information for continuation – general information on LC, specific information on local situation (natural, social and economical conditions)

Ensure a clear description of the problems:

People’s problems analysis; local “SWOT” (Strengths, Weaknesses, Opportunities and Threats) analysis in line with the local natural, social and economic situation

Ensure a broad discussion of scenarios and alternatives to arrive quickly at positive, demonstrative results:

Discussion and decision about alternative solutions – Preferred scenario (zero-alternative included), action programme for implementation, type of land consolidation procedure (simple or comprehensive)

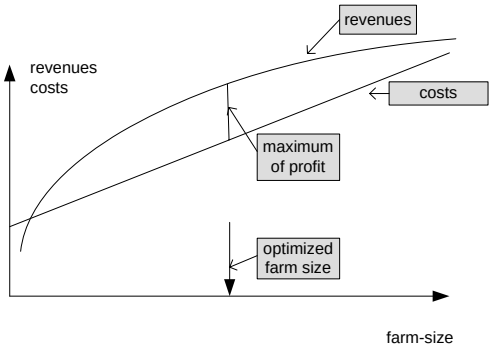
Ensure formal implementation, transfer to administration and decision-makers:

Formal participation during the chosen land consolidation procedure (with legally-regulated close participation of land owners and tenancy rights holders)

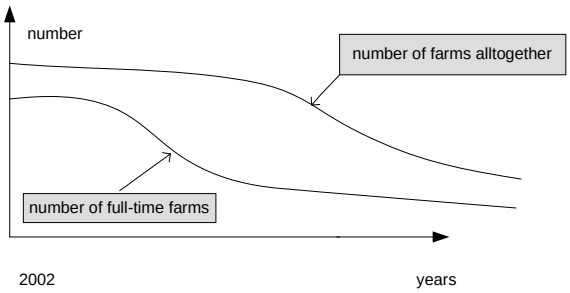
Annex D
Cornerstones of a land consolidation procedure

Information campaign **raising awareness, capacity building**		
Investigation and Analysis	*Informational meeting*	Consultant, Community
	Establishment of Working Groups (WG) (farmers, landowners, others)	Consultant
	SWOT-analysis through WG	Consultant
	Putting together results: desires and proposals	Consultant
Phase 1 Preparation of the land consolidation project	**Public meeting** (approval by most of the participants)	State agency and Consultant
	Application of the Community Council (including terms of reference)	Consultant
	Cost estimates, time schedule, work plan, participation concept	Consultant
	Approval of the project, including financing	State agency
	Public meeting (participants, community, NGOs) Explanations, election of Board of Participants	State agency Consultant
Phase 2 Conception and planning phase	Discovering the frame/conditions of nature and landscape resources	Consultant, in cooperation with Board of Participants
	Draft of planned measures	
	Discussions and comments by other involved institutions → agreement	
	Environmental assessment and approval of the planned measures	State agency
Phase 3 (Phase 2 and 3 can be implemented in parallel)	*Land valuation*	Consultant
	Publication of the results to the land owners	
	Objections	State agency
Phase 4 Construction phase	**Rehabilitation** of existing and **construction** of **new rural infrastructure**, measures of village renewal and other public facilities	Board of Participants, Community
Phase 5 Re-allotment phase	Surveying of new infrastructure	Consultant
	Updating cadastral maps	
	Consulting with all landowners on their wishes	
	Drafting **re-allotment plan**	
	Individual agreements on re-allotment	
	Surveying and marking of new parcels	
	Publication of the re-allotment plan and hearing of the landowners	
	Objections	State agency
	Right to appeal to the court	Court
Phase 6 Conclusion of the project	Regulation of ownership rights, **implementation of the new legal situation**	State agency
	Updating of Land Register and Real Property Cadastre, maps included	
	Financial arrangements	Board of Participants

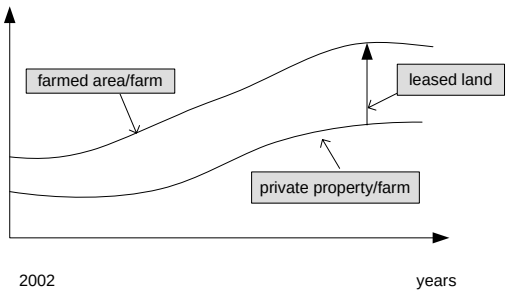
Annex E
On development of agricultural farms in CEECs



Optimizing of farm-size



Probable Development of Number of Farms



Probable Development of Acreage per Farm

(Source: Thomas, 2001 a)