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LAND FRAGMENTATION AND LAND CONSOLIDATION IN THE AGRICULTURAL SECTOR

A CASE STUDY FROM THE CZECH REPUBLIC

TO BE PRESENTED AT THE INTERNATIONAL SYMPOSIUM ON "LAND
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SUSTAINABLE RURAL DEVELOPMENT IN THE NEW MILLENNIUM"
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The fragmentation of land holdings and its potential economic and social impact on rural society in the Czech Republic

Forty years of communism left people's access to property rights in the Czech Republic highly restricted. The repression of property rights severely impacted nearly 3 million Czech landowners, who could not farm on their own farm and fields. Property rights redistribution and restitution has been one of the main economic changes after velvet revolution in 1989. However, the renewal of land ownership rights and private farms after 40 years of communist regime has been no easy task. Land consolidation is the one of the most important instruments for the support of countryside development. Land consolidation is viewed as the most rational instrument for arranging ownership relations to agricultural and forest land, not only with regard to prudent and rational management but also with respect to landscape requirements and needs. Building of new common facilities in the framework of this activity means new roads, fish ponds, green vegetation in the landscape, limiting erosion etc., which is a contribution for everyone who lives on such territory. The initiative for land consolidation comes not only from land owners, but, also from the European Community. This report attempts to describe the history and development of land ownership and farming in the Czech Republic and uncovers difficulties that are associated with it..

1 Land Reform: An Analysis of the Current Legal Framework

1.1 A Brief History of Agrarian Reform in the CR

During the time of collectivisation, from the beginning of the 1950's, two types of large-scale production cooperatives were created: (1) state farms, which were formed on State land and farmers were 'forced' to relocate to these farms; and, (2) agricultural production cooperatives, where farmers were forced to combine their land and farming activities under one management that took its directives from the state. The latter were formed from private land holdings and typically had the village as their natural boundaries.

Unlike Albania where land was completely nationalised in 1969, property titles in the CR were formally preserved throughout the communist period, even after the land had been handed over to the socialist enterprises. However, the owners lost the right to make decisions concerning the land and any transactions that occurred during the communist period were not registered. Concerning owners rights to plots in the CR, the creation of the 'consolidated cadastre' in the 19th century was significant, because this provided the basis of 70 percent of the present cadastral maps.

The principal intervention into the historical owners' rights came after the Second World War. After 1948, nationalisation, confiscation, industrialisation and centralisation all had an impact on the suppression of the natural development of the principal traditional functions and living conditions in the countryside and agriculture. For instance, the economic and social stability of the countryside, the transformation of the traditional country regions into areas for industrial production, and the transfer of country residents into cities and industrial agglomerations, all resulted from this period. Collectivism, not respecting the rules of market economy and the denial of private ownership, led to the situation where farmers were removed from their land, their ownership was effectively annulled and farming, as a profession, lost its traditional character. The steady pressure to intensify production had consequences in the form of an increase in the use of non-ecological forms of farming and

led to a high concentration of production, and to the centralisation of management centres into the larger municipalities.

During the 1970's another wave of land reform took place. At this point the cooperatives and state farms were merged into larger socialist agricultural units, with a complicated management structure, following instructions given by the government's plan. During the 1970's, the average size of State farms and cooperatives increased substantially and the number of private farms diminished. This was exacerbated by the fact that the older farmers, who did not agree with collectivisation and were authorised to stay on their holdings, were dying off. For young people, farming was of little interest, because it was based on manual labour and used old-fashioned machinery. The volume of private farming was negligible and there was a tendency to overlook it in registration. This structure remained constant until the beginning of the transformation of economy in the early 1990s.

After 1989, substantial changes in the structure of farms took place. As opposed to some countries of central and Eastern Europe, farming preserved its large-scale production methods. This was the consequence of the transformation of the cooperatives. All members interested in private farming were allowed to farm independently according to Act No. 229/1991, 'On the owner relation to land and other agriculture property.' A new category of farm was thus established, 'the private farmer'. The owners, who neither wished, nor were able to farm, founded new cooperatives or other types of enterprise such as joint stock, or limited companies. The typical pattern was for large agricultural cooperatives, with areas of approximately 3000 hectares, to break up into smaller co-operative entities, which by law had the status of 'legal personhood.' Where land was owned and farmed independently the law specifies the status of 'natural person'. The State farms were privatised.

As a consequence of the above historical circumstances, the owners' relations to agricultural property and land changed. Prior to the 1990s it was mainly family based. Now, a new class of employees in agricultural co-operatives had indirect responsibility for the ownership and for its management and control. Apart from the transformation changes started in 1991 by the restoration of owners' rights to land as private property, the collectivist mentality still persists in people's minds, which is the reason for the slow progress of the restoration of 'land relations'. This has also had an impact on owners' and users' attitudes towards the process of the consolidation of holdings.

Until 1989, a land market did not exist and users' rights had priority over those of owners. At the present time, the land market is still in its infancy. Many new land owners do not farm the land and a land market exists only in the form of leasehold relations. The sale and the purchase of land, besides construction lots, do not include arable land, meadows and pastures. The principal seller of the land, at the present time, is the State and owners living in the cities.

1.2 *Legislation and regulations around land reform*¹

Czech agriculture still carries the stigma of the situation of the Czech countryside in the period from 1948 to 1990. Under the influence of the Soviet example, the Czech village underwent an exceptionally complex development, especially in the field of legal regulations.

¹ For a list of the legislation related to land privatization, land reform and consolidation see annex A.

From 1949, up to, and including, 1990, the basis of agricultural enterprise was the socialist form of co-operative farming, or state enterprise on state agricultural property.

Act No. 229/1991 Coll., (amended later to the Land Act) is the third of the so-called Restitution Acts and concerns itself exclusively with agricultural land and forestry that was converted to State ownership under communism. Despite the fact that the Land Act has been in legal force for approximately nine years, the spirit of historical justice that motivated the law has yet to be fulfilled. Until now, many legally entitled people are forced to engage in complex litigation to prove the legitimacy of their claims.

Under the Land Act the State undertook the obligation to restore the ownership of agricultural and forest property and to make the necessary adjustments to the land ownership. This is done in the interests of countryside development in accordance with the needs of landscape protection and environmental protection. The Act defines two tasks for the land offices:

- The restitution of agricultural and forest property.
- The adjustment of land ownership to facilitate the process of land consolidation.

Unfortunately, the motivations underlying these two tasks have proven to be contradictory in a number of ways. On the one hand, the Land Act upholds the application of historical justice and the ‘righting of property injustices’, while on the other, it intends to ensure the fulfilment of economic concerns and objectives of land reform. These economic considerations include an improvement in the care of agricultural and forest land and a change of attitudes to land, combined with the interest of the economic development of the countryside and with the requirements of landscape planning and environmental protection. A mere change of ownership rights, by the redressing of past wrongs, may not result in efficient use of land resources. On the contrary, in many cases those whose ownership rights were renewed, fail to fulfil the owners constitutional duty and simply abandoned their agricultural land. So the Land Act fulfilled its main task of reducing and redressing the consequences of some property injustices, but fell short of its other aims.

1.2.1 *The Land Fund*

The Land Fund of the Czech Republic (hereafter ‘LF CR’) was established by Act of the Czech National Council No. 569/1991 Coll., which came into legal force on January 1, 1992, and was entered in the Commercial Registry as a legal entity. The Land Fund was created for the administration of State land. It is responsible for the administration, purchasing, selling and renting of State agricultural land and other land in its holding.

Act No. 229/1991 Coll., on the *Modification of Ownership Rights to Land and Other Agricultural Property*, stipulates the sphere of activity of the LF CR, as later amended. Under this Act, the LF CR administers the following real estate in State ownership:

- a) Land comprising the Agricultural Land Fund, or belonging to it under Act No. 334/1992 Coll., on the Protection of the Agricultural Land Fund, as later amended. If doubts arise as to whether such land is part of the Agricultural Land Fund, the competent decision-making authority is the Ministry of Environmental Protection of the Czech republic. Under this Act the Agricultural Land Fund is comprised of plots of land under farming, i.e. arable land, hop-fields, vineyards, gardens, fruit orchards,

meadows, pasture land and, in addition, land which was and is supposed to be under farming, but temporarily is not. The Agricultural Land Fund also includes ponds for rearing fish or water fowl and non-agricultural land essential to agricultural production, e.g. field roads, land with irrigation facilities, irrigation water reservoirs, drainage ditches, dams providing protection from swamping or flooding, anti-erosion protective terraces, etc.

b) Land designated for the protection of forestry, including forest standings, under Act No. 289/1995 Coll., on Forests, as later amended. Forest plots are defined as plots of land with forest growths and areas from which forest growths were removed for the purpose of renewal, forest cut passage accesses and forest tracks, if their width does not exceed 4 m, and lots of land, from which forest growths were removed under order of the Ministry of Agriculture of the CR. Also included in the legal definition of forests are small water pools, plots of land above the upper limit of wooded vegetation, with the exception of settlements and access roads, forest pasture lands and small fields for livestock, if they are not a part of the Agricultural Land Fund and if they are adjoined to forest or serve forest production.

c) Residential buildings, including settlements, farm buildings and other constructions, which formerly belonged to the original farmstead, or which now serve for agricultural production, or connected water management.

The real estate under the administration of the LF CR, which was not claimed by their original owners or other related individuals in the time-limit stipulated by law is dealt with by LF CR in the following way:

With agricultural and forested plots of land, the LF CR may do the following:

- Transfer them as compensation into the ownership of people to whom it was impossible to return their original dispossessed agricultural lots of land, (e.g. because after transfer to the State or another legal entity, they were built up with non agricultural structures) or from whom the property was confiscated.
- Grant them into temporary use for compensation, in the form of rent, to eligible parties, principally to agricultural companies and proprietary farmers. This can be done by the LF CR, even in cases where there still is not a lawful decision on whether the plot of land in question will, or will not be surrendered to its original owner (if that is the case, the lease contract is concluded for a finite time, until the final decision on ownership of the real estate in question is made).
- In justified cases, exchange with owners of similar plots of land, e.g. with municipalities, agricultural companies and proprietary farmers. At the same time, the LF CR ensures that the plots of land in its administration, which it newly acquires on the basis of exchange, are at least as valuable in terms of area and price as the lots of land that were under its administration originally.
- In emergency cases transfer to people, whom, according to approved construction-planning documentation, wish to carry out construction.
- Use for the settlement of obligations of enterprises designated for privatisation in the scope of, and under conditions stipulated by, the Ministry of Finance of the CR.
- Transfer the land (free of charge) to a State administrative authority or State companies, if it is necessary for the fulfilment of their tasks.

With agricultural plots, the LF CR can do the following:

- Sell under Act No. 95/1999 Coll., (Act on Sale of Land) to individuals who can, under this Act, become acquirers of State lots of agricultural land as payment i.e. a citizen of the Czech Republic, municipality, exceptionally even a legal entity or an individual eligible for compensation under the Land Act.
- Transfer them under Act No. 95/1999 Coll., (Act on the Sale of Land) free of charge to individuals, who, under this law, are eligible to acquire State agricultural lots of land free of charge such as a municipality, if it satisfies precise conditions stipulated by law, and also education establishments at university level.

With residential buildings, farm buildings and other constructions, including plots of land that have been built upon, it can:

- Transfer them as compensation into the ownership of people, to whom it was impossible to return their original dispossessed farm buildings and other agricultural constructions e.g. when, after their transfer to the State or some other legal entity, they were destroyed or were allowed to deteriorate beyond repair, or who were, in the past, deprived of their movable agricultural possessions.
- Grant them for temporary use against payment of rent to eligible parties, especially to agricultural companies and proprietary farmers. This can be done by the LF CR even in cases where there still is not a lawful decision on whether the plot of land in question will be surrendered to its original owner, in that case, the lease contract is concluded for a finite time only, until the time of the final decision on the ownership of the real estate in question is made).
- Contribute them to the assets of joint stock companies in the framework of an approved privatisation project transfer.
- Use them for the settlement of obligations of enterprises designated for privatisation in the scope and under conditions stipulated by the Ministry of Finance of the CR.
- Transfer them free of charge to a State administrative authority or State company if they are necessary for the fulfilment of their tasks.
- Sell them in open, competitive bidding to the highest bidder.

Besides disposing of real estate under its administration, the LF CR, in the framework of approved projects on privatisation can:

- Establish joint stock, or other commercial companies, or participates in their establishment, has an interest in their economic results and bears the consequences, in the form of profit or loss and shares in their liquidation balance, in the case of the liquidation of the company.
- Acquire stocks or shares on the basis of its participation in business transactions of joint stock companies and exercises the rights of a shareholder, including its participation in general meetings.
- Sell stocks or shares in enterprises other than joint stock companies.

The Agricultural Land Fund and its registry are now regulated by Act No. 265/1992 Coll., on Entries of Ownership and Other Substantial Rights to Real Estate, which came into legal force on January 1, 1993, and by Act No. 344/1992 Coll., on the Real Estate Cadastre of the Czech Republic (the Cadastral Act). Generally, the system of legal norms is reverting to the

original principles of land cadastre and this is a good starting point for the future recording of all parcels of land in the Czech Republic.

The protection of the Agricultural Land Fund was established by Act No. 334/1992 Coll., on the Protection of the Agricultural Land Fund, as amended by Act No. 10/1993 Coll., and Act No. 98/1999 Coll., (the full wording of this Act was announced by the Chairman of the Chamber of Deputies in the Collection of Acts under No. 231/1999 Coll.). This Act primarily delineates the concepts of the Agricultural Land Fund, stipulates under what conditions it is possible to change the intended use of lots of land and the type of farming and the principles of its protection.

The responsibility for supervision of upholding the principles of the Protection of the Agricultural Land Fund lies with the following regulatory authorities: The authorized Municipal Offices, the District Offices, the Administrators of National Parks and the Ministry of the Environment of the Czech Republic. If the Act on the Protection of the Agricultural Land Fund is breached, the competent authority may punish the perpetrator by fine.

The owners and leaseholders of plots of land are required to farm in a manner that avoids the pollution of sources of fresh water, soil and their connected food chains, to protect the health of people and other creatures. The current legal regulations do not stipulate that an owner must use a plot of land for agricultural purposes, but if it is not used in this way, the owner is obliged to take all possible measures not to endanger adjoining plots and the environment. An owner of agricultural land, its tenant, or other rightful holder, also has a duty to respect all the rules of environmental and landscape protection obligations ensuing from the Act on the Protection of Agricultural Land Fund. The legal norm, regulating environmental and landscape protection is Act No. 114/1992 Coll., as later amended. Its purpose is to contribute to the upkeep and renewal of the natural balance of the landscape, the protection of the diversity of life forms and natural beauty and the prudent management of natural resources. The aim of the Act is to create a system of ecological stability, the protection of which is the duty of all owners and holders of lots of land.

The Act on the Protection of Agricultural Land Fund and the Act on the Protection of the Environment and Landscape, together create a platform for the condition of the environment in the CR to gradually establish the same high level as in the member countries of the European union. It is, of course on the one hand, necessary to adapt laws in this area to European standards, and on the other to put pressure on owners and rightful holders of real estate to protect the environment and maintain a natural balance. It is necessary to use the mass media for this purpose and also to enforce the laws and deal firmly with any breaches.

Immediately after the enactment of the Land Act in 1991, the restitution of agricultural and forest property became a core activity of the district land offices (DLO's). In the Czech Republic, nearly 232,000 restitution requests were submitted to the DLO's. By January 1, 2000, the DLO's had resolved, or nearly resolved, 96.3 percent of these cases, 85.1 percent of cases being completed. In many cases, however, there remains the problem of lots of land, which, by law, cannot be returned, but for which the entitled person has the right to a substitute lot of land, or some other form of compensation. These cases are not in the competence of the DLO's, but the Land Fund of the CR (LF CR). Overall, the DLO's have made decisions on 1,556,300 hectares of land, i.e. 1/5 of the land in the entire Czech Republic. From these earlier DLO decisions it follows that the LF CR has still to release 117,800 hectares of scarce substitute lots of land. Completion of restitution should establish

basic order in land ownership and in agricultural property generally, and provide a necessary precondition for further activity.

In the land market, supply exceeds demand. Since 1999, there has been a further increase in the supply of land in the region of 500,000 Ha. This was land in the possession of the State and managed by the Land Fund.

From the total possessions of the Land Fund of the CR only 0.15 to 0.45% is sold annually. In addition, in the land market other people also apply for land for family reasons, not only farmers, but for land for recreation, hobby farmers or speculative purchases for the possible, future use of the land for construction purposes. To determine the reason for buying land is problematical. Agricultural land is, in practice, easily transferable to non-agricultural land and the designation 'agricultural land' is not an assumption of farming use. The size of plot could be used as a criterion to aid such designation.

1.3 The Registration and Administration of Land Ownership

1.3.1 The Real Estate Cadastre

The institution used for entries of ownership title and other substantive rights to real estate is The Real Estate Cadastre. In The Czech Republic this comprises a set of data on all real estate in the republic, comprising a list and description of such real estate, its dimensions and locations. It is an integrated and continually updated information system on lots of land and specific buildings. Data on types of lots of land make possible the easy distribution of the Land Fund of the Czech Republic.

The basic legal provisions regulating the cadastre are:

- Act No. 344/1992 Coll., as amended by Acts No. 89/1996 Coll., No-120/2000 Coll., *on the Real Estate Cadastre of the Czech republic (The Cadastral Act)*.
- Act No. 265/1992 Coll., as amended by Acts No. 210/1993 Coll., No. 90/1996 Coll., No. 27/2000 Coll., and No. 30/323000 *on Entries of Ownership and Other Substantive Rights to Real Estate*.

Entries in the real estate cadastre are in the form of:

- A registration, e.g. entering the ownership title based on a contract of sale or a deed of donation.
- A record, e.g. the creation of a right by implementation of law, or on the basis of a ruling by a State authority or court.
- A cover note for the entry of facts, which have no influence on the creation, change or extinction of a right.

When real estate that is subject to laws regulating the cadastre, is transferred by contract it is registered in the real estate cadastre. With other real estate, e.g. small structures or constructions without a building contract, transfer takes effect on the legal effectiveness of the contract. In other words, in the latter case the transfer does not have to be formally

recorded, but, rather conforms to the *consensus principle*. Under this principle, the creation, change and extinction of ownership rights to real estate is effectuated by the contract itself.

Act No. 359/1992 Coll. on Geodetic and Cadastral Authorities stipulates the division of duties in the administration of the real estate cadastre. This Act stipulates that the Czech Office safeguards the uniform administration of a real estate cadastre for Geodesy and Cadastre (COGC). The Geodetic and Cadastral Inspection Offices then supervise the administration of the Real Estate Cadastre of the Czech Republic, carried out by the individual cadastral offices established in every district of the Czech Republic. The duties of these cadastre offices include:

- Entry of data on legal relations and other information in the cadastre.
- Verification of data changes in the cadastre.
- Comparison of data in the cadastre with the actual situation by providing data from the real estate cadastre.
- Dealing with cases breaching of rules concerning the real estate cadastre.
- Approve the changes of boundaries of a cadastral area.
- Ensuring the validity of duplicates and copies of documents on legal relations from the collection of documents in the cadastre and the collection of documents of the real estate registry.

In accordance with the acts mentioned above, the cadastre is considered as public information enabling anyone to inspect the real estate records and to make duplicates, copies or sketches free of charge. Records in the real estate cadastre are based on the following principles, which create the necessary conditions for the avoidance of conflicts between the registered owner of real estate and its actual user.

a. The constitutive principle

All the contractual transfers of real estate which are subject to entry in the real estate cadastre, contractual mortgage rights to such real estate, pre-emptive rights (if such pre-emptive rights have the effect of substantive rights), and other rights, if established as substantive to real estate, should be amended or finalised on the day of their registration in the real estate cadastre on the basis of an enforceable decision of the relevant cadastral office.

b. The disposition principle

The relevant cadastral office starts proceedings on granting registration of ownership, or other substantive right to real estate, only on the basis of a registration request delivered to it. Without such request, a cadastral office is not entitled to start registration proceedings. A cadastral office is not empowered to decide upon the granting of registration rights and to register the right, if it is not included in the original application to the real estate cadastre.

c. The principle of legality

Under strictly binding regulations, it is the duty of a cadastral office to investigate, whether or not certain substantial requirements of the necessary deeds for recording into the real estate cadastre, are in conflict with valid regulations.

d. The principle of priority

Unless the law provides otherwise, the order of entries in the real estate cadastre depends on when a request for entry is delivered to the cadastral office. The order of entries, be it registration, record or note, is determined by the date (day, month, year) stamped on the request upon receipt by the cadastral office (a request for registration is also stamped with the exact time of delivery), and also noted in a record of submitted requests. Everyone is entitled to inspect the record of submitted requests.

e. The principle of transparency (the principle of public access)

Everyone is entitled to inspect the real estate cadastre in the presence of a cadastral office employee and to make duplicates or copy excerpts of legal information on real estate, not only about their own rights and obligations, but also the legal relations of any person to any real estate. Only Law can limit public access to the real estate cadastre.

f. The principle of good faith.

Everyone who takes action on the basis of an entry in the real estate cadastre, made after the day of enactment of Act No. 265/1992 Coll., i.e. after January 1, 1993, acts on the premise that the records of the real estate cadastre correspond to the actual situation, unless she or he knows that this is not the case.

g. The principle of formality

The acquirer of a right to real estate is, by law, liable to inform the cadastral office of any change within 30 days of the creation of that right and to submit a document providing proof of it. Similarly, the State authorities and creators of other documents, confirming or certifying legal entitlement to real estate, are legally required to send such documents to the cadastral office within 30 days of their becoming legally binding, or within 30 days from the day of their creation. The official duties of cadastral office are the recording of these legal entitlements, on the basis of a motion from the bearer of the right, or through the relevant State authority.

The Cadastre office does not decide on the legal ownership or other rights to real estate, but simply documents previously 'legalised' registration or withdrawal of such rights in the real estate cadastre. It is a legal requirement to register property in the cadastre for purposes of acquiring and proving the subsequent existence of ownership or other substantial right to real estate. This is always dependent upon the existence of a legally binding contract or other legal documentation. Deletion is a legal act of the dissolution of ownership or other substantial right to real estate, and is also dependent upon the existence of a legally binding contract or other legal documentation. The cadastral office does not examine the legal validity of documents, but looks for evidence of legality and whether or not the request for registration complies with all the requirements stipulated by law. When the request does not comply with these requirements, the cadastral office, depending on the nature of the problem, either calls on the applicant to remedy the situation, and suspends the proceedings for the granting of registration, or halts the proceedings on the grounds of an irreparable fault. The applicant can appeal against a decision to stop the proceedings, by resort to competent

geodesy and the cadastral inspectorate. The final decision of the cadastral office on the granting of the registration of ownership right in the real estate cadastre cannot be appealed against.

1.3.2 An assessment of current land administration procedures

There are number of important rules and regulations in the area of land survey and cadastre. This legislation is on a level that is comparable with that of the European Union. It is very rigorous and attuned to normal (i.e. more or less problems-free) conditions of cadastre. At present, however, the 'practical' situation of the cadastre is not in accordance with legislation. The real difficulties involved in implementing the cadastre legislation are reflected in the lack of entries of registered properties in the new system. New legislation, better suited to today's transitory period, allows for simpler, and also much cheaper ways of securing basic order to real estate evidence in the cadastre. Nearly ten years after the beginning of the land privatisation intended to re-establish property rights, there is still no clear picture of what constitutes State owned land, municipal land or other categories of land (such as, ownership of land allotted from the years 1945 to 1950, on the basis of President Benesh's decrees). A number of cadastre offices have become somewhat better oriented in the problem of land consolidation and nowadays deal with a number of demands concerning cases of non-transparent ownership, such as double ownership (especially in the case of allotments). They demand the right of deciding such cases on their own.

1.4 The Assessment of State policy regarding rural livelihoods

The subsidies and the support programs of the Ministries assist the regional policy, including the policy of countryside development and preservation. Besides the Ministry of Agriculture and the Ministry of Regional Development, which is the responsible coordinator of regional policy, other ministries also participate, such as the Ministry of Industry, the Ministry of the Environment via the State Fund of the Environment and The Ministry of Culture.

The Programme of Rural Renovation, which was newly created by the Ministry of Regional Development, aims to restore the economic and cultural life of the countryside and includes landscape and nature protection. Within this programme, preference is given to investment in countryside municipalities of up to 2,000 citizens, where the resources are primarily used to support small investment. In 1999, the largest amount from the financial resources of the Programme of Countryside Regeneration was given to the restoration and maintenance of countryside construction activities and facilities.

In the above-mentioned area, the policy of the Ministry of Agriculture has concentrated on the support of agricultural entrepreneurial activities through Support and Guarantee Fund for Farmers and Forestry (SGFFF), which subsidises agricultural companies through programmes, the structure and aims of which are changing yearly.

Small and medium-sized companies have an important role in countryside development and they create a large majority of the job opportunities in the countryside. Some programmes of the Ministry of Regional Development and the Ministry of Agriculture, giving support to small and medium-sized enterprises, were announced in 1999. The Ministry of the Environment subsidises those agricultural activities that

protect and ameliorate the environment, inviting agricultural companies to participate in the 'Landscape Protection' and 'The Revitalization of the River Systems' programmes.

A number of support programmes of the Ministry of Culture were launched in the countryside. 'The Care of Village Monuments and Zones of Landscape Monuments' could be considered the most important. The State offers further services to the farming sector, not included in the above-mentioned measures and resources. The majority of them could be classified as expenditure on specific State services. Primarily it means expenditure on land consolidation, agricultural schools, the activities of the Institute of Education of the Ministry of Agriculture and the service activities of the Ministries.

From the point of view of net expenditure of the State on agricultural subsidies, the subsidy of inputs (interests on credits and loans), price subsidies, subsidies granted by the State Fund of Market Regulation (SFTR), direct payments for landscape maintenance and production subsidies are important financial sources for countryside landscape and settlement renovation.

SAPARD contains some possibilities for pursuing the strategy for the treatment of the problems of sustainable development of the countryside in the CR. The integration of agriculture and the countryside has first priority. This should introduce an improvement in the living conditions of the inhabitants. This integrated attitude aims to strengthen agriculture at three levels: enhancing the competitive character of agriculture, the sustainable development of countryside regions and more specific help.

The measures of the SAPARD programme to enhance the competitiveness of agriculture aim to:

- Increase investment into agricultural property.
- Bring an improvement in the processing and marketing of agricultural products and fish products.
- Bring an improvement in the quality control structure as food quality and consumer protection, irrigation and land consolidation.

Through the implementation of these measures, the number of agricultural and processing companies meeting EU standards would increase. This would support first level producers on the market and the proportion of products with higher added value would increase. The positive attitude of farmers to the improvement in competitiveness would heighten. Those processing companies with implemented hygiene standards would have better prerequisite powers to maintain their position in the home market and their market possibilities would expand. The completed land consolidations contribute to the development of agricultural companies and entrepreneurial activities in the countryside, and to the better functioning of the land market. This would be stimulated by the creation of the jobs in the countryside, which would bring about income stability and create the conditions for maintaining a dynamic agricultural environment. The measures to achieve the tenable development of the countryside regions focus on:

- The regeneration and development of villages and the countryside infrastructure.
- The development and diversification of farm activities.
- The supporting of the diversity of activities and alternative income resources.

- The support of methods of production aiming to protect the environment and landscape preservation.

The adoption of these measures would improve the conditions for job creation and enhance effectiveness in relation to geographical factors. The efficient functioning of agro-environmental programs would be verified and the conditions for their practical application established. These measures would induce a reduction in the differences in the standard of living between the countryside and urban areas and reinforce the development of a safe environment.

The measures for special help aim to prepare the conditions for full implementation of the programme and are oriented to professional education and technical help. These measures reinforce the conditions for the successful implementation of the SAPARD programme and to acquire professional knowledge and improve the education and competitiveness of farmers and countryside inhabitants.

2 Land Consolidation

2.1 *An Overview of Land Consolidation initiatives in the CR*

In the CR natural physical fragmentation of the landscape is not considered to be a major constraint to production; however, problems exist regarding fragmentation of land ownership rights, the identification of parcels and environmental damage etc. From the point of view of legal ownership, the land of the CR is very fragmented. Between 1990 and 1996 approximately 3,798,000 owners were registered and the area was divided into 12,625,000 plots. The Land Resource Institutions comprise 13,066 cadastral units, 6,288 communities and 76 districts, excluding the capital, Prague. Private individualised holdings predominate, accounting for over 3,400,000 Ha. Various private societies and associations also exist. The remainder of agricultural land is still owned by the State. Although legally fragmented in physical terms, individual privately owned land plots are still incorporated into the larger land structures that still represent the old structures of the production cooperatives of the communist era. This situation does not enable private landowners to use their land for farming efficiently. This is because the process of complex or simple land consolidation is time consuming and is a physically and technically complicated process, thus, it is a reason of many problems and difficulties. Many recipient farmers cannot use their own land due to technical impossibilities. They have to use other land, because complex land consolidation does not exist. It also inhibits land market development, investment in land and the completion of the restitution process. A Regular Report of the EU Commission has also highlighted the problem of unclear titles to land parcels as a constraint to farming.

A major prerequisite for the development of a land market is the determining of plot boundaries in the cadastral units by land consolidation, or by geodetic mapping. The need to complete land consolidation, as an instrument for settling ownership rights with respect to land parcels, is part of an on-going debate about land reform and is detailed in many policy documents related to the agricultural sector. According to the Czech Statistical Office 'Agrocensus' of 1995, the average size of a farm in the CR is 131 hectares. Since the 1990's, the average area of State-owned farms has decreased from 6,259 hectares in 1983, to 660 hectares in 1995. Cooperatives and private associations maintain, a relatively large average

area of 1,447 hectares. There are more farms of less than 10 hectares, because many farmers own an area of less than one hectare, and are engaged in subsistence production.

Since 1991, land consolidation has been carried out in the Czech Republic pursuant to Act No. 284/91 Coll. on *land consolidation and land offices*. Under the Act, land consolidation is pursued and implemented by a variety of the following activities: ownership rights to parcels are arranged, spatial and functional characteristics of land are adjusted, plots are merged or divided, access to plots is ensured and boundaries are straightened. An objective of land consolidation operations is to create conditions for rational land management, for the protection of soil quality and fertility improvement, and for the increased stability of the ecological landscape. Comprehensive land consolidation makes a significant contribution to the use and organisation of agricultural land. Land consolidation is a prerequisite for the completion of the restitution process and restoration of private land ownership, and is referred to in the Position Paper of the Czech Republic as the main instrument for ensuring real and identifiable ownership and for settling ownership rights with respect to land parcels.

As a consequence of collectivisation and large-scale land cultivation under communism, field roads, natural structures, such as, water lines and vegetation belts, and other landscape features suited to individual farming were destroyed. The ecological stability of the landscape was disturbed, biodiversity was reduced and the overall landscape was affected.

An integral part of the current land consolidation process is the implementation of the so-called ‘common’ facilities, pursued through the Territorial System of Ecological Stability (TSES). Act No. 114/1992 Coll. on nature and landscape conservation, defines TSES as ‘a mutually interlinked group of natural, as well as altered, but closely resembling natural, ecosystems, which maintain the natural balance’. The TSES considers anti-erosion measures, the building and renovation of field roads providing access to lands and other technical measures. It is laid down in the Act that only people authorised by the Ministry of the Environment may develop TSES projects. TSES contributes substantially to the fulfilment of the International Convention on Biological Diversity, to which the Czech Republic acceded in 1994.

The implementation of the above measures creates the conditions for rational land management, conservation and increased ecological stability of the landscape. Where it is deemed that the land consolidation programme is not necessary, Act. No. 229/1991 Coll. provides an opportunity for a land owner, wishing to farm his land, to request a separation of the said land from the large-scale field layout. The practical job of actual identification and setting out of the parcels of land ‘on the ground’, including the execution of geometrical plans, is carried out by the District Land Offices (DLO’s).

2.2 *Legislation around land consolidation*²

Theoretically these laws and regulations make possible a problem-free land market without restrictions. In reality the present state of affairs in the real estate cadastre renders it impossible to create basic harmony between the registry and the actual state of affairs. The past mismanagement of documentary evidence, dwindling numbers of highly skilled

² See Annex 2 for a list of the current legislation supporting land consolidation in the CR

workforce in the administration leaving for the private sector and a lack of financial resources have caused this situation. In practice, it means, that if basic order was insisted upon in the cadastral offices before land consolidation, very few consolidations would commence.

A breakthrough in the concept of land consolidation came with the adoption of the ‘temporary guidelines for land survey and project design work in implementing land consolidation for the needs of the real estate cadastre.’ These were put into practice for more than two years until it was possible to include a number of ideas from the guidelines in the Act No. 217/1997 Coll., the latest amendment of Act No. 284/1991 Coll., on Land Consolidation and Land Offices. This Act deals the question of eligibility in design land consolidation projects. The fact that this Act directly stipulates that all the results of land consolidation, not merely the complex ones, should be used for the renewal of cadastral operations, is very important. The preparation of this passage of the Act revealed quite a number of differences in opinion. The most important being the question of whether the granting of authorisation should be liberal, i.e. on the basis of documentary evidence and relevant experience combined with other standard requirements, (such as the applicants being of good moral standing and legally responsible). The original legislative intention was very strict and unequivocal concerning eligibility criteria, upholding the former very tough system of examination. However, the bill was discussed in an era when the Government was pressing for the liberalisation of these matters, in tune with the liberal atmosphere of the time. The basic argument presented by the Government was that, by creating a system of examinations, the examiners would become a hierarchy and, certain people, by monopolising this activity, would acquire unjustified powers over such matters. Briefly, the Government’s position was that the best way to create equality was to allow competition in land consolidation rights.

Because of the reasons mentioned above, the process of granting official authorisation is very liberal and makes it possible for a wide spectrum of applicants to be certified for land consolidation activities. As one of its obligations in the Act on Land Consolidation and Land Offices, the Central Land Office must maintain a list of people to whom it has granted official authorisation.

The design and execution of land consolidation in the Czech Republic is carried out by the following departments:

- The Ministry of Finance through the Ministry of Agriculture, which puts forward proposals for the allocation of funds assigned for the activity of the Land Offices.
- The Ministry of the Interior, as a supervisor of regional autonomy supervises the District Offices, of which the Land Offices (DLO’s) are independent departments. These directly carry out land consolidation.
- The Ministry of Agriculture, which oversees the methods, and funds the activities of the Land Offices from the allotted State budget.
- The Czech Office for Geodesy and Cadastre which, through its agencies, the cadastral offices, administers and assures the uniform register of real estate, i.e. a set of descriptive information (SDI) and a set of geodetic information (SGI), that provide the basic legal documentation of the ownership of real estate.
- In addition to these departments and authorities, the Departments of The Environment, Local Development and Transportation, can also influence the procedures and design of land consolidation.

2.3 *Simple and complex land consolidation*

2.3.1 *Simple land consolidation*

After 1989, it was considered necessary to transfer land quickly to those owners who requested it. This specifically required ensuring access to plots of land locked inside large blocks of land by providing access paths. In the early stages of reform it was not practically possible to pursue formal or ‘complex’ procedures for land consolidation proper, in the sense that complementary provision of public facilities (e.g. roads, water management and anti-erosion, ecological and other measures) would take a long time. Thus, it was necessary to implement a temporary solution, introducing widespread simple land consolidation (SLC), and the establishment of the temporary-use rights. In simple land consolidation an owner acquires the use-rights of another owner’s accessible plot of land. The latter is typically not interested in managing the land, thus, is happy to exchange his land for another piece so that it is easier for the person acquiring the land to farm. For instance, the latter land may be more accessible or even contiguous to other land plots of the person who wants to exchange. The exchanged value of these plots of land should be equal. The State, through its land offices, plays the role of middleman, or clearing house, in an effort to speedily provide the use of land to owners in particular areas. SLC was implemented from 1991 with the purpose of making it possible for newly created private farmers to farm on partially consolidated plots of land.

Agreements on ‘non-formal’ consolidation conform to simple (temporary) land consolidation (SLC) under sections 4 and 8 of Act No. 284/1991 Coll., *on Land Consolidation and Land Offices*. The requirements of simple land consolidation proposals are stipulated by Order of the Ministry of Agriculture of the CR No. 427/1991 Coll. Simple land consolidation provides the settlement of user relations to land – not an arrangement of permanent ownership relations.

Unfortunately, SLC was carried out haphazardly in the first few cases after 1990. Sketches of allotment plans providing a basis for the handing over of the land to farmers were executed very simply and inaccurately. These plot boundaries were marked out in a permanent manner by erecting land markers, thus making it complicated to later correct any inaccurate measurements for legal purposes. An attempt to overcome inaccurate surveys of the plots of land and bring ‘order’ to the land registry was supposed to be implemented at the expense of the State. However, these inaccuracies have been further exacerbated by the fact that historical and political developments after 1948 created disinterest in the accurate keeping of land books and, consequently, lists of allotted plots of land were not completed. In most cases only inaccurate, graphical allotment plans, without the proper marking out of allotted land and the delineation of new boundaries were drawn up. Many allotment plans were seriously damaged, or even destroyed, during the past decades. This made it very difficult to verify ownership documents with cadastre maps and with what was going on in reality.

Up to the present, 20000 such simple land consolidations have been instigated. The temporary use-rights allowed the land offices some time to process the initial rush of applications (Act No. 284/1991 Coll. And Order of the Ministry of Agriculture No. 427/1991 Coll.) without severely constraining the agricultural sector. By the end of 1999, as many as 19,227 SLC cases were resolved in the CR., of this number, 838 cases were resolved during 1999. Overall, 309,326 Hectares of agricultural land (i.e. 7.2 percent of the Agricultural Land Fund) was taken up using this procedure. The remaining part of the Agricultural Land

Fund is predominantly in the possession of the agricultural co-operatives, limited liability companies and joint-stock companies, having direct contracts with land owners for a limited period of time, usually up to 7 years. On lots of land leased this way, land consolidation is not being implemented, i.e. no changes in size and shape of lots are contemplated. In 2000, more than 800 simple land consolidations were supposed to commence, but this is significantly lower than in 1994 or 1995, when 5,000 were started.

Besides 'non-formal' land consolidation implemented in this manner, there are an unspecified number of cases where owners' Plots of land are leased out or let for use without formal agreement. (The proportion of the rented land of the total area can be seen in graphs 6 & 7 in accompanying annex).

2.3.2 *Complex land consolidation*

The other solution to land consolidation is termed as 'complex' or 'comprehensive' land consolidation and this represents a longer -term solution to agrarian structure. Complex land consolidations aim to preserve and enforce the stability of farmland, in parallel with the preservation of habitation and harmony with agricultural production in the countryside. It aims to enhance the non-productive functions of agriculture and to enhance the activities in the design of countryside in general. These aims are emphasised in the new agricultural policy of the EU and there is a danger of the CR being left behind other countries.

Contracts for the development of complex land consolidation are awarded by District Land Offices in competitive bidding under Act No. 199/1994 Coll., on Competitive Bidding Awards, as later amended. Under Act No. 284/1991 Coll., *on Land Consolidation and Land Offices*, it is the duty of District Land Offices, as land consolidation funds providers, to execute the plan of cadastral area choice. The choice of cadastral areas, where land consolidation is to be implemented needs to be discussed with the cadastral office a year in advance.

The criteria for the choice of cadastral areas where land consolidation is planned:

- Following requests from owners of more than one half of the cadastral area.
- The activity and diversity of farmers in the area.
- An emergency requirement for environmental protection.
- Obvious discrepancy between data of the real estate cadastre and the actual situation.

In 2000, 137 complex land consolidations will commence in the Czech Republic, over an area of 67,482 Hectares. The start of these land consolidations depends on the approval of the plan for the allocation of finances from the State budget.

Complex land consolidations are usually implemented in those municipalities where land-use plans, zoning plans (of the built-up parts of a municipality) and rural renewal programmes (Program for Countryside Renovation – Ministry of Rural Development and other various programs of Ministry of Agriculture) are already prepared, or in an advanced stage of preparation. Both land-use plans and rural renewal programmes are usually developed in those municipalities where a significant increase in economic activity is expected. Requests for the drawing of subsidiary funds from the Ministry for Local Development and the Ministry of Agriculture usually coincide with this activity.

The rural renewal program, land-use plan and complex land consolidation should ensure:

- The efficient use of the natural production potential of land, without sacrificing its general importance as a resource for human life and society.
- Mutual guarantees for the sustainable development of health, recreational and ecological facilities of rural areas.
- The renewal of the traditional environment of villages, their natural balance with the landscape, their uniqueness in specific localities, as well as a higher prominence for local cultural monuments.
- An improvement in civil and technical infrastructure, including the use of locally accessible, renewable energy sources and support for the development of alternative transportation in particular micro-regions (i.e. cadastral areas, or a municipalities).
- The mobilising of local material and human resources by supporting agricultural and other economic activity suitable for a specific region.
- The renewal of partnership relations between municipalities and micro-regions.

The Central Land Office of the Ministry of Agriculture safeguards the methodology and financial backing for land consolidation in the Czech Republic. The private sector has no share in land consolidation financing. The Czech Land Survey and Cadastral Authority in Prague methodically and financially oversee reference documents detailing land titles, in both written and map form. For this purpose a special Land Survey Office was established to centrally administer all cadastral data. In addition, the Land Survey and Cadastral Inspections were established, with powers of inspection over land survey works.

The Ministry of the Interior established District Offices operate at a regional level. The Central Land Office supervises the land office departments. In each region, or district, there is a Land Register Office, which, according to the size of the district, can contain several branches and manages the written and graphic database of land owners in a particular cadastral areas and the municipalities within each district.

At a local level there are Municipal Offices which manage one or more cadastral areas. With land consolidation, especially complex land consolidation, municipal offices make decisions in their sphere of authority on:

- Changes of cadastral boundaries (see land consolidation in Dřísy, fig. 2, annex 2). Safeguarding the public interest on the structure of the road network, water-management facilities, anti erosion measures and ecological measures such as bio-corridors and bio-centres, in a given location.
- Town and country planning and its connection to land consolidation outside built-up areas of the municipality.

The District Land Office ensures the preparation of land consolidation proposals with designers. The project designers, or executors of a land consolidation proposal, can only be legal entities or physical persons, who are certified for land consolidation design. The conditions for granting such certificates are stipulated by the Ministry of Agriculture of the Czech Republic in strict legal regulations.

2.4 Land consolidation procedures: An assessment

For a description of land consolidation procedures see annex 4.

The latest amendment to the Act of Land Consolidation and Land Offices makes possible more exact procedures in cases of allotment areas, i.e. the reconstruction or specification of an allotment. However it provides a solution only to problems connected with unfinished consolidation. There still remain some questions, which can only be competently assessed, in a fixed legal environment by the courts. In the course of land consolidation proceedings, DLO's can stipulate only in those cases in which it is necessary to take legal action over ownership disputes. Without this intervention the ownership of an unclaimed plot of land would never be resolved.

In the process of land consolidation a substantial part of the cadastral area can be renewed by new mapping or land survey operations (especially '*extravilan*' - village land that is located outside the legal urban perimeter of the village – usually agricultural land). The built-up parts of a cadastral area (especially '*intravilán*' – village land located within the legally defined urban area) remain in an original, un-renewed condition and this is undesirable. For these reasons, it would be possible to link the new mapping to the land consolidation procedures; so one entity could carry out the mapping of an entire cadastral area, i.e. both *extravilan* and *intravilan*. Such a firm would be subject to a selection procedure, as determined by provisions in the Act on Public Tenders.

By law, there is no legal obligation to start land consolidation at the behest of a particular applicant. This means, that initiating land consolidation in a particular cadastral area is at the discretion of a DLO. In the past, some DLO's came under pressure from landowners who requested land consolidation implementation, under the impression that it was obliged by law to resolve their ownership problems at once. A DLO is required to begin comprehensive land consolidations only at the request of the owners of more than half of the overall land area in a particular cadastral area. In an effort to help owners, the DLO's were starting simple land consolidations and implementing temporary usage in a majority of cases, especially where the tentative owners were unable to reach a settlement with current users, or other owners. The DLO's are using their powers under the law to issue decisions on temporary allocation of land into temporary usage in cases opposed by some owners not managing land themselves.

In some districts (even in some cadastral areas) there are frequently quite different conditions for implementing land consolidation, and that is why owners have different experiences of DLO policies. Also, land offices themselves have very different experiences of the implementation of the practice of temporary usage. At present, the growing body of experience shows that temporary usage can solve the most pressing problems, but there are more and more cases where temporary users are failing to manage the land in question. Also some landowners, having thus far failed to manage their plots of land, have decided to try again rather than endure temporary users on their land. This creates the necessity to fully complete complex land consolidation in many cadastral areas.

On the other hand, there are places where land is managed without legal title, because the user does not deem it necessary to identify the location and make contracts with all the owners of used plots of land. It must be said, that for a sizable group of owners this situation is convenient, and they are basically content not taking care of their land themselves. This

situation is an aftermath-of-the-revolution state of affairs, a transitory period that must be replaced by complete transparency in ownership and users relations to land.

2.4.1 *Technical/ operational requirements*

In 76 districts of CR 1,350 civil servants work in land offices dealing with the agenda of the restitution of property and land to original owners and land consolidation. There are 35 employees in the Central Land Office of the MoA. These civil servants run the District Land Offices, secure the financing of land consolidations and geodesic work in progress, connected to restitution. They also design the methodology, decrees and source materials for legislation. Private companies design land consolidation projects. By April 2000, more than 450 authorisations for the design of land consolidation were issued. It can be assumed that 1,200 people work on land consolidation design in the CR. There are also around 1,000 people who carry out geodesy projects connected to restitution and land consolidation. Overall in the CR, there are approximately 3,600 people working in the field of land consolidations.

Land consolidation activities are closely connected to the activities of surveying and cadastre. Besides the actual objective of comprehensive land consolidations, one of the results of the proposals for the new arrangements of proprietary ownership is a brand new digital cadastre map. The replacement of the existing, inaccurate and obsolete cadastre map is a very important goal. The present problems that surveying and cadastre must overcome are very well known. The improvement of the condition of the cadastre is one of the most challenging and pressing tasks. That is why the law, in its current form stipulates that the results of land consolidation (especially complex land consolidation) are to be used for the renewal of the cadastral operations. Since March 2000, the new law has been in effect, supporting the renewal of cadastral operations by way of land consolidation. This law is Government Decree No. 4/2000 Coll., on the *Execution of the Act on Land Consolidation and Land Offices*. It is basically a code of practice for land consolidation and gives guidelines for the exchange of plots of land. At the time of writing 94 complex land consolidations are completed and another 508 are in various stages of implementation. In 2000, 137 complex land consolidations were supposed to commence, but due to lack of finances, this was not allowed. Complex land consolidations are the most complicated activities of the DLO, and only in the last three years have they become more experienced in their implementation. DLO's oversee, not only project design of land consolidation, but also the whole process of implementation. This includes the building of new roads, vegetation belts, anti-erosion and anti-flood measures etc.

We are at a stage where it is necessary to provide solutions to the fundamental problems of ownership relations and the basic arrangement of proprietary ownership. There is a great deal of work ahead for the DLO's, in addressing their fundamental responsibility for future developments in this area. It is desirable that these institutions should take over general responsibility for rural development, as in neighbouring Bavaria. However, any programme is only feasible if backed by at least a minimum amount of finance. The social necessity and common interests of society in supporting land consolidations are obvious, for these are essential instruments for rural development.

2.4.2 *Assessment of LC efforts*

How do we evaluate the two, seemingly contradictory, tasks of restitution and consolidation laid out in the Land Act for the land offices? The process of restitution culminated in 1994 and 1995, but will persist over the next few years, until all administrative decisions on restitution are taken and implemented. Settling all the court proceedings will take a long time.

The temporary nature of SLCs was necessary to speed up and smooth the period of agrarian transformation. In the current situation, it is necessary to settle ownership relations by the process of ownership rights exchanges and to enable farmers to farm on their plots, or on plots with clear arrangements with other owners. There exist the problems of the great soil variability of plots, inaccessibility of plots, lack of clarity in ownership and by the unfinished consolidation of allotments. The current situation complicates entrepreneurial activities in agriculture. SLC is used to quickly enable a start for those interested in taking up farming; however, it has created a very unstable situation, from the point of view of owners and users. This is a hindrance to economic development and is unacceptable in the long-term.

With regard to complex land consolidation, by December 1999, more than 96 percent of requests for the restitution of land and other property were resolved. By the same date, complex land consolidations, with an exchange of ownership rights for an overall area of 27,871 hectares, were fully completed in 94 cadastral areas. Since 1990, 508 complex LCs have begun on an area of 247,000 Hectares, of which 78 began during 1999, on total area of 30,709 ha. The number of commencements of complex land consolidations does not correspond to the necessity of solving the problems of the settlement of ownership relations. The faster tempo needed for initiating and completing LCs is hampered by the lack of financial resources. In 1999 the state budget allocated for the activity of the land offices is only 652.2 million KC. This figure is 23 percent less than in the previous year and approximately 50 percent less than actual annual needs.

The unfinished allotment and consolidation procedure is also a fundamental complication for the sale of State agricultural land. There are complications on both legal and technical grounds. Without ascertaining ownership rights, it is impossible to know which plots of land are owned by State, i.e. under the administration of the LF CR, or under the management of the Forests of the CR. The consequences of the incomplete allotment and consolidation procedure generally create significant uncertainty regarding the identity of the real owners and to inhibit the preparation of investment concepts, the development of mortgage lending and the development of cities and towns. It also creates serious problems for the authorities in the process of collecting real estate tax, and complicates land and building proceedings seriously hampering the process of the selling off of State owned agricultural land. It is important for the State to overcome these problems in the shortest possible time. In Government Decree No. 194 from April 2, 1997, the Government ordered the Minister of Agriculture to resolve the incomplete consolidation and allotment proceedings by December 31, 2006.

2.4.3 Conclusions

Some general characteristics of the land consolidation are as follows:

Strengths

- The interest of landowners to participate in the land consolidation programme.
- The extensive experience of the District Land Offices with the land consolidation programme.
- The experience of the District Land Offices with the implementation of the TSES elements.

Weaknesses

- The widespread use of short-term tenancies.
- The incomplete transformation of land ownership rights.
- The lacks of defined land ownership in regions where consolidation and land transfer are incomplete (e.g. in border regions).
- A lack of physical access to some land parcels.
- The acquisition of agricultural land for infrastructure and TSES elements.

Land consolidation has created opportunities for:

- The participation of local authorities in the implementation of the programme.
- The participation of landowners in the maintenance of the local infrastructure and TSES elements.

While at the same time producing threats such as:

- The non-adherence to the agreed land consolidation programme.
- A lack of maintenance of the local infrastructure and TSES elements.

2.5 An estimation of required resources

From their establishment in 1996, up until 1999, the DLOs have spent KC 5.6 billion in the process of the implementation of the Act on Land Consolidation and Land Offices. The financial situation is not healthy, since the initial needs have not been fully provided. For the years 1998 and 1999, the State budget allocated the amount of KC 847 million annually to the DLO for complex land consolidation, but the actual requirement is around KC 2 billion per year. It means that the land offices, in an effort to maintain the progress in completing land restitution and the most crucial geodetic activities, must limit their activities to only the renewal of field roads, a necessary condition for making owners' plots of land accessible. In the entire CR 450 km of field roads were built or renewed in recent years. Water management and anti-erosion measures were carried out in a number of cases as an exception rather than a rule.

There are about 30 cadastral areas that can be considered as models, which means they have had common facilities put into place. There is a need to implement as many land consolidation proposals so far approved as possible. In many cases there are some obstacles in the commencement of land consolidation for the people in the municipalities in question, who, in accordance with the law, expected tangible improvements in the rural landscape. Merely the minor problem of completing consolidation by specifying and reconstructing allotments requires an expenditure of KC 2.6 billion. The major part of the estimated

expenditure is primarily on the activities and analysis of the results of the surveys in hand, the minor part is the project design work.

To solve this problem by 2006, as demanded by Government Decree, KC 400 million would have to be spent in 2000 alone. But despite all this, the State budget allocated for the overall activities (all activities of DLO, not only for CLC) of the land offices is only KC 652.2 mil. This amount is 23 percent lower than in 1999. There is much talk of the problem of ownership being a key to solving the agrarian structure problem, but the State does not pay sufficient attention to it. It is not allocating the needed resources, which would make it possible to resolve at least the most problematic areas of ownership. Without improving this situation, the fulfilment of the tasks in response to effective rules, regulations, or Government Decrees cannot be expected.

2.6 Conclusive summary/remarks

Detailed analyses of laws, directives and regulations related to land and property are in progress. The majority of these are harmonised according to EU Regulations and Directions). In spite of this, many of the present problems depend on the current situation in the agriculture and social spheres of the Czech economy.

Briefly, we will point out some of the main problems and obstacles regarding the land market, property and the use of land:

The Land market:

- The lack of interest in increasing farm area by land purchases is the consequence of the low profit margins in agricultural production.
- Enterprise insolvency and the lack of financial resources postpone the land purchase even if it is desirable for the farm.
- Banks are not willing to use land as guarantee for mortgage purposes, and are not willing to give credit for land purchase.
- The considerable splitting up of land properties and the insufficient size of parcels as 'tradable units'.

The greater part of the land is used by large enterprises, which have a privileged position in the land market. They farm on rented land and do not have any economic reasons for buying plots now; on the contrary, they influence the level of rents due to their monopoly position.

The restitution process has not yet finished. Until December 31, 1999, there were 8,457 unfinished restitution claims. The restitution of Church land and Jewish property is also not yet settled.

Land use:

- There is no guarantee for an owner or leaseholder. Law does not set the conditions of a lease.
- Law does not set the level of rents.

- The leaseholder must deal with the group of owners in the case of important intervention (such as, basic changes of land-holding use) on the Plots, e.g. to improve the grass vegetation needs the owner's agreement or at least his unspoken agreement. The reason is the division of holdings - simple land consolidations were not the solution.
- Users are not implementing improvement measures on land where they do not possess stable user rights.

3 Contemporary Agriculture in the CR

3.1 *Socio-demographic profile of CR agriculture*

The Czech Republic (CR) is a landlocked country with a total area of 78,866 square kilometres. There are 10,299,000 inhabitants and the population density is 131 inhabitants per square kilometre. The natural conditions for agriculture correspond to the European average, the soil is fertile and the climate moderate. The average elevation of the CR is 430 m.a.s.l. The total agricultural area is 4,282,000 hectares.

According to recent estimates, the rural sector comprises around 75 percent of total land area in the CR and contains 22.3 percent of the total population. In early 1999, approximately 63 percent of inhabitants residing in localities of between 500 and 2000 inhabitants were of working age, whereas in smaller villages (up to 100 inhabitants) only 59 percent of the population were of working age. This observation can be compared with earlier demographic statistics reported in 1996 that showed that the village unit had the highest ratio of elderly people to overall population in the country at 19 percent. This sector also has a high amount of young people, under the age of 15 years. The average number of members of an agricultural household is 3.11, of these, 1.7 are economically active, 1.15 dependent children and 0.07 non-working pensioners.

Employment

The unemployment rate is an important indicator of the situation of the countryside. In 1999, 25.1 percent of the total economically active population of the CR were located in the countryside, of these, 16.4 percent were specifically active in agriculture. Around fifty percent of the total rural population are women. Twenty-three percent of the total economically active population of women in the CR, are located in the rural sector, 6.8 percent being actively engaged in agriculture.

The proportion of agriculture in the overall employment within the national economy dropped in an extremely short period of 5 to 6 years from 9.9 percent to 5.5 percent in 1997. This reduction in employment was caused by the following factors:

- The outflow of labour to other sectors.
- The reduced proportion of agriculture in GDP.
- Increased labour productivity due to the introduction of new technology and machinery.

Of a total of 400,000 people leaving agriculture, 170,000 moved to other industrial sectors and 230,000 became unemployed. Employment in agriculture fell to 206,000 people in 1998, accounting for 4.2 percent of total employment in the civil sector of the national

economy. Employment in the food processing industry accounts for 27.5 percent of total employment.

In the event of falling employment, the following trends may be identified:

- The separation of some operations of subsidiary non-agricultural activities, from agricultural companies. The people employed here became employed in branches of the newly established business entity, where the specific character of the activity belonged in industry or services.
- A decrease in employment of people receiving retirement pension (in the period 1989-1993 the proportion of employees over 60 years of age in the structure of employment in agriculture decreased by half to 3.5 percent).
- The exit of young people from agriculture, enterprising and qualified personnel who started their own businesses outside agriculture, or left to join non-agricultural companies for more lucrative employment.
- The occurrence of employees released from agriculture on the labour market - most frequently in trade and in services, also in industry, transportation, construction, public administration and forestry. According to a sample survey, 'Development of Unemployment in Agriculture', carried out by the Czech Research Institute of Agricultural Economic (VÚZE) in year 2000 for The Ministry of Agriculture ‘
- Some agricultural employees, who have not found jobs on the labour market, remain unemployed and receive poor social support. Unemployment in agriculture is continuously increasing.
- The level of wages & salaries in agriculture and rural areas is significantly lower than the CR average. The average salary in rural areas is 86.7 percent of the CR average.

Off-farm employment opportunities

According to most recently available information (*Micro census*, CSO 1996), in the countryside, 33.1 percent of those of economically active age worked in the processing industry, 16.4 percent in agriculture and forestry, 10.5 percent in construction, 9.7 percent in wholesale and retail, 7 percent in transport and communication, 4.8 percent in education, 4.4 percent in State administration, 3.8 percent in health care, and 10.3 percent in unspecified activities.

Education

In 1996 the proportion of the population with basic or unfinished education, (44.9 percent), represented the most significant category in the educational structure of the countryside population. The second category was the group with completed apprenticeships (29.5 percent). University graduates had the lowest proportion (2.7 percent). In 1998, as shown in the table below, there were less people with basic or unfinished education and more university graduates.

The education of employees in agriculture (%)(1998)

Level of Education	Percent
Without education	0.7
Basic school	16.7
Skilled	50.0
Secondary school	7.0
Skilled with examination	1.1
Special secondary school	19.9
Secondary school with examination	0.9
Academic degree	3.7

3.2 Analysis of household income and consumption structure

The Czech Statistical Office (CSO) defines a farm household as one where the person with an agricultural working activity is the head of the household (i.e. a member of a cooperative, an employee working on any type of farm, or a farmer himself).

Net money income is defined as gross income before deductions for obligatory health and social insurance. Net money expenditure differs from gross expenditure by approximately the amount of health and social insurance and rate of income tax. Expenditure is divided into consumption expenditure and expenditure that is not included in final consumption. Since 1999, expenditure items are classified according to Czech classification compatible with the EU classification.

In the household of a farmer, the average net money income per person in crowns per month, was 5,638 in the second quarter of 1999. This was 83.2 percent of the average net money income per capita in the CR. The structure of net money income in the households of people working in agriculture comprised of: salary (76.1 percent), entrepreneurial income (4.9 percent), social income (14.6 percent), pensions (4.1 percent) and other income (4.4 percent). In the structure of the income of farmers, compared to the income structure of the total population, the proportion resulting from non-entrepreneurial activities was higher.

The highest proportion of the expenditure of agricultural households was food (20.4 percent), followed by; accommodation, water, energy and fuel (13.5 percent), transport (13 percent); recreation, culture and sport (9.3 percent); other goods and services (8 percent); housing equipment (7.5 percent); clothing and shoes (7 percent); accommodation services (4.6 percent); beverages and cigarettes (3.2 percent); mail and telecommunication (1.9 percent); health care (1.1 percent); and education (0.3 percent). Compared to the average household in the CR, expenditure by farmers on food, accommodation, energy, recreation, culture, sport, mail and health was lower; other expenditure was higher, though education was at the same level.

3.3 Agricultural Production

The Structure of agricultural land use in the Czech Republic in 1999 (000's hectares)

Type of land	Areas in hectares
Agricultural Land	4,284
Arable Land	3,101
Hop Gardens	11
Vineyards	16
Orchards	49
Gardens	160
Meadows	663
Pastures	284
Forest land	947
Total Area	7,886

Compared to 1990, gross agricultural output was 28 percent lower in 1997, with crop output down by 21 percent and livestock output down by 32 percent. Cereals rank among the main agricultural commodities produced in the Czech Republic, which has always been traditionally dominated by crop production. The harvested area of cereals was 1,678,900 Ha in 1998, that is, 54 percent of all arable land. With declining livestock numbers and changed methods of livestock production, the use of grain as feed has declined in recent years. Maize, used in compound feed for pigs and poultry, has been an exception. Oilseed rape is the main oilseed crop produced in the Czech Republic. The overall production of rapeseed amounted to 680,200 tonnes with an average yield of 2.57 tonnes per Hectare (year 1998). In the 1998/99 marketing year, potatoes were harvested from 72,900 Hectares with total production amounting to 1,519,800 tonnes. The situation of sugar beet and sugar within Czech agriculture has worsened in recent years. In 1998, sugar beet accounted for 2.1 percent of total gross agricultural production. Sugar production was 470,200 tonnes in 1998, i.e. 2.7 percent of EU production.

Area harvested and hectare yields for the main crops in 1998

Crop	Area harvested (ha)	Production (t)	Yield (t/ha)
Total arable land	3,089,624.00		
Total cereals	1,678,285.16	6,668,920.2	3.97
of which			
Wheat	912,300.94	3,844,740.9	4.21
Rye	71,861.29	261,166.6	3.63
Barley	577,694.02	2,093,101.3	3.62
Oats	57,687.59	179,671.0	3.11
maize for grain	32,906.64	200,562.4	6.09

Total pulses	57,156.80	133,381.7	2.33
of which			
peas	50,978.81	121,788.5	2.39
Total root crops	163,579.81		
of which			
new potatoes	18,481.60	302,822.6	16.39
other potatoes	53,373.55	1,276,704.8	23.92
technical sugar beet	81,409.44	3,479,425.6	42.74
Total oilseeds	349,623.64	778,982.0	2.23
of which			
oilseed rape	264,310.36	680,216.4	2.57
poppy	27,880.83	20,524.3	0.74
Flax	3,718.63	11,185.4	3.01
Vegetables	34,459.22	552,854.9	16.04

The first post-war census of farms, carried out in 1995, revealed a detailed account of the size structure of enterprises in Czech agriculture compared with the data of the pre-war census. The data about the number of farms indicated a clear decline in the number of workers employed in agriculture over the last fifty years. This is similar to all developed countries. It is evident that, after the privatisation and restitution process of the mid 90's, the greater part of land remains in the use of farmers with an area of over 500 Hectares of agricultural land.

Since 1995, the number of individuals or family property owners with the juridical status of "natural persons" ('natural person' here refers to a private farmer) has grown. The high percentage of farms under 10 hectares is conditioned by the large number of farmers with an area of less than 1 hectares. These people use their production mainly for family utilisation and as hobby, not for market. The changes in this category were revealed by the higher precision of the register. (From all group of private farmers approximately one third of the total area are farms with an area greater than 500 Ha.

Since 1995, the number of enterprises with corporate property rights (otherwise termed as 'legal or artificial persons') diminished, but their area increased. From 1995 to 1998, the number of farms smaller than 100 Hectares decreased by about one third. The number of farms with an area greater than 2,000 Hectares increased in this period.

Of the total number of farms owned corporately, or by 'artificial persons', 5 percent operate on 64 percent of agricultural land. Based on the observations of the last few years, two trends become apparent. On the one hand, the number of farms of small area engaged in intensive market production, for example producing vegetables or farming as an additional source of basic production for a family, has increased. On the other hand, in the category of farms using traditional market production, the principles of large-scale farming production persist.

Considering the sociological attitudes of land owners, the historical development of the last ten years and the present situation in agriculture, it could be supposed that the desirable combination of the large farms and smaller enterprises will be maintained. Since 1989 there

exists a substantial amount of properties with legal personhood, as big co-operatives have not completely collapsed. Also, many land owners do not live in the countryside and they desire to lease their lands. To assist this, it is necessary to ensure certain guarantees for farming from the perspective of land use to both of these categories of farming. The first priority is to identify land ownership and to consolidate the plots to promote production or to encourage the long-term leased land of owners without an interest in farming.

3.4 *The impact of land fragmentation (farm size and shape) on agricultural efficiency*

The size of Czech farms has an impact on their competitiveness and efficiency. The ideal size of farm in a market economy is not a universal constant, but is dependent on its productive orientation or specialisation. In 1989, the average size of a farm in the CR was over 2,500 hectares, and the upper limit occasionally surpassed 10,000 Hectares.

The process of the transformation after 1989 had a very important impact on the size of farms. The larger farms were typically transformed into smaller units. According to the data of the *Agrocensus* in 1995, the average size of farm was 131 hectares -- larger than the 20 hectares average in countries of the EU (for example – in Germany it was 30.1 ha; Austria, 15.4 ha and; United Kingdom, 70.1 ha). The size of enterprise from the perspective of management theory is neither a decisive factor in competitiveness, nor an obstacle. What is important is the efficiency of management and output. From multiple empirical investigations into 'efficient farm size' in both the CR and in the EU, we see that in the EU the appropriate size for a competitive enterprise, with typical type of production, is 100 Ha. In the CR 3,521 enterprises are 100 hectares or larger and they farm 90.5% of the total area (see the Czech Agricultural University, Technical Faculty, Prague).

The optimal size of land plots for crop cultivation is determined in part by the available agricultural technology at any one point in time. The size and shape of plots have a great impact on the performance of agricultural equipment, the consumption of fuel and operational costs. In general, plots smaller than a certain critical area mean lower efficiency of agricultural technology and fuel consumption increases due to the higher ratio of headlands to total area. In addition, more efficient mechanical equipment with larger width of catch (this refers to the operating width of combine harvester) demands bigger plots and headland. However, increasing the size of lots over a certain limit causes problems of accessibility that promotes the creation of access paths in a random way and causes the hardening of land. It is necessary to take into account the natural and economical conditions of farms and the character of technology when deciding what the optimal size of land holding should be.

Studies investigating efficiency of plot size:

In agriculture, efficient mechanical equipment with a high percentage of self-propelled equipment (machines with their own engine) prevails, corresponding to the size structure of farms. In the case of larger farms, planning is possible and consequently it gives better economic conditions. In the CR, compared to technically more advanced countries, the use of tractors of higher performance is 3 times higher and 2 to 3 times higher than the use of farm machinery, especially self-propelled (see the Czech University of Agriculture, Faculty of Techniques). The width of headland also reflects the rate of use of mechanical equipment.

Number and structure of selected mechanical equipment in the CR

Type of of equipment	number	percentage	average age (years)	predominate width of headland (meter)
tractors and small capacity	79304	100.0	12.0	X
tractors – total				
below 30kW	8648	10.9	12.5	X
31-60 kW	48895	61.6	12.5	X
61-90 kW	12201	15.4	11.5	X
91-120 kW	3911	5.0	10.5	X
over 120 kW	5649	7.1	8.9	X
trucks	14354	100.0	11.2	X
total				
- below 5 t	5237	36.5	10.9	X
ploughs total	29768	100.0	10.2	14-18
- 3 and 4 ploughshares	16258	54.6	10.1	14-16
- 5 or more	10860	45.4	10.3	16-18
sprinklers, total	8622	100.0	8.6	10-18
- self moving	386	4.5	9.5	10-18
fertilizer equipment	12421	100.0	9.5	12
- born	6462	52.0	9.7	12
threshing machine	12836	100.0	10.9	16-18
- below 100 kW	6999	54.5	11.4	18
cutters	6467	100.0	11.0	16-18
- self moving	3270	50.6	10.8	18
Type of of equipment	number	percentage	average age (years)	predominate width of headland (meter)
potato collectors total	3524	100.0	10.8	12
- one row collector	1412	40.1	10.3	12
tuber collectors	961	100.0	10.0	20-24
- self moving	169	17.6	9.3	24

With respect to dairy farming, in 1998 milk production accounted for 29.7 percent of gross livestock output and 33 percent of total sales in livestock production. Milk production amounted to 27.7 million tonnes in 1998, i.e. 0.7 percent of the world production and 2.3 percent of EU production. With domestic demand stagnating, there is a surplus supply of milk on the market.

Pig meat represents the primary livestock production commodities. It accounted for 33 percent of total 1998 sales in livestock production. A total of 670,000 tonnes of pig meat, live weight, were produced in 1998. Beef is also one of the main livestock production commodities. In 1998, beef accounted for 14 percent of total sales in livestock production. Beef production dropped to 247,000 tonnes, live weight, in 1998, as a consequence of declining cattle numbers, which in turn is a result of the long-term lack of profitability of cattle farming and a reduced demand for beef. Poultry meat production amounted to 241,000 tonnes, live weight, in the Czech Republic.

Livestock numbers (000' head)

Livestock category	1998	1999	Year-on-year index
Total cattle	1,701	1,657	97.4
of which – total cows	647	642	99.2
Total pigs	4,013	4,001	99.7
of which – sows	320	317	99.1
Total poultry	29,035	30,222	104.1

Source: CSO – Livestock census as of 1 March 2000

Production and performance in livestock production

Indicator	1997	1998
Milk production (million l)	2,703	2,717
Average dairy yield (l/head/year)	4,366	4,837
Beef production (000' t)	294	247
Average daily weight gain for fattening cattle (kg/head) ¹⁾	0.77	0.82
Pigmeat production (000' t) ²⁾	680	670
Average daily weight gain for fattening pigs (kg/head) ¹⁾	0.63	0.64
Poultrymeat production (000' t) ²⁾	190	241
Total egg production (million pieces)	3,322	3,615

3.5 Contemporary landholding structure

Since 1989 private agriculture has been increasing. For instance, if, in 1989, private farmers worked on only 0.3 percent of agriculture land, by 1998 they worked 20 percent. In 1995, the newly founded corporations (limited, or joint share companies) carried out farming on 23 percent of the agricultural land. By 1998 it was more than a third of the agriculture land, at 33.4 percent. On the other hand the proportion of the total area farmed by the agricultural cooperatives has been declining consistently. Their proportion of 61.4 percent in 1989 decreased to 38.9 percent in 1995, and in 1998 decreased by about 10 percent to 28.9 percent of the agricultural land of the CR. Similarly, land under the control and ownership of State enterprises has been declining. In the early 1990s the average size of state enterprises diminished from 6,259 hectares in 1983, to 660 hectares in 1995.

The average size of farms has been greatly influenced by these changes. The average size of a farm in the CR is about 131 Hectares. In the 1930's, it was 8 Hectares. The average size of agricultural cooperatives and also the area of State enterprises diminished dramatically. In recent years, the size of joint stock, or limited companies has grown. In the period 1995 to 1998, the statistics on private farmers might have been influenced by the fact that the register of farms became more precise and even small farms were registered.

The impact of size and shape of plots on the efficiency of equipment was investigated in research at the Institute of Agricultural Technology in Prague. The types of equipment described in the Annex table 13 were investigated. The results of the research are given in the graphs 1 – 5 (see Annex). To evaluate the impact of lot size on efficiency, changes in the ratio of rotation in the dependency on size and shape of lots were investigated. The coefficient of rotation expresses the comparison of machine efficiency achieved during turning on the headland to its theoretical efficiency without turning. Indirectly, it is possible to deduce also the ratio of headland to total area (Graphs 1 -4).

From the graphs, it follows that the coefficient of rotation, in the majority of the investigated operations, is problematic for plots of less than 10 Hectares. For plots between 30 and 40 Hectares the graph gives its highest value. From this, it follows that the minimal size of lot in the CR should not fall below 10 Ha. This corresponds also to the technical norms and to the methods of invoicing for services. The practical accessibility of plots and local differences from the perspective of soil structure, nutrient supply and the intensity of pollination are principal criteria in the conclusions drawn about the upper limit of optimal size of plot.

The principle criterion for the evaluation of the technological accessibility of plots during harvesting, is technological accessibility during the transportation of the crops. The ideal situation for accessibility is that where the transport vehicles do not enter the field and stay on the headland, or on the access routes (technological place). The impact of the combination of construction parameters (the catch and the size of chamber – the working width and size of storage bin capacity) of a harvesting machine and the yield of product must be considered. For example, for grain harvesters used in the CR fill up every 1,000 to 1,200 meters for an average yield of 5 tonnes per Hectare. The chamber collector of sugar beet for a yield of 45 tonnes per Hectare fills up after c.900 to 1,000 meters. Study has proved that a square shape of lot (900x900, 1,000 x1,000, 1,200x1,200 meters), is less convenient than an oblong shape (graph no 5, see annex) and the optimal size of lot is 80-140 Ha. It could be deduced logically, that the lower value of interval is valid for slope lots with a higher degree of local differences. The ecological necessity to preserve a natural shape for animal protection also supports the above-mentioned arguments.

An investigation of the impact of size and shape of lots on the change of consumption of fuel was carried out at the Czech Agricultural University, in the Faculty of Technology in Prague. 17 shapes were analysed in a comparative way and the changes in the fuel consumption were calculated. The oblong shape, which is considered ideal, was taken as a reference. According to the graph No. 5, it is possible to deduce the same consequences as in the case of efficiency. The lower limit of optimal size of the lot of different shapes (from the point of view of fuel consumption) is about 10 to 20 Ha.

The process of collectivisation and socialization of agriculture after 1949 had a severe impact, not only on the farmers as entrepreneurs, but also primarily on the ownership of land and other property. Land was not confiscated, or this was exceptional, but the right to use land was taken away. Technical, economic adjustments of land were executed, as well as the consolidation of the original lots into large land complexes, suitable for large-scale farming. During this time, the original owner boundaries were not respected and new boundaries were established through building new field roads, irrigation and other field construction, etc.

The area of these plots started from a minimum of 5 ha to 50 to 100 ha, in some cases more. A size of 30-50 Ha was not unusual. This created many eroded, poorly cultivated fields, some of which are problematic even to the present day.

An exact, central register of these plots has never existed. The process of transformation did not significantly influence the size of lot. The larger plots were divided up, especially on sloped terrain and in the case of inaccessible or uncultivable plots. It is possible to say that the size of predominant plots is in the limit of 5-50 hectares. This size mostly fulfils the exigencies of adequate technological accessibility and convenient accessibility to the crops for pollination.

The newly executed projects of complex land consolidation attempts to respect the above conditions that establish the optimal size of land plots and it support the restoration of ecological functions in the countryside.

The majority of plots in the CR are suitable for the effective use of modern technology. Land consolidation in the CR has had to solve not only economic, but other serious problems of Czech agriculture, (e.g. real property rights implementation & landscape protection). The size of plots in the areas of intensive agriculture in CR should not fall to less than 10 Hectares. The reason is the lower efficiency of mobile machinery, their high fuel consumption, and the higher ratio of headland to the total area, giving more hardened sectors on the plots.

The size of plots in the areas of intensive agriculture should not exceed 100 Hectares. There are also the considerations of adequate technological accessibility of the plots and the crops for pollination. In addition, the minimum needs of wildlife are respected. The recommended size of plots, respecting operational economies of scale and ecological aspects in the areas of intensive agriculture in the CR, is 20-80 Hectares. Size of plots in less favoured areas will reflect not only needs of agriculture but also the subsistence needs of rural residents.

3.6 General Conclusions

The positive aspects of the process of transformation are:

- The agriculture of the CR, with some exceptions, is privatised.
- The size of farms corresponds to the demands of modern agriculture.
- The size of plots corresponds to the demands of modern farming technology.
- There has been an increase in productivity.
- The high professional standards of manual labourers, farm employees and managers.

The negative aspects of the transformed and privatised agriculture are:

- The high degree of wastage of the excess capacity of the means of production, machines, tractors and mobile equipment.
- The low-tech technology for livestock farming
- The low profit margins of agriculture.
- The elevated prices of inputs.
- The problems related to sale of produce.

- The low level of government support given professional organisations within agriculture, e.g. farmers' union, credit unions, etc.
- The low degree of cooperation between basic agricultural production and the processing industry.
- The prevailing lack of interest of owners in farming. Thus, supply prevails over demand, and there is a non-existent land market.

3.6.1 The major constraints to agricultural development

- The low efficiency of State management and administration, including the obsolete technical knowledge of the State monitoring, testing and controlling institutions and an over-centralised administration.
- An unsustainable farm sector, heavily indebted by the 'three generations of debts' (pre-reform credits, transformation debts and new credits through the Support and Guarantee Farm and Forestry Fund): approximately 70 percent of farms are at risk of liquidation or bankruptcy.
- Negligence of environmental requests in food production on the side of consumers and farmers.
- The continuing barriers on input markets impeding the restructuring of farms, particularly in the land market (i.e. the discrepancy between the ownership and usage of land, land tax paid by users, problems with the physical identification of lots, incomplete privatisation of State land and land consolidation).
- The land market does not function.
- The owners of land, who do not work on the land and lease it to the users, do not usually have an interest in complex land consolidation.
- The relationship to the land is weakened. It is being restored slowly and with difficulty.

4 A Survey investigating the potential for land consolidation

4.1 Characteristics of the survey site

The physical territory of the CR is very heterogeneous in its natural topographic and soil quality conditions. In many ways this variability influences the intensity of agricultural production and modes of land use across the country. The fertile lowlands are characterised by a high proportion of arable land where cereals are grown. The climatic and soil conditions are also suitable for crops such as fruit and vegetables. Under these conditions, even farming units with smaller land areas can be economically viable. In the lowlands yields for most crops tend to be higher than in other areas. The foothills and mountainous areas are characterised by meadows and pastures where livestock farming is oriented towards cattle-raising and milk production. In these areas crop yields are lower and more fodder crops are grown. Despite the fact that land parcels tend to be larger in the upland areas, agricultural enterprises have historically relied on subsidies and production bonuses. At present, government grants and subsidies in this area focus on landscape protection, cultivation and maintenance of pasture, the ecological management of production and support for selected methods of agricultural production.

For this study we selected two districts, each characterised by different type of agricultural production.

The Melnik District: This is one of the smaller districts in the CR, with an area of 712 square kilometres. The population is 94,932, the population density, 133 inhabitants per square kilometre. This is slightly above the CR average. The proportion of the population in work is 65 percent. The proportion of inhabitants living in rural areas is 40 percent. The unemployment rate varied between 7.4 percent and 9.2 percent at the beginning of 2000. Sixty percent of agricultural workers are male. Those over 60 years old account for 7.3 percent of all agricultural workers.

In the district of Melnik there are 47,124 hectares of agricultural land and 42,018 hectares of arable land. The proportion of arable land is 89 percent. The area of meadow and pasture is only 4 percent of agricultural land. In 1999, vegetable production was adversely affected by drought. Approximately 5.5 percent of the agricultural area suffers from periodical drought. Irrigation systems are a basic necessity for plant growing in the area. Restrictions on farming, due to ecological reasons, are in force on approximately 17 percent of agricultural land. This is not a typical area for livestock production. There is 0.16 head of cattle and 0.90 head of pig per hectare of arable land.

The Klatovy District: The area is 1,939 square kilometres. The population is 88,399, being less densely populated than Melnik with 46 inhabitants per square kilometre. This is much lower than the CR average. The proportion of the population that is employed 64 percent. The proportion of inhabitants living in rural areas is 46 percent. The unemployment rate varied between 5.7 percent and 6.9 percent at the beginning of 2000. Sixty-six percent of agricultural workers are male. Those older than 60 account for 6.9 percent of all agricultural workers.

In the Klatovy District there are 89,915 hectares of agricultural land and 50,856 hectares of arable land. The proportion of arable land is 56.5 percent. The area of meadow and pasture is 40% of agricultural land. 29% of agricultural land is in mountainous areas. Almost 74% of agricultural land was classified as 'less- favoured areas'. This is an area typically suitable for livestock production. There is 0.53 head of and 1.16 head of pig per hectare of arable land.

Agriculture in surveyed districts (Melnik and Klatovy districts)

	Melnik	Klatovy
Structure of agricultural land(k 31.12.1999) hectares:		
Arable land	42018	50856
Meadow	1072	26436
Pastures	882	9644
Agricultural land	47124	89915
Rate of arable land (%)	89,12	56,55

Harvest in 1999:		
<i>Wheat</i>		
Harvested area (ha)	11282	13041
Harvest (t)	47368	55103
Crop (t/ha)	4,20	4,23
<i>Rye</i>		
Harvested area (ha)	430	1604
Harvest (t)	1190	5238

Crop (t/ha)	2,77	3,27
<i>Barley</i>		
Harvested area (ha)	1393	4465
Harvest (t)	5448	17565
Crop (t/ha)	3,91	3,93
<i>Oats</i>		
Harvested area (ha)	316	1314
Harvest (t)	837	4532
Crop (t/ha)	2,65	3,45
<i>Triticale</i>		
Harvested area (ha)	81	340
Harvest (t)	378	1233
Crop (t/ha)	4,67	3,63
<i>Corn</i>		
Harvested area (ha)	651	9
Harvest (t)	3568	23
Crop (t/ha)	5,48	2,56
<i>Rape</i>		
Harvested area (ha)	5073	5966
Harvest (t)	12182	15793
Crop (t/ha)	2,40	2,65
<i>Potatoes early</i>		
Harvested area (ha)	554	181
Harvest (t)	8777	3365
Crop (t/ha)	15,84	18,59
<i>Potatoes other</i>		
Harvested area (ha)	829	997
Harvest (t)	15953	21655
Crop (t/ha)	19,24	21,72
<i>Sugar beet</i>		
Harvested area (ha)	1726	0
Harvest (t)	66065	0
Crop (t/ha)	38,28	0

Animals (1.3.1999)		
Cattle	7454	47704
In it caws	47704	18600
Head of cattle per hectare of agriculture land	0,16	0,53
Head of caws per hectare of agriculture land	0,05	0,21
Pigs	37676	59198
Head of pigs per hectare of arable land	0,90	1,16

4.2 Sociological Analysis

The sociological survey (Sociology method – Case Study) was done in May 2000 in the two chosen districts. It is the place, where in the consequence of the splitting of land holdings, the land consolidations are done.

In this locality the analysis related to the official documents of land consolidations (land office, town hall, cadastre, consultation bureau) and the sampling according to the owner-user criteria were done. The total file of 48 respondents was created: 18 individual owners (physical persons), 27 owners - members of the coop farm, 3 lessors, renters.

The main conclusions of sample sociological survey are:

- The land market doesn't work, the realization of the complex land consolidation facilitate the sale and leasing of the land
- Current level of the land rent is low
- The entrepreneurs - physical persons do farming on the consolidated lots which they obtained as a replacement for their original split lots, they have interest for termination of the settlement of the owners rights under the preserving of the bigger land entities, they have also potential interest to buy the land but not to sell
- The enterprises of the legal persons do farming on the leased consolidated land, they have interest to lease other land, they feel the potential danger in the splitting of holdings because of the potential releasing the lots after executed complex land consolidation
- The owners of the land who don't work on the land and leased it to the users, usually are not interested for the complex land consolidation
- The relation to the land is very weakened. It is restoring slowly and with difficulties
- In the present time the predominant way of land heritage doesn't support the easy land disposition
- Human relations have big impact on the process and result of the complex land consolidation in the municipality
- There are four categories of owners in the process of the complex land consolidation: type emotional (nostalgia), type speculative (astute), type indifferent (collectivist) and type rational (entrepreneurial)
- Some provisions introduced in the process of complex land consolidation (the restoration of the characteristic aspects of the landscape, landscape accessibility) have positive impact on the quality of life in the region

The process of the land consolidation is an important condition for the stability of the socio-economic functions of the countryside. The division and fragmentation of land has had a negative impact on the economic potential of the countryside, its structure, its ecological stability and the restoration of relations to the land and family traditions of farming. Farm restructuring has also had a negative impact on employment in the countryside, on income levels, the socio-demographic structure of the countryside population and on the quality of human relations in countryside society.

From the point of view of owners and users relations to the land, six socio-economic basic categories of land owners and users are identifiable:

- Owners who work and utilise their own land (entrepreneurs - private people).
- Owners who work and utilise land in a collective arrangement (they put their land into the entrepreneurial activities of cooperatives and commercial societies where they work).
- Owners not using the land. The land is leased and the leaseholders pay ground rent.
- Leaseholders who do not own their land. They used leased land as independent entrepreneurs.
- Leaseholders who do not own land. They used the land in a collective way (corporations)
- Churches, municipalities, the State, the creditors of the agricultural enterprises, e.g. private people owning property shares, banks etc.

The main objective of the sociological survey was to evaluate the relations to the land and the penetration of interrelationship among property of land, the use of the land and entrepreneurial interests. From the above-mentioned groups, the investigation focused on those whose property was directly affected by these land consolidations under Act No. 284/1994, 4/2000.

- Individual entrepreneurs.
- Individual land owners who put the land into the cooperatives where they work.
- Owners who leased their land, e.g. leaseholders and renters.

Land Consolidation in the survey area

We selected two locations, each characterized by different types of agricultural production.

The first area, Dřísy, is located in the district of Mělník, about 55 km north of Prague. It comprises the cadastral area of Dřísy. The overall area of land under consolidation is 633.5 Ha. This location has the characteristics of a fertile lowland region.

The second area, Hornosín, is located in the district of Strakonice, about 120 km south-west of Prague. It comprises the cadastral area of Hornosín. The overall area of land under consolidation is 267.2 Ha. This location has the characteristics of a foothill and mountainous region.

Characteristics of areas suitable for land consolidation project

Name	„Dřísy“	„Hornosín“		
Area	Central BOHEMIA	South-east of the CR		
Relief	Lowland in Elbe river basin	Foothills of Šumava – upland		
Production Area	Favorable condition High soil productivity	Less favorable conditions (LFA) Low soil productivity		
Sea level	210 m	450 m		
Climatic Conditions	Warm, moderately dry region, Average yearly temperature 8-9° C, average yearly aggregate precipitation 500-600 mm, probability of the dry vegetation season 20-30 %	Moderately warm, wet region, average yearly temperature 6-7° C, average yearly aggregate precipitation 650-750 mm, probability of the dry vegetation season 5-15 %.		
Soil Character	Very heterogeneous soil character. Prevalence of clayey to clay-sandy soils on fluvial sediments, very fertile. Sandy soils are under irrigation.	Brown soils on granites and gneiss, from light to medium gravelly, medium heavy. In lower parts of the area the soils are marshy.		
Soil fund Structure in ha	arable land hope fields vineyards gardens fruit orchard meadows pastures	584.2 - 0.9 22.2 3.0 1.8 1.4	arable land hope fields vineyards gardens fruit orchard meadows pastures	165.6 - - 4.8 - 61.3 6.0

	agricultural land total	613.4	agricultural land total	237.7
	forest land	160.7	forest land	60.7
	water area	5.6	water area	19.2
	built up area	18.0	built up area	3.6
	other areas	45.3	other areas	19.7
	total	843.1	total	340.9
Area under consolidation in ha		633.5		267.2
Documentation executor	Legal entity, HYDROPROJEKT PRAHA a.s.		Physical persons Ing. Josef Honz, CSc., Písek	

The reasons for the implementation of land consolidation in both locations was to provide a solution to land holding in connection with finished restitution (under Act No. 229/1991 Coll.), 'Requirements for singling out lots of land for agricultural production purposes (by new legal entities and physical subjects', the creation of useful lots, the creation of more practical shapes and sizes of particular lots of land and the corresponding road network completion, the protection and creation of the landscape and finally, the solution of water management and anti-erosion problems in this area.

Land consolidation was initiated on the basis of requests from land owners and the municipal authorities. Land consolidation in Dřísý commenced in 1994 and will be completed at the end of 2001. Land consolidation in Hornosín commenced in 1995 and will be completed at the end of 2000. The owners of lots of land participating in complex land consolidation have various rights to land. In both locations, as in the CR generally, there are basically two groups of owners.

The first group is comprised of landowners whose ownership rights to land were suppressed in the past (before 1989). The second group comprises of landowners whose land was seized in the past and, after 1989, was returned by the process of restitution. All claims of real estate owners are documented by abstracts of ownership lists (OL), on the basis of data in the set of descriptive information (SDI) in the district cadastral offices. (A model ownership list is in appendix No.1). In the whole process of the creation, negotiation and approval of land consolidation propositions, all the data on real estate ownership were continuously updated. (For basic data on ownership and type of agricultural management - land fund usage - see annex 1,2).

4.2.1 *The Methodology applied*

The investigation was carried out in May 2000 in the two chosen districts, in the villages of Hornosín and Dřísý. They were the places where the consequences of the land consolidations could be seen. In these localities, the analysis related to the official documentation of land consolidations, e.g. the land office, town hall, cadastre, consultation bureau etc., and sampling according to the owner-user criteria, was performed. A total file of

48 respondents was created: 18 individual owners, 27 owners - members of cooperative farms and 3 leasers/ renters.

The data resulting from the standardized interview with the respondents, done face-to-face, was registered into the questionnaire. The questionnaire included 53 questions and seven subject areas were included:

- The identification of the holding of the respondent.
- The history of land holdings of the respondent.
- The degree of information about the possibility to reclaiming ones land ownership.
- The expectations of the respondent from land consolidation.
- The purposes of the respondent regarding the land holding.
- The socio-economic hindrances of the respondent in relation to land consolidation.
- The faith of the respondent in the local authorities and in the decision-making bodies and institutions of the land consolidation process.

The data was analysed through basic statistical analysis.

4.2.2 Observations from the field

A history of land holding of the households of respondents:

Prior to the collectivisation of the 1950's, private farmers and people with smaller areas farmed this region. During the enforced creation of the agricultural cooperatives, the owners had to combine their properties for a collective type of farming. The larger land entities with a greater scale of farming were created from the smaller original lots. Formally the land stayed in the possession of the original owners, but they were not allowed to work the land and the land rent was not paid (the land was still the subject of inheritance). For individual use, they could keep only a limited area (usually up to 0.5 Ha), these private lots were usually located behind the peasants' houses (gardens etc). They were not suitable for large-scale production technology.

In the period of the transformation process, some owners decided to start farming. These people were given the plots of cooperatives for the temporary use, in order not to burden either starting farm enterprises or the cooperatives. Largely the new farmers were given consolidated lots for their use. The problems with the use of land started to be solved, but the problems of ownership still persisted. This discrepancy is being resolved by the complex land consolidations. Complex land consolidations will also solve the problem of restitution.

In this region, a land market practically does not exist. After 1989, farmers neither purchased land (apart from very small areas) nor sold it. There are some private owners interested in buying land, but not in selling it. Prior to collectivisation, property was passed on to one heir who farmed the land. The inheritance and, at the same time, usage of land created a firm mutual relationship: 'the farmer- the land'.

During socialism, the ownership of collectively used land made little sense and the relationship to the land was weakened. After the transformations of 1991, the relationship is being restored with difficulty. Chiefly, the land is not used by its owners and becomes the subject of leasing to entrepreneurs. The predominant way of inheritance is not optimal in relationship to the land and from others aspects. The most common form of inheritance in families where the owners do not farm allows all the heirs inherit every lot. The transactions

with of plots demand the approval of all of the heirs. The number of heirs of plots still increased, and at the same time, people seeing land only as a source of income (e.g. leasing or sale) become owners. These people do not have a real and special relationship with the land.

The Identification of land holdings of respondents:

Entrepreneurs largely farm their own land, the average area of these farms is about 10 hectares. The 'legal persons', or enterprises, farm largely on contract leased land. Within the total survey area, 'legal entities' farmed an area of 900-2,400 hectares. Rent is paid in money, although there is the possibility of a payment in products. The level of rent is approximately one percent of the official price of the land (in the investigated region a yearly rent of 800 to 1,200 Crowns per hectare is paid). The lease contracts are concluded with all owners for every plot, regardless of the owner's relationship to the enterprise (e.g. members or shareholders, employees of the enterprise or those outside the enterprise). Some of the lots in the cadastral units are owned and used for self-consumption e.g. a peasant's private lot, or for recreational purposes.

The purposes of respondents regarding the land holding:

Due to the lack of land offered for purchase, and a shortage of capital and credit on the buyers side, the land market is not fluid. The small number of transactions that do occur, typically involve buyers that are individuals, not corporate bodies. Leasing land to increase the size of a farm is also relatively uncommon within individual or family operated enterprises. The respondents are largely satisfied with the substituted land, obtained during the process of simple land consolidation. (In the process of complex land consolidation, they did not demand the restitution of the original lots, but claimed ownership rights to the land they were using at the time.)

An assessment of people's attitude towards guided land consolidation:

- The degree of information from respondents about the possibilities of settling owners' rights to the lots:

It was revealed that the degree of respondent's information depends on the stage reached in the complex land consolidation process. The Land Office (DLO) provides the information for participants correlated to their personal interests, regardless of the character of his or her enterprise. The best informed people with an interest in having their land consolidated are those with entrepreneurial aims in agriculture.

It was discovered that there is high degree of information where simple land consolidation had been carried out, prior to the more complex process. The majority of owners, with an interest in entrepreneurial activities, participated in simple land consolidation.

- The trust of respondents in the local authorities and in the decision-making bodies during the realization of land consolidation:

The mistrust in the decision making bodies (State institutions) involved in the process of complex land consolidation appears in the first stages of the process and includes all

ownership categories, regardless of the age or area. Mainly, in the category of older owners, the mistrust is historical, these owners did not overcome the feelings of injustice and they felt that their interests were being harmed. During the complex land consolidations, some of them disapproved and launched complaints.

The prevailing attitudes of the people in the village are very significant in the process of complex land consolidation. If, for example, complex land consolidation is carried out through the entrepreneurial initiative of only two people who want to obtain land of better quality, possibly to the disadvantage of other owners of small areas, then this obviously has negative consequences on relationships in the village. In the case of the participation of the private consulting bodies for land consolidation initiatives, the consultant being native to the region is a very important factor, because they have intimate knowledge of the situation and the owners of the land know them or their families.

The expectation of respondents regarding the land consolidation:

The respondents expect the following improvements from land consolidation:

- To settle ownership relations to the land (these expectations do not differ from one form of enterprise to another).
- To make accessible to farmers every lot belonging to them, and the total landscape area accessible to all inhabitants of village (these expectations do not differ significantly according to the form of farming).
- The consolidation of split holdings and the settlement of the discrepancies between users and owners (in the group of individual entrepreneurs).
- To facilitate the leasing and selling of the larger and more accessible lots. This would have a prospective impact on the increase of the market price of land and on the level of rent set by the landlords.
- To achieve a better arranged appearance of the landscape with a positive impact on the restoration of the relationship to the land, to public property (in the group of individual entrepreneurs).
- The restoration of the characteristic aspects of the landscape and the availability of its aesthetic and recreational values (in the group of individual entrepreneurs).

To gain the required consent of the majority of owners for the proposed design of complex land consolidation it was necessary, in the case of the older owners, and their neighbours to explain every step of the land consolidation process. Sometimes the unclear ideas of owners about their plots and the state of their relations with neighbouring owners could be inhibiting factors in the land consolidation process. During the process of complex land consolidation projects in this region there were conflicts of interests, misunderstanding of the institutions, mistrust and false accusations that had to be overcome in order to achieve the aim.

4.3 Conclusive summary/remarks

The main conclusions of the sample sociological survey are:

- The land market does not function and the current level of land rent is low.

- The entrepreneurs - physical persons - farm on the consolidated lots which they obtained as replacement for their original split lots, they have an interest in the termination of the settlement of owners' rights under the preservation of the larger land entities, they have also a potential interest to buy land, but not to sell it.
- Generally, enterprises of 'legal persons' (or associations) farm on leased consolidated land. They have an interest in leasing other land. They sense a potential risk in the splitting of holdings, because of the release of the plots after completed complex land consolidation.
- The owners of land who do not work it and lease it to users do not usually have an interest in complex land consolidation.
- The relation to the land is greatly weakened. It is being restored slowly and with difficulty.
- At the present time, the custom of land inheritance does not support the easy disposition of land.
- There are four categories of owners in the process of the complex land consolidation: emotional (nostalgic), speculative (astute), indifferent (collectivist) and rational (entrepreneurial).

5 Conclusions and summary of the major results of the study

Land improvement and parcel restructuring are accepted as the two of the main challenges in agriculture and rural development in the Czech Republic (CR). The primary objectives of land consolidation in the CR are:

- To complete the transformation of ownership rights.
- To enable farming on people's own land.
- To organize land resources in the best possible way and to make them accessible.
- To facilitate investments in land with the aim of protecting the land while enhancing the landscape.
- To clarify the operational and clear identification of ownership titles required for development of a land market.
- To improve ecological stability.

Land consolidation (LC) objectives, and other related activities of land management (land bank, leasing, land use directives etc) are aimed at mobilising and developing land as a central factor in the development of the economy.

The main advantages in the course of designing and implementing land consolidation in CR are:

- The legislature concerning land consolidations is at a very good stage and is already harmonised with EU legislature.
- The Private sector is active and ready to do more, although consultancy work is necessary.
- Land owners are interested in direct and indirect use of their land and also in land values.
- There are marketing opportunities presented by the proximity of central Europe's large markets, but access to more information about them is necessary.
- Technical knowledge/expertise and personal skills are available.

Experience from Land consolidation and Land and Geographical Information Systems (GIS), pilot projects already exists. Land consolidation experiences are already widespread (mostly simple and fast, but with relatively modest reorganisation targets) and can easily be further developed. Also LIS / GIS experiences approved in pilot projects can be relatively easily extended to start creating the basis for a nation wide planning and multipurpose management.

- There already exists a well qualified human potential (survey and civil engineers, agricultural experts, environment specialists, machinery technicians and last, but not least, economists) that only need to be trained in the special 'know how' for target orientated new tasks.
- There is relatively good computer equipment, no older than 3 to 5 years.
- There is a relatively good institutional structure, from the Ministries to the Districts and Municipalities.

The main problems in designing and implementing land consolidations in the CR are:

- The great potential of thousands of square kilometres of state owned or state managed land is inhibited by possibly justified compensation claims and ancient owner rights, which have not yet been raised, but formally may still exist with original and later owners now settled on expropriated land.
- The purpose and results of the targets of land reorganisation are often so modest, that the administrative and survey costs are almost not justified (this could be soon be made more economically worthwhile by extending the results without considerably changing the expenses).
- The poor marketing structure, with problems that cannot be solved by a land market .
- The high fluctuation within leasing systems.
- The lack of software products for the creation of digital maps in cadastral offices and designers' offices.
- Ortho-photomaps are available, but often not consequently used in their extended variety of application. The special knowledge of foreign experts is needed in this area.
- The authenticity of property limits in map and book registration (land use) has been lost in around 2,200 cadastral areas. To reliably clear up these deficits for planning, reorganisation and land use in general is very time consuming and requires highly qualified and experienced staff.

The overall lack of financial means for implementing land consolidation at a rapid pace, which would harmonize with the needs of land consolidations in the CR with those of the countries of the EU is a limiting factor. It is assumed, that the shortfall of resources will be partly compensated from the resources of the SAPARD programme of international assistance for the candidate countries for EU admission. It is assumed that the EU contribution for this measure is 75 percent of public expenditure. This contribution is approximately 3.5 to 5 million Euros per year.

The FAO project Order No: 7246; 'The fragmentation of land holdings and its potential economic and social impact on the rural society in the four candidate countries of the EU: Bulgaria, Czech Republic, Hungary and Romania. (A comparative study)', was successfully passed to the Ministry of Agriculture and to the Central Land Office of the CR for practical usage.

5.1.1 *Conclusive summary and remarks*

In the pre-accession period without complex land consolidation, it would have been very problematic to have profited from the SAPARD program which focused on the countryside and on the enforcement of the non-productive functions of the landscape, e.g. tourism, cycling etc.

For the agriculture control system (IACS) it would be necessary to ensure that reliable maps showing land use are the result of complex land consolidations. IACS requires the filing of user relations to the lots visible on the surface. It will take time and will be difficult financially and technologically to correct the present situation in land registration.

The clarification of the unclear relations between the owner and user, to establish the situation when the farmers farm on their lots or regularly leased lots, will introduce transparency in the use of agricultural land. It will enable the allocation of the subsidies related to the area of farmed land and to its quality, e.g. in the case of the compensation subsidy for disadvantaged regions.

It will be necessary to ensure confidence in the cadastre and to correct the lack of clarity in ownership relations. The unfinished allotment process is very problematic. It creates great uncertainty over the owner or about the extent of ownership. A large percentage of owners is registered on the basis of dubious information. The consequences of the unfinished allotment process, which was executed in the post-war period, make it very difficult for the citizens of these regions. A very similar situation exists in the regions with an incomplete consolidation process, which was interrupted in the 1950's and has not been finished until the present day.

The consequences of the unfinished allotments and consolidations have a serious impact on the preparations of investment aims and on the development of cities and villages. It complicates regional planning and the construction process and could be an obstacle for the flow of foreign investment into the CR. It creates problems for the tax offices during tax collection from real estate and it also complicates the selling of State land.

6 Annexes

6.1 Annex 1: Abbreviations

BPEJ	- system of land evaluation
COGC	- Czech Office fo Geodesy and Cadastre
CSO	- Czech Statistical Office
DLO	- District Land Offices
KC	- Czech Crown
LC	- land consolidation
LF CR	- Land Fund of the Czech Republic
MoA	- Ministry of Agriculture of the Czech Republic
OL	- ownership list in register of real estate
SAPARD	- Special Accession Programme for Agriculture and Rural Development
SDI	- set of descriptive informations of register of real estate
SGI	- set of geodetic informations of register of real estate
SFTR	- State Fund of Market Regulation
SGFFF	- Support and Guarantee Fund for Farmers and Forestry
SLC	- simple land consolidation
TSES	- Territorial System of Ecological Stability
UPU	- Central Land Management Office
VUZE	- Czech Research Institute of Agricultural Economics

6.2 Annex 2: Land consolidation in Drisy before and after (CLC)

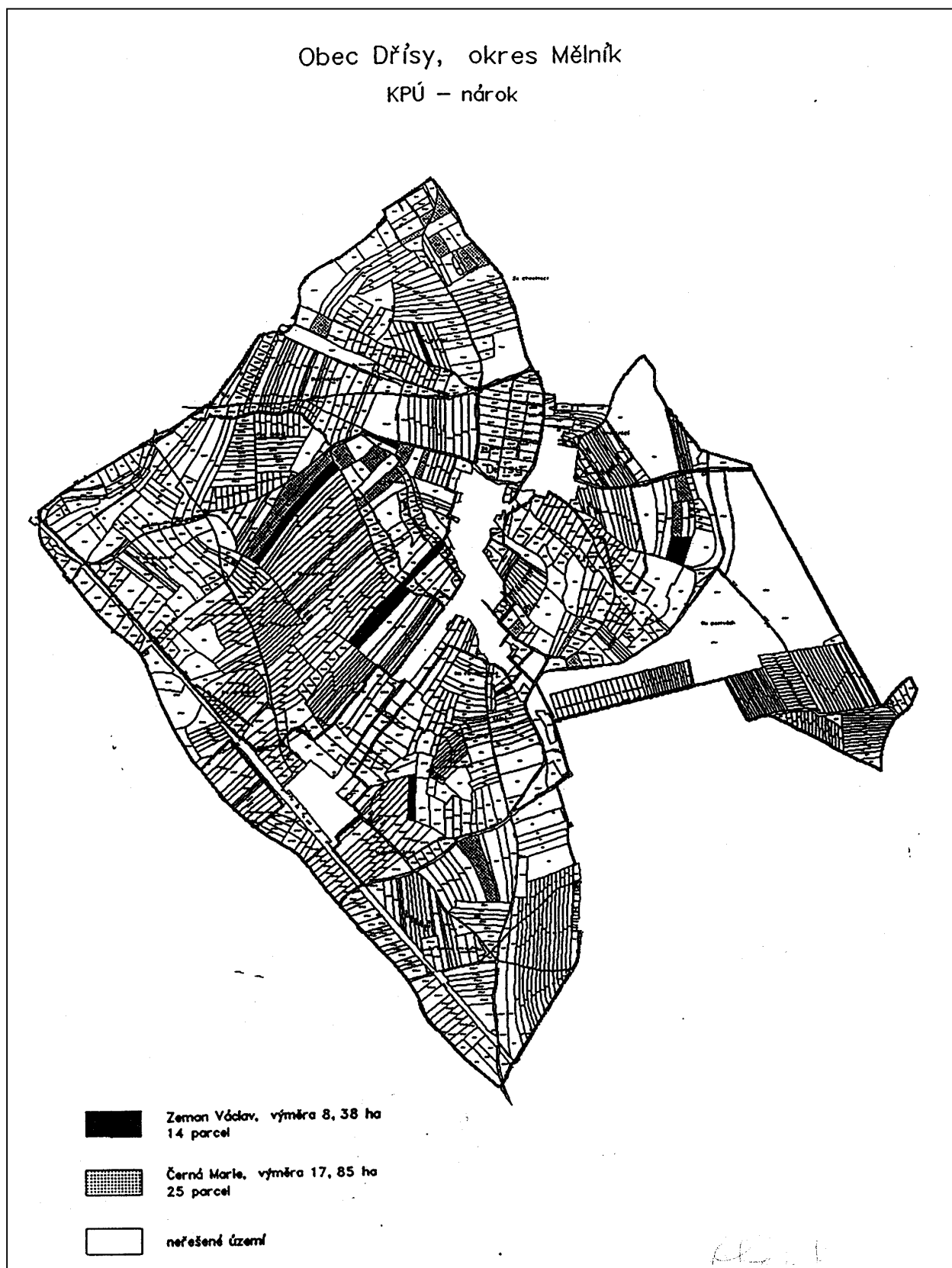


Figure : Village (Perish) DRISY, District Melnik – Before CLC

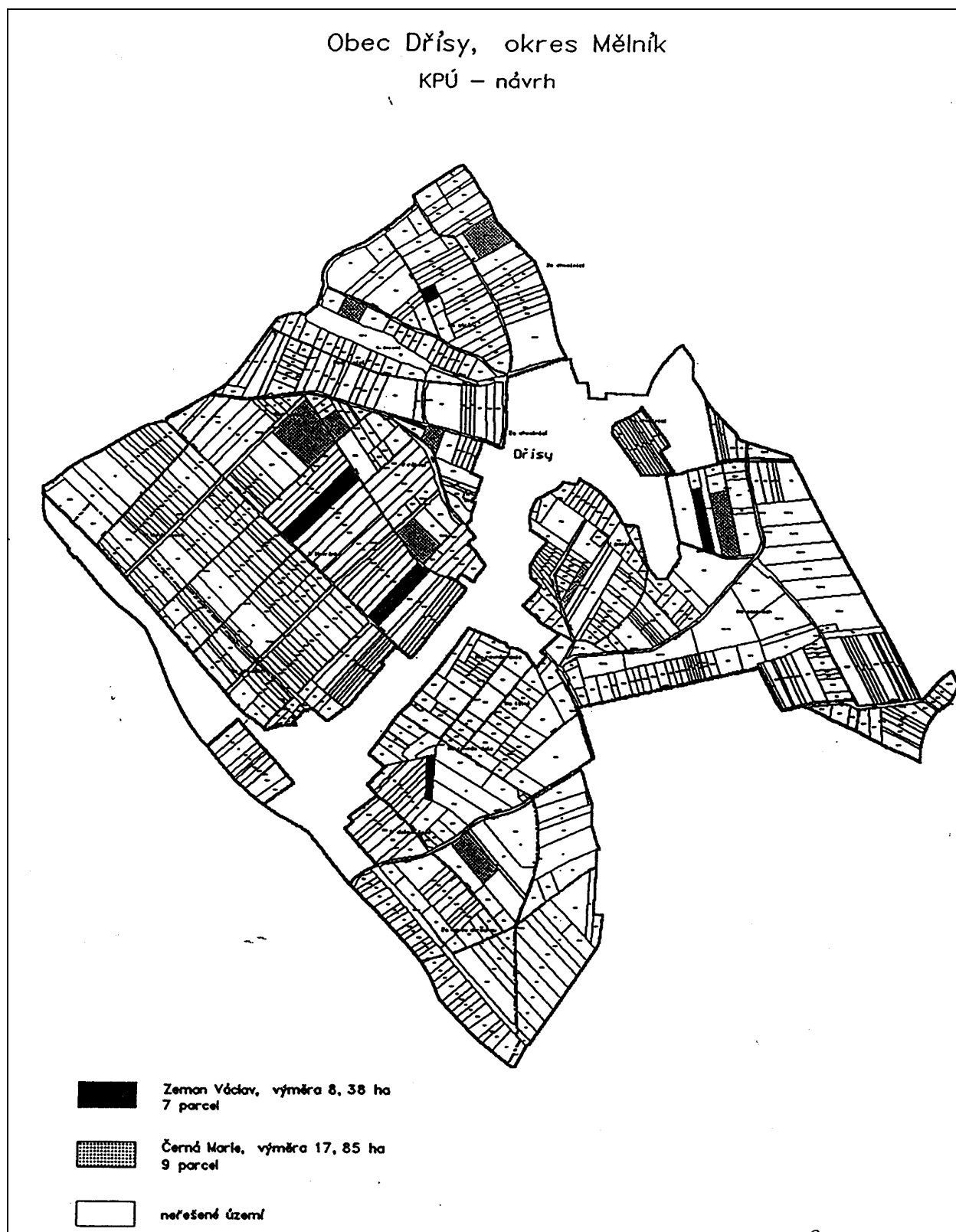


Figure : Village (Parish) DRISY – District Melnik - after CLC

6.3 *Annex 3: Land Consolidation legislative regulations:*

- Act No. 284/1991 Coll., on Land Consolidation and Land Offices, as later amended.
- The order of the Ministry of Agriculture of the CR No. 427/1991 Coll., which ‘Stipulates the Requirements of the Land Consolidation Proposal and Rules for the Evaluation of the Adequacy of Quality and Area of Exchanged lots of Land’.
- Government Order No. 4/2000 Coll., on the Execution of the Act on Land Consolidation and Land Offices.
- Order No. 179/1998 Coll., together with ‘temporary directions for land survey and design works in land consolidation for the use of the real estate cadastre’, issued by the MoA of the CR, CLO and COGC on October 12, 1994, under ref. No. MoA 4199/94-440 and COGC ref. No. 4735/94-23.
- Act No. 229/1991 Coll., On the Adjustment of Ownership Rights to Land and Other Agricultural Property, as later amended.
- The ‘Temporary Guidelines for Complex Land Consolidation’, issued in 1995.
- The Decree of the Government of the CR No. 194 of April 2, 1997, on Introducing Land Quality Ecological Units in the Real Estate Cadastre.
- Other binding rules and regulations, principally those regulating the real estate cadastre, environmental protection, wildlife and countryside protection, the protection of the Agricultural Land Fund, BPEJ (system of land evaluation) valuation, the Water Act, the Building Act etc.

6.4 *Annex 4: a description of land consolidation procedures*

Act No. 284/1991, Coll., and Government Order No. 4/2000 Coll regulate the speed of implementation of land consolidation. The procedure is as follows:

- (1) The DLO requests competitive bids for the selection of the most suitable land consolidation project designer. The actual awarding of the contract is usually takes from two to six months, assuming that the statutory time limits under Act No. 199/95 Coll., on government contracts, are adhered to.
- (2) The Land Office Department of the District Authority summons an initial meeting of all the landowners which takes place 14 days after the sending out of invitations.
- (3) Between 5 and 9 of the participating land owners depending on the number involved in the initial negotiations are elected to form a board of deputies.
- (4) In cooperation with the land office the designer delineates a perimeter of the area to be consolidated, including boundary changes of lots of land and cadastre. Both landowners and municipal representatives of all concerned municipalities should approve the changes in the cadastre boundaries. This can take more then 6 months.
- (5) The project designer carries out an area survey and land quality evaluation. Changes in the land quality of lots of land must be clarified with the Research Institute of Amelioration and Land Protection. This can take up to 12 months. The determinations of the perimeters of the consolidated area, its marking out and collection of basic maps are done by the project designer, in cooperation with the Commission of Representatives of Land Office and

Cadastre. Depending on the size of the consolidated area this takes around 6 to 8 months. The marking out of the area of land for consolidation usually takes place outside the growing season.

(6) The project designer, in cooperation with each participant, determines the initial claims of landowners. It is necessary to determine the following facts:

- The area of the claim – i.e. the size and dimensions of the lot of land.
- The quality of the claim - i.e. the price of the lot of land.

Original claims determined in this manner, are processed into comprehensive summary tables called ‘claims balances’. The approval of the claims of landowners who participate in land consolidation can take from 2 to 8 months, dependent on the quality of the base documents and the extent of the landowners’ cooperation.

(7) The project designer charts a summary map of ‘claims’, i.e. Plots of land before the land consolidation adjustments. The activities listed under paragraphs 1 to 7, i.e. ‘preliminary’ or ‘preparatory’ work usually take from 1 to 2 years. Before the exchange of plots of land proper, the project designer works out a plan for the multifunctional framework of complex land consolidation, in which he takes into account the broader social interests of all the parties to the land consolidation project.

The multifunctional frame of land consolidation contains the following requirements:

- The delimitation of the transportation system, (e.g.. the network of field roads.
- The delimitation of the systems of ecological stability (e.g. bio-corridors, bio-centres).
- The delimitation of anti-erosion measures (e.g. the reconstruction of drainage facilities and the revitalisation of water courses and water reservoirs).
- The delimitation of protected strips of land (buffer zones) and the resolution of ownership relations.

(8) The board of deputies, the municipal board and other relevant organisations and institutions then approves the compiled plan of the multifunctional framework. The necessary work for the drawing up and approving of plans for the multi-functional framework usually takes from 6 to 8 months.

The exchange of plots of land requires the elaboration of exchange plans in maps of scale 1 : 5,000 or 1 : 2,880. There are usually 2 to 4 alternatives to be considered by the board of deputies. If the board of deputies approves a particular alternative, it is then discussed with individual landowners.

(9) The proposed ‘new-for-old’ compensation plan has to be discussed with the owners individually. The basis for this is a comparison of the ‘input’, the area and value of old land parcels in situation, and the intended ‘output’ (register and map). The proposed new-for-old compensation plan includes total land needed. Not only for land ownership but also for other common use. It means waterlines, roads, landscape elements and so the total land needed for common facilities, waterlines, roads, landscape elements, etc. also in situation, area and value (register and map).

(10) After the consideration and approval of plan of newly proposed plots of land, the preparation of written and graphical documentation is completed. Based on this documentation, the land office makes a decision regarding the changes in lots of land ownership. The owners of more than two thirds of the overall area of land in the project must approve this decision.

If any of the participants expresses disagreement, after the decision of the land office, the Central Land Office of the Ministry of Agriculture reviews the project of land consolidation proposals. In cases where a landowner disagrees with their subsequent decision The Court decides the proposal. The overall time for the resolution of complex land consolidation is at least 2 years, but can take as long as 6 years. Assuming smooth implementation at all stages, exchange of lots of land and their entry in the land register takes about three years.

An analysis of institutional, organizational and administrative aspects.

Act No. 284/1991 Coll. stipulates the group of participants in land consolidation, and land offices. They are:

- The District Office, The District Land Office - funds provider of land consolidation.
- The District Office, The Finance Department - the owner of a number of lots without identifiable owner.
- The District Office, The Regional Development Department - the development of the infrastructure, town and country planning and zoning.
- The District Office, The Security and Defence department - regarding civil defence.
- The District Office, The Environmental Department - regarding nature and landscape protection.
- The District Office, The Transportation and Road Management Department - development of the transportation network.
- The District Office, The Department of Culture - from the point of view of protected monuments. In the case of land works, there is a duty to inform the Archaeological Institute of the Academy of Science in Prague.
- The District Office, The District Hygiene Department- concerning environmental pollution.
- The Cadastral office - background documents on ownership of lots of land, maps in scale of 1:2,000 and 1:2,880 in map sheets. The design of basic geodetic points and the design and production of the digital cadastral map.
- The Building office - construction work permits (field roads).
- The Forests of the Czech Republic (state owned company), management of forest and forestland.
- The Land Fund of the CR – the manager of land owned by the State.
- Road Management and Maintenance – the placement and adjoining of lots of land and purpose-built communications (forest and field roads) to State roads.
- CEPRO (Czech Product and Oil Pipe Lines) - The manager of resource pipelines.
- The City Office, the Building Department.
- The District Fire-Safety Council.
- The State Irrigation Agency, regional branch: Vltava V.
- The Nature and Landscape Protection Agency of the CR.
- The Ministry of the Environment.
- The District Office.

- The Military Accommodation and Building Administration.
- The Ministry of the Interior.
- STE - Central Bohemia Energetic, owner of underground cables
- STE - Central Bohemia Energetic - Central Administration Prague - in the event of unearthing communication cables - limitations for over-ground cables for the Dřísý area.
- SPT Telecom. - Prague area - underground facilities - informative diagram of long-distance cables for the Dřísý area.
- Central Bohemia Gas - regarding long-distance gas pipes.
- The Regional Water Works. – the water supply network in the relevant area.
- The Archaeological Institute of the Academy of Sciences - allowing emergency archaeological research.
- The Czech Hydro-Meteorology Institute, owner of protective zone of hydrological bore holes.

6.5 *Annex 5: A list of relevant laws related to the land reform*

- Act No. 284/1991 Coll. on land consolidation and land offices, as amended.
- Act No. 229/1991 Coll. on regulation of ownership rights with respect to land and other agricultural assets, as amended.
- Government Decree No. 4/2000 Coll. on the implementation of Law on land consolidation and land offices.
- Act No. 344/1992 Coll. on the real estate register of the Czech Republic, as amended.
- Government Decree No. 427/1991 Coll. detailing the proposals for land consolidation and the rules for the assessment of land quality and area, as amended.
- Act No. 569/1991 Coll. on the land of the Czech Republic, as amended.
- Act No. 334/1992 Coll. on the protection of agricultural land, as amended.
- Decree No. 13/1994 Coll. concerning details of the protection of agricultural land, as amended.
- Act No. 265/1992 Coll. on the registration of ownership and other rights with respect to real estate, as amended.
- Decree No. 327/1998 Coll. laying down the characteristics of the soil typological units and the procedures for their recording and updating, as amended.
- Decree No. 190/1996 implementing the Act No. 265/1992 Coll. on the registration of ownership and other rights with respect to real estate, as amended by Act No. 210/1993 Coll. and Act No. 90/1996 Coll. and the Act of the Czech National Council No. 344/1992 Coll. on the real estate register of the Czech Republic, as amended by Act No. 89/1996 Coll., as amended.
- Decree No. 279/1997 Coll. on the valuation of buildings, parcels and permanent plantations, as amended.
- Act No. 151/1997 Coll. on the valuation of buildings, parcels and permanent plantations, as amended.
- Act No. 77/1969 Coll. on the State Fund for Land Reclamation, as amended.

It is understood that the areas of the above laws and regulations do not appear to be uniformly treated in the EU and seem to be integrated within the legislative framework of individual Member States. It would, however, appear reasonable to state that the above legislation does not contradict EU legislation.

- Act No.114/1992 Coll. on nature and landscape protection, which is partly compatible with EU legislation.
- Council Directive No. 92/43 EEC, on the conservation of natural habitats and of wild fauna and flora.
- Council Directive No. 79/409 EEC, on the conservation of wild birds.

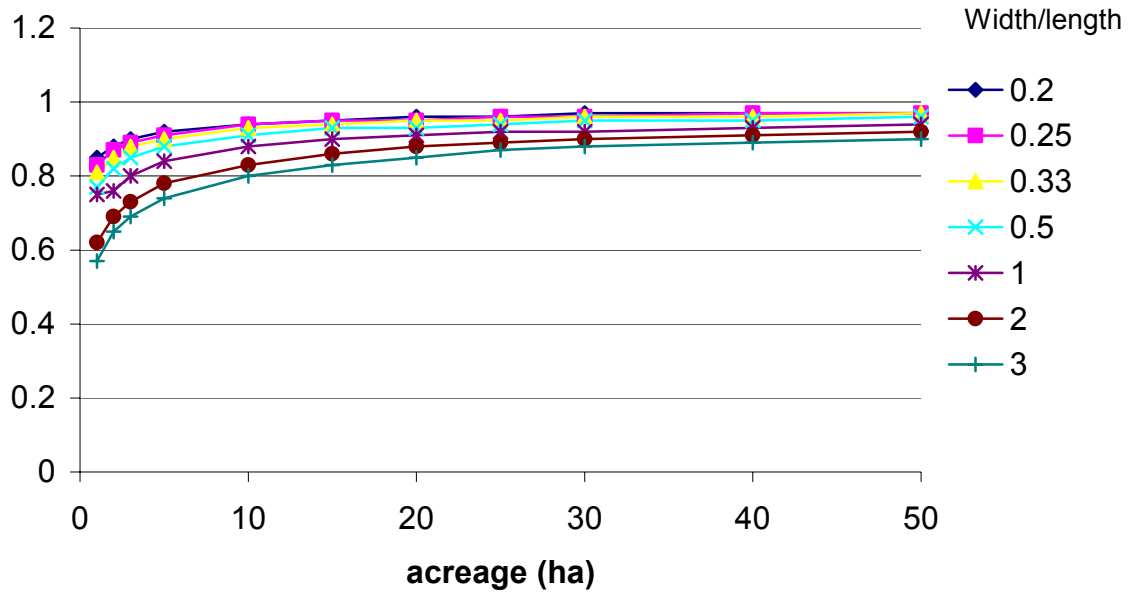
6.6 *Annex 6: Procedures and Regulations for Land Consolidation in the CR*

Land consolidation in the Czech Republic is generally governed by the following regulations:

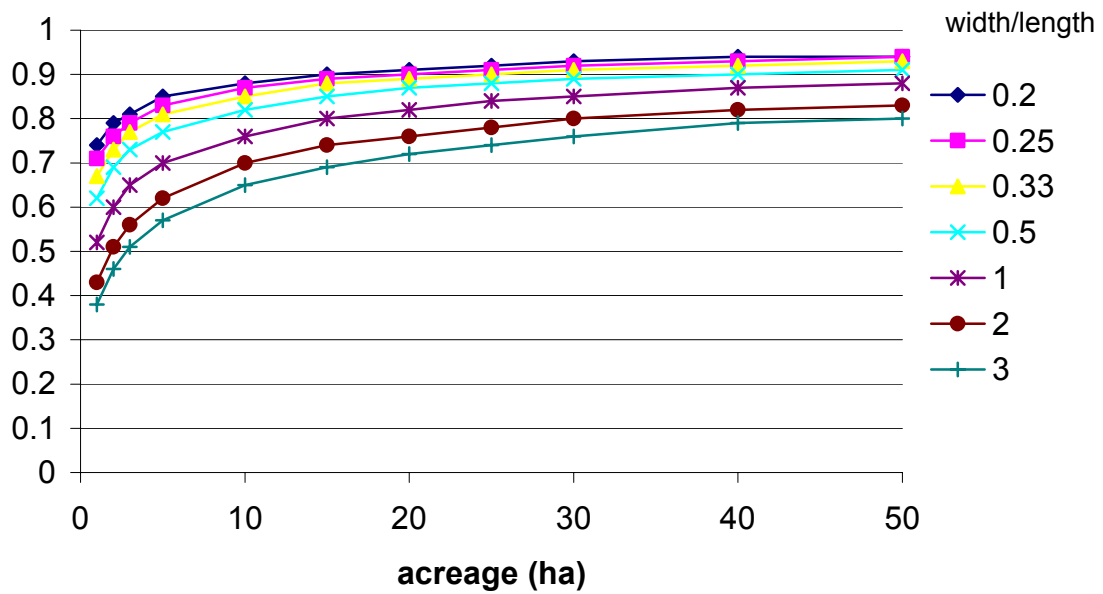
- Act No. 284/1991 Coll., on Land Consolidation and Land Offices as amended later.
- The Ministry of Agriculture of the Czech Republic Order No. 427/1991 Coll., which stipulates the requirements of the land consolidation proposals and rules for the adequacy of the evaluation of the quality and area of surveyed lots of land.
- Government Decree No. 4/2000 Coll., on the Implementation of the Land Consolidation and Land Offices Act.
- Government Decree No. 179/1998 Coll., together with ‘Temporary instructions for land survey and design works at LO for real estate cadastre purposes’, issued by the Ministry of Agriculture of the CR, Central Land Management Office (ÚPÚ), Czech Office for Geodesy and Cadastre (ČÚZK) on October 12, 1994 under ref. No. MZ 4199/94-440, ČÚZK ref. No. 4735/94-23.
- Act No. 229/1991 Coll., on Modifying Ownership Relations to Land and Other Agricultural Property, as amended later.
- ‘Temporary methodical instructions for complex land consolidation’, published by Research Institute for Soil and Water Conservation (VUMOP), Prague.
- Other binding legal regulations, especially the rules and regulations governing the real estate cadastre, environmental protection, the protection of the Agricultural Land Fund, nature protection, the Water Act and Building Act etc.

6.7 Annex 7: GRAPHS

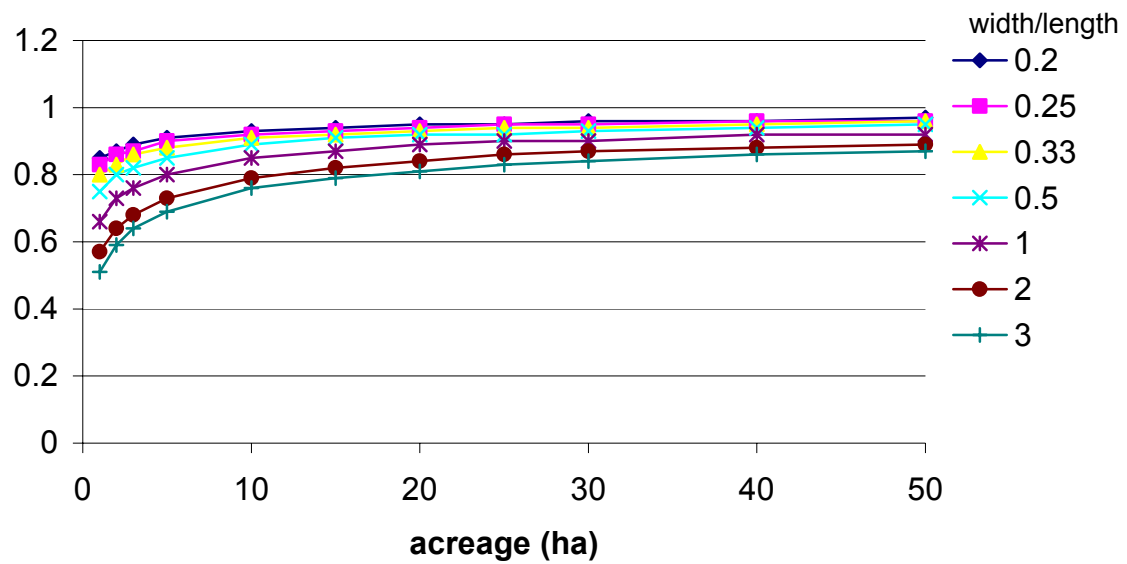
Graph 1: The dependency of coefficient of rotation on the lot for plugging



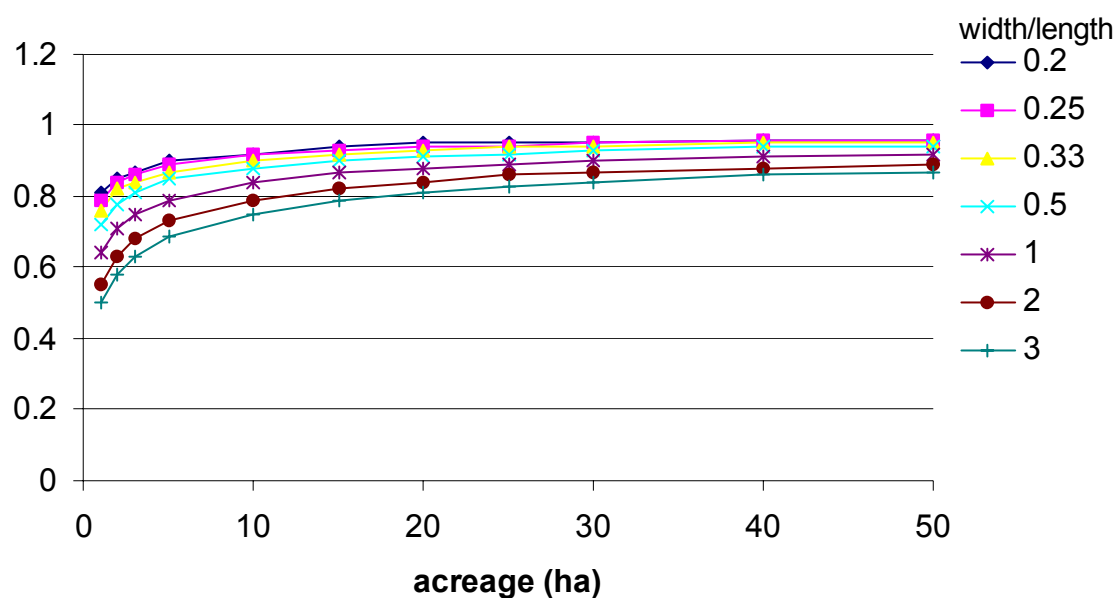
Graph 2: The dependency of coefficient of rotation on the area of lot for sowing



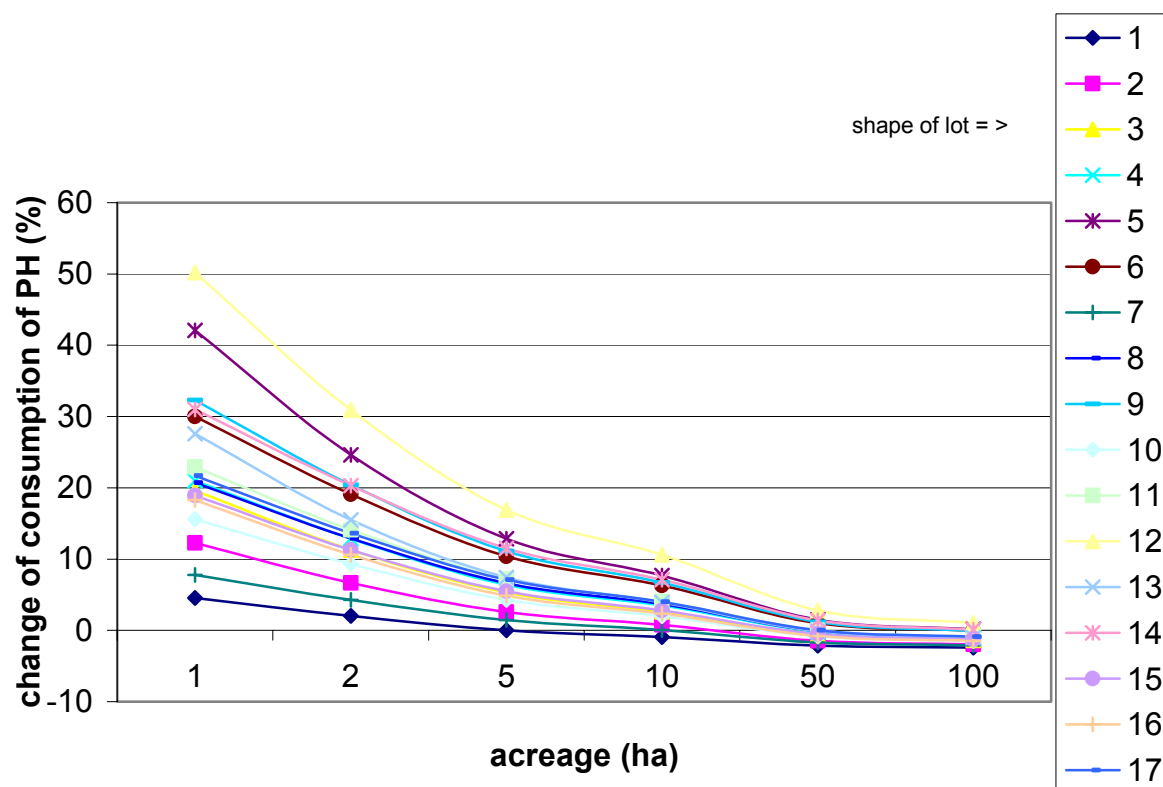
Graph 3: The dependency of coefficient of rotation on the area of plot for fertilization by industrial fertilizers

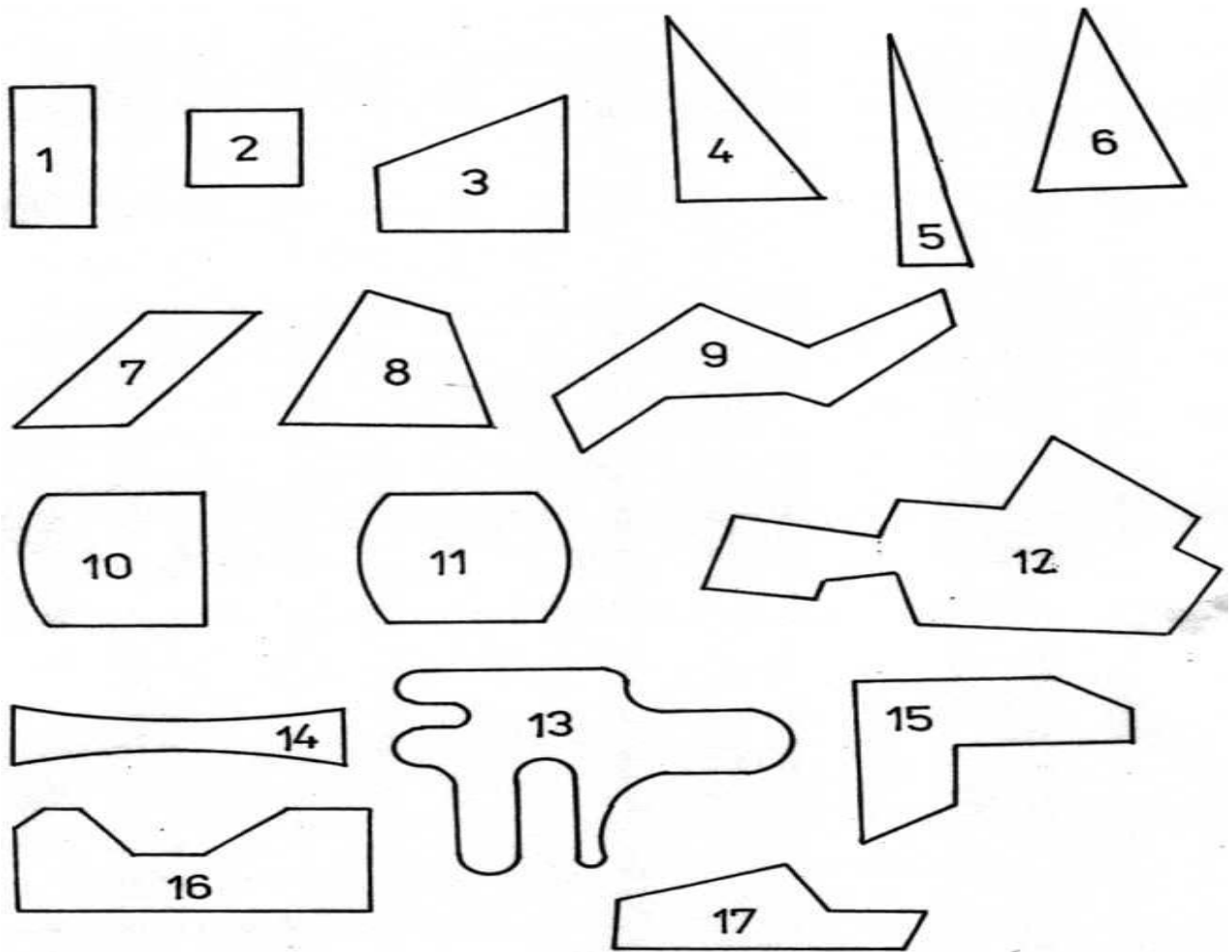


Graph 4: The dependency of coefficient of rotation on the area of the lot for grain harvest

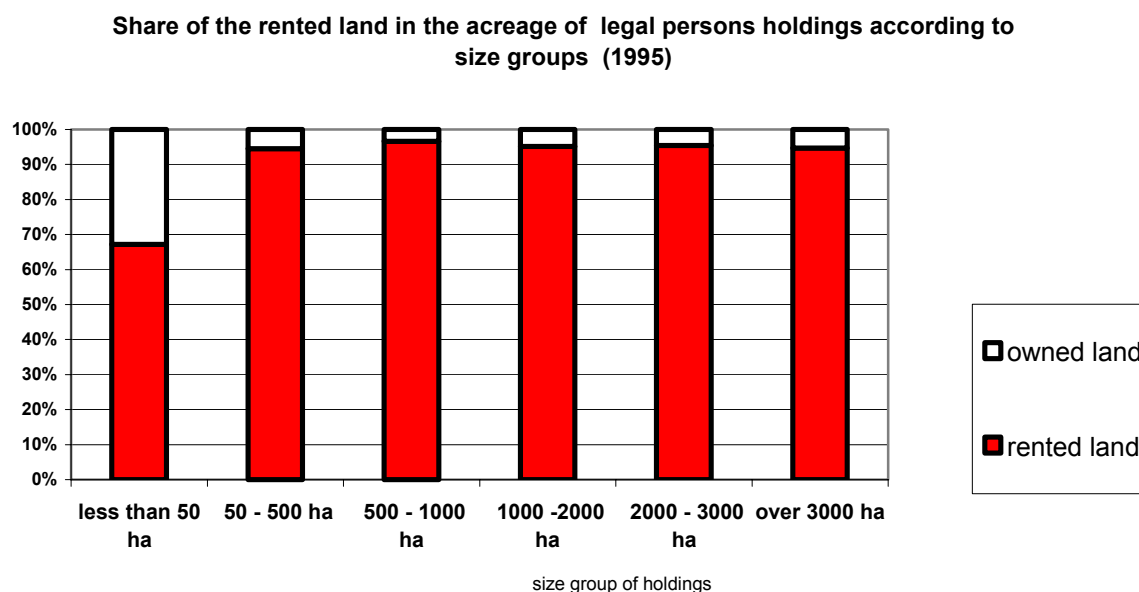


Graph 5: The increase of fuel consumption in relation to the oblong shape (per cent)

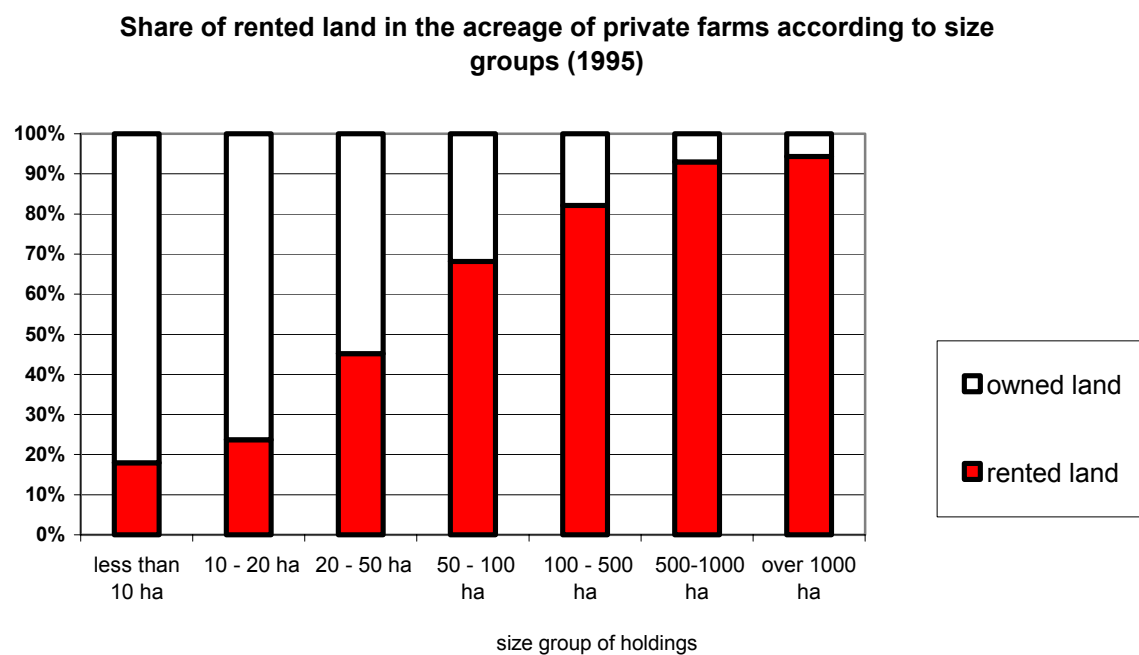




Graph 6



Graph 7



6.8 Annex 8: Tables

Table 1: The evolution of the number of farms according to the form of farming

Form of enterprises	1960	1980	1989
	Number of enterprises		
State farms	270	136	174
Agricultural cooperatives	8 133	1 084	1 024
Private farms	479 867	-	3 205
in it: less than 2 ha	450 731		
2 - 5 ha	16 248		
5 - 10 ha	9 584		
over 10 ha	3 304		

Table 2: Size of the agriculture land

Form of enterprises	1960	1980	1989
	Total area (thousand ha of the agriculture land)		
State farms	862	999	1 089
Agricultural cooperatives	3 099	2 666	2 636
Private farms	328	162	13
in it: less than 2 ha	164		
2 - 5 ha	54		
5 - 10 ha	68		
over 10 ha	43		

Table 3: Average size of the farm:

Form of enterprises	1960	1980	1989
	Average size of holding (ha)		
State farms	3 192.6	7 346.4	6 258.6
Agricultural cooperative	381.1	2 459.1	2 574.2
Private farms	0.7	-	-

Table 4: The evolution of the number of farms of different forms of farming

Form of enterprises	1989	1995	1998
	Number of enterprises		
Private farmer	3 205	24 183	32 365
Agricultural cooperatives	1 024	1 151	875
Limited liability company		1 132	1 526
Joint-stock company		298	570
State farm	174	80	958
Others	.	.	.
Total	4 403	26 904	36 344

Table 5: The total surface of the farmed land of different legal forms of farming and its share on the total area of agricultural land:

Form of enterprises	1989	1995	1998	1989	1995	1998
	Total (thousand ha of agriculture land)			% of total area		
Private farmer	13	826	850	0.3	19.3	19.9
Agricultural cooperatives	2 636	1 666	1 235	61.4	38.9	28.9
Limited liability company		714	781		16.7	18.2
Joint-stock company		269	650		6.3	15.2
State farm	1 089	53	44	25.3	1.2	1.0
Others	558	753	720	13.0	17.6	16.8
Total	4 296	4 281	4 280	100.0	100.0	100.0

Table 6: The average farm size according to the legal status of farming:

Form of enterprises	1989	1995	1998
	Average size of one enterprise		
Private farmer	4	34	26
Agricultural cooperatives	2 574	1 447	1 411
Limited liability company		631	512
Joint-stock company		902	1 140
State farm	6 259	660	46

Table 7: The comparison of the size structure of farms in 1995 and 1931 follows:

Size group	Census 1930	Census 1995	Census 1930	Census 1995	Census 1930	Census 1995
ha of the acreage	Number of enterprises		Area of agriculture land (ha)		Share in the total area (%)	
less than 5	281 845	8 332	963 522	21 759	20.8	0.6
5 - 10	144 084	5 104	1 015 526	37 675	21.9	1.1
10 - 20	92 826	4 857	1 302 450	69 957	28.1	2.0
20 - 30	23 543	2 010	560 741	49 502	12.1	1.4
30 - 50	7 484	1 637	275 206	63 454	5.9	1.8
50 - 100	2 729	1 427	188 964	100 268	4.1	2.8
100 - 200	1 450	786	198 511	111 596	4.3	3.1
200 - 500	443	751	119 375	248 498	2.6	7.0
over 500	18	2 000	13 038	2 844 975	0.3	80.2
Total	554 422	26 904	4 637 333	3 547 684	100.0	100.0

Table 8: The evolution of the size structure of farms of physical persons with basic agricultural production:

Size group	1995	1998	1995	1998
ha of acreage	Number of enterprises		Area of agriculture land (ha)	
less than 10	10447	12208	46 926	61 639
10 – 50	7985	8102	168 300	178 599
50 – 100	1345	1236	91 778	86 455
100 – 500	1109	1173	226 320	245 430
500 - 1000	187	172	130 254	119 569
1000 – 2000	68	67	89 404	88 846
over 2000	15	13	41 362	69 870
Total	21156	22971	794 344	850 408

Table 9: The evolution of the size structure of farms of legal persons with basic agricultural production:

Size group	1995	1998	1995	1998
ha of acreage	Number of enterprises		Area of agriculture land (ha)	
less than 100	362	232	6 148	7 945
100 – 500	365	369	111 958	115 161
500 – 1000	587	563	434 606	428 469
1000 -2000	729	705	1 033 137	1 008 353
over 2000	374	382	1 065 450	1 104 925
Total	2417	2251	2 651 299	2 664 853

Table 10. The tax structure per 1 hectare of the agriculture land

sort of tax	cooperatives		commercial societies		legal persons total		physical persons total	
	1997	1998	1997	1998	1997	1998	1997	1998
tax and payment total	517	551	430	458	479	511	522	504
Property transfer tax	9	18	5	9	7	14	-	-
routes tax	104	104	87	92	97	99	50	75
real estate tax	358	390	296	326	331	363	349	400
in it: lot tax	159	159	142	146	152	155	327	305
in it: construction tax	26	24	18	17	23	22	41	95
Others	24	26	30	22	26	24	123	29

Table 11: Reached and recommended land rent in 1996 and 1997

Interval	1996			1997		
	land price (crowns/m ²)	paid land rent (crowns/ha)	Recommended rent (crowns/ha)	land price (crowns/m ²)	paid land rent (crowns/ha)	recommended rent (crowns/ha)
0 až 2	1.60	150	160	1.60	152	160
201 až 4	3.22	199	322	3.20	202	320
401 až 6	4.82	408	482	4.81	410	481
601 až 8	7.08	713	708	7.07	723	707
801 až 10	8.82	708	882	8.81	707	881
1001 až 12	10.86	1128	1086	10.87	1120	1087
1201 až 1350	12.12	1445	1212	12.12	1436	1212
Total	6.06	541	606	6.05	541	605

Table 12: Rent per hectare of leased land according to economical size of enterprise (EU methodology)

Enterprises	physical persons			legal persons	
	class	crowns/ha	Euro/ha	crowns/ha	Euro/ha
very small	I.	162	5		
	II.	162	5		
Small	III.	361	10		
	IV.	501	14		
Below average	V.	498	14		
	VI.	497	14		
over average	VII.	502	14	112	3
Big	VIII.	846	24	149	4
very big	IX.	850	24	245	7
	X.			396	11

Table 13: Rent per hectare of the leased land according to natural conditions

Productive region	physical persons		legal persons	
	crowns/ha	ECU/ha	crowns/ha	ECU/ha
Maize (the best natural conditions)	1330	37	597	17
beet (very good natural conditions)	846	24	731	21
Potatoes (average natural conditions)	447	13	174	5
Potatoes, oats (less convenient conditions)	761	21	158	4
Mountains	205	6	68	2

Table 14: Rent per hectare according to economical results

Enterprises	physical persons		legal persons	
	crowns/ha	Euro/ha	crowns/ha	Euro/ha
Profit	604	17	336	9
Loss	718	20	363	10
Average	649	18	345	9