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ENVIRONMENTAL IMPACTS OF LAND PRIVATIZATION IN SELECT COUNTRIES OF EASTERN EUROPE AND EURASIA: AN ASSESSMENT OF PRIORITY ISSUES

Prepared for:
The Environment and Natural Resources Division
Bureau for Europe and Eurasia
United States Agency for International Development

Submitted by:

The Environmental Information Systems and Networking Project
(Contract No. EE-C-00-98-00001-00)
DevTech Systems, Inc.

May 30, 2002

Final Draft Report

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Note

This document was prepared by DevTech Systems, Inc. for the United States Agency for International Development (USAID), Environment and Natural Resources (ENR) Division of the Bureau for Europe and Eurasia under the Environmental Information Systems and Networking Project.

The report is based on a project undertaken by a team of local consultant specialists in the countries covered. The first three sections of the report was written by Alexandra Ewing (lead author), and Jim McNicholas (Project Manager for DevTech). Section 4 of the report contains individual country reports written by the project team listed below, based on a questionnaire developed by Gregory Myers and Jeff Goodson (USAID) with comments from Alicia Grimes and Gerald Gold (USAID), J.A. Atchue III (DevTech), and the project team. The statements and opinions expressed herein are not necessarily those of either USAID or DevTech Systems, Inc.

Project Team:

Albania	Dr. Thimaq Lako
Armenia	Ramaz Gokhelashvili
Bulgaria	Yanka Kazakova
Czech Republic	Dr. Jirina Jilkova
Estonia	Dr. Ljubov Gornaja
Georgia	Ramaz Gokhelashvili
Hungary	Judit Zalatnay
Kazakhstan	Alma Raissova
Lithuania	Dr. Daiva Semeniene
Poland	Dr. Zbigniew Karaczun
Romania	Dr. Ioan Abrudan
Russia	Dr. Pavel Kasyanov
Slovakia	Livia Bizikova
Ukraine	Ukrainian Land and Resource Management Center
Uzbekistan	Dr. Raisa Taryannikova

This document is a Working Paper intended for internal USAID review and discussion regarding the issues associated with the environmental impacts of land privatization in the countries covered. The country reports contained in Section 4 have not been formally language edited.

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1.0 INTRODUCTION

After decades of state ownership, centralized economic markets, and collectivized, large-scale agriculture, the countries of Eastern Europe and Eurasia find themselves at various stages in the process of economic reform and political and social transition. The privatization of the agricultural sector, as well as the privatization of large-scale state-owned enterprises, is seen as one of the necessary precursors to moving from a centralized, command economy to a market-driven economy. Land privatization has also been driven by cultural and equity issues, spurring among other things the move towards restitution of forest and farmland in many countries. During the ongoing land privatization process, there have been and will continue to be significant environmental impacts, both positive and negative. This study was commissioned by the Environment and Natural Resources (ENR) Division of the Bureau for Europe and Eurasia in order to begin assessing these impacts. The ENR support contractor DevTech Systems, Inc. implemented the study under the Environmental Information Systems and Networking Project. DevTech retained consultants in 15 countries across the region to answer a survey examining the priority issues associated with the environmental impacts of land privatization.

The resulting study, *Environmental Impacts of Land Privatization in the E&E Region, An Assessment of Priority Issues,* is based on the results obtained from this field survey. It identifies the status of the land privatization process in each country and the key environmental impacts and trends resulting from the process of land privatization to the extent that data was available. Environmental impacts -- beneficial, adverse and neutral – are noted, along with supporting data on the policy, economic and cultural factors that appear to influence and in some cases cause these impacts. This study has identified priority issues for further analysis and developed an initial understanding of the environmental impacts of land privatization in the region.

The study is divided into four sections. Section 2 discusses the methodology used in preparing this study. Section 3 provides a regional overview and identification of priority issues. It begins with a summary of land privatization facts and figures, found in *Table 1*, along with a narrative giving specific country highlights and examples of varying progress in the basics of land privatization. Section 3.3 offers a look into the policy, economic, and institutional context of privatization and provides highlights of specific issues of concern regarding how policies and economic variables relate to environmental impacts. Section 3.4 provides an overview of environmental impacts by sector. This section includes *Table 3, Environmental Impacts*, which provides an overview of the impacts of land privatization on land, air, water, and the impacts of land privatization by sector, agricultural land, forestland, wetlands, and protected areas. Section 4 provides the full text of the 15 country reports.

2.0 METHODOLOGY

This project was conducted from March through May 2002. In March, a questionnaire was developed that would become the basis for country specialists to collect relevant data and prepare country-level surveys on the environmental impacts associated with land privatization activities. The questionnaire was developed by USAID and modified based on comments from the project team.

Regional consulting specialists were located through a combination of contacts in country and known expert groups and organizations. A total of fifteen countries were included in the final study (see the Figure 1 for a list of the countries), based on the availability of local expert consultants within the timeframe of the project. Consultants were given a total of 10 days in

which to conduct data collection and secondary research. All information was to come from written materials, personal knowledge, or information obtained through interviews with other local sector experts. In addition, if relevant data could not be found or did not exist, consultants were instructed to provide an overview of current research, anecdotal information, or hypotheses that would provide a good summary of land privatization in the country. In all cases, consultants were asked to identify the source of data or indicate where information was anecdotal.

Reviews of draft country reports were conducted on a rolling basis and consolidated information from the reports was presented in tabular format. With only a couple of noted exceptions, the information shown in the tables is taken directly from the country reports and provides easily accessible information and insight into potential areas of concern. Unless indicated in the text, the analyses and highlights identified in the report are based on data and opinion of the country specialists. Detailed information can be found in the individual country reports.

While consultants made focused efforts to isolate the environmental impacts of land privatization, this generally proved to be difficult. In most cases, given the economic and socio-political transition context of the region, environmental impacts tend to be the result of a combination of factors including land privatization, levels of legal and institutional development, and economic and market changes brought about by transition to market-based economies. As such, country consultants found that it is important to look at these other factors, and not just at land privatization in isolation. In particular, consultants identified the policy, institutional and economic issues discussed in section 3.3 as significant determinants of the success or failure of the land privatization process and important to the assessment of environmental management and impacts.

Another challenge to developing a consistent methodology in approaching the issue of land privatization in the region is that data is often collected and managed at differing levels of detail. In some cases, land use categories overlapped, official land-use categories had multiple sub-classifications, or the guidelines were modified in the course of the 1990s. In these cases, efforts were made to ensure that data provided in tables are based on the most appropriate data and footnoted when necessary for clarity. The data provided in these tables, however, should not be construed as comparative data or indicative of any *one model* of land privatization. As the results of the study indicate, the environmental impacts of land privatization, both positive and negative, are linked to the specific domestic situation of the country both *before* and *during* the privatization process.

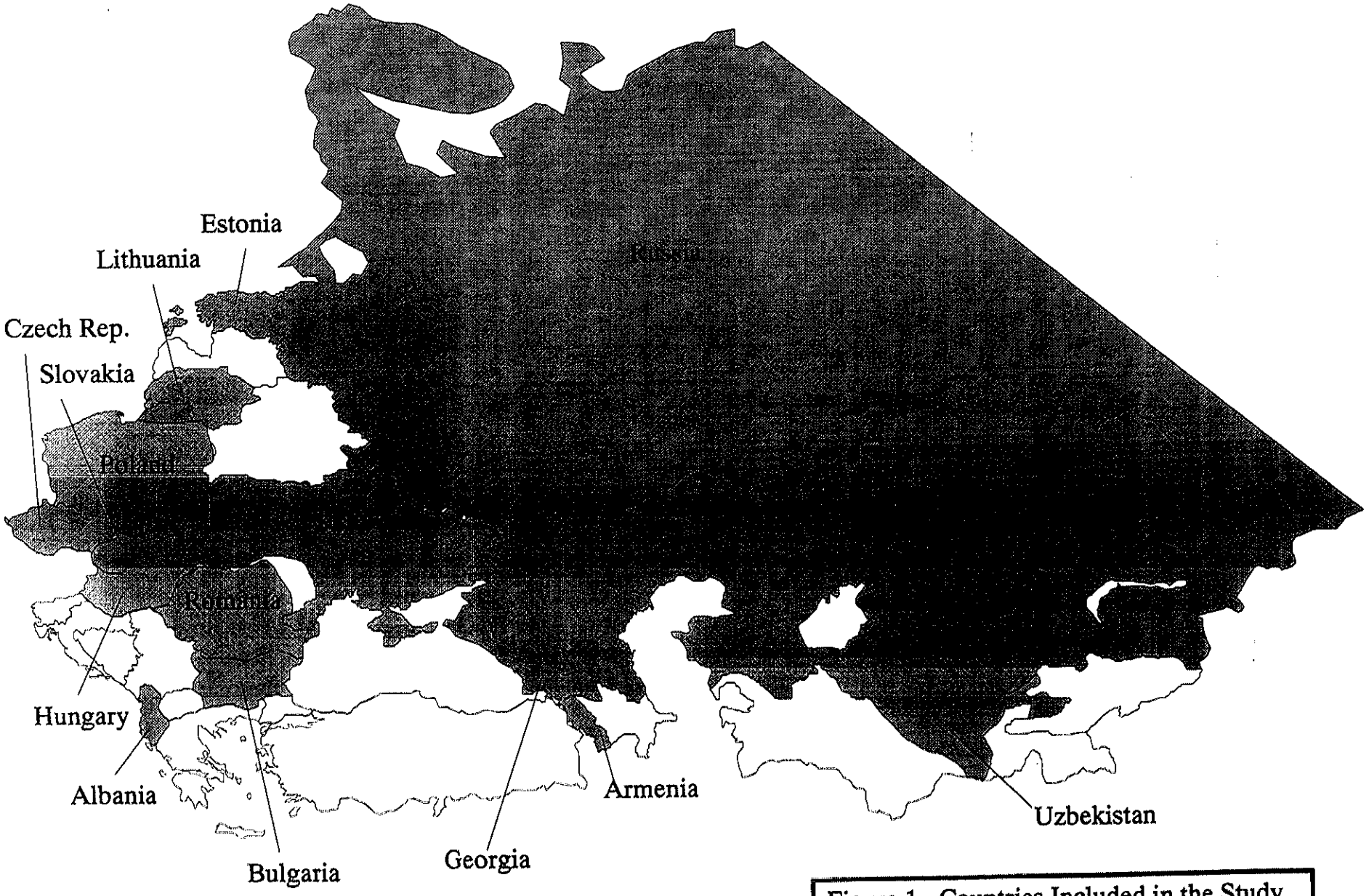

Figure 1. Countries Included in the Study

3.0 OVERVIEW OF REGIONAL INFORMATION

The countries of Eastern Europe and the former Soviet Union (FSU) are diverse in terms of their progress in political and economic transition processes, natural resource bases, traditional attitudes to the land, and land reform agendas.

Pre-privatization approaches to land ownership and management and political developments since reform vary in the countries studied and have an effect on progress in the privatization of land. On one end of the spectrum are Uzbekistan and Kazakhstan, where both governments still retain all land under state-control. Nevertheless, in these two countries there have been some concessions to realities of "land use" if not land ownership. While all land is still state-owned, individuals, private joint stock companies, and various other private organizations now manage a portion of it through leasing. On the other end of the spectrum is a country such as Poland, where prior to 1989, when privatization began, 75% of land was already privately owned or managed. This has helped Poland avoid problems seen in other countries where new landowners lacked land management skills, knowledge, and awareness of rights and responsibilities associated with private land tenure. Somewhere in the middle is a country such as Albania, where land was state-owned and collectivized, but there was already a tradition of communal forest management, and while the land was, on paper, state-owned, it *de facto* belonged to the Komunas surrounding it.

The level of economic restructuring and development within the countries studied also varies. Countries such as Albania and Armenia, with low GDP per capita and a highly labor-intensive agricultural sector face different challenges from advanced EU-accession countries such as Czech Republic, Hungary, and Poland, all of which exhibit higher GDP per capita and lower concentration of labor in the agricultural that sector. In almost all countries, the rural population, one of the primary beneficiaries of land privatization, is a relatively poor segment of society, with limited resources available to them to properly manage agricultural lands and agricultural infrastructure.

Countries have also varied in their commitment and/or consensus for land reform. Poland in fact has actively pursued privatization along with liberalization of the agriculture sector. On the other side are countries including Ukraine and Russia, where the debate over privatization of agricultural land continues and does not appear close to resolution. These countries are not finding consensus for reform and, where reforms have been carried out, have not seen much success. Much of the privatization seen in these and other countries where agriculture was fully collectivized has not resulted in measurable change in the structure of collective farms. "Collective" has been replaced by "cooperative", with much of the same structure and management in place. So while individuals now own land, management of this land is still very much carried out by the collective and farming is still undertaken to provide economies of scale.

3.1 Privatization: Facts and Figures

Table 1, Land Privatization Overview presents data on land privatization in each country as well as some general statistics required to assess priorities at the national level.

Table 1: Land Privatization Overview	Albania	Armenia	Bulgaria	Czech Republic	Estonia	Georgia	Hungary	Kazakhstan	Lithuania	Poland	Romania	Russia	Slovakia	Ukraine	Uzbekistan
General Facts and Figures															
Total Land Area (km^2)	28,748	29,800	110,910	78,866	45,277	70,000	93,020	2.717 m	65,200	312,685	238,391	17.09 m	48,845	603,548	447,400
Total Population	3.35 m	3.75 m	7.70 m	10.26 m	1.37 m	5.5 m	10.11 m	16.73 m	3.6 m	38.634 m	22.36 m	145.5 m	5.42 m	48.76 m	24.5 m
GDP per capita (2000) [1]	$3,600	$2,580	$5,560	$13,780	$9,340	$2,680	$11,990	$5,490	$6,980	$9,000	$6,360	$8,010	$11,040	$3,700	$2,360
Land Facts and Figures															
Agricultural land as % total land area	24.5%	46.8%	57%	46%	31.7%	43.4%	63%	33.5 %	51% [2]	59%	62%	23.8%	48%	71.3%	39.5%
Agricultural Land (km^2)	7,030	13,914	63,014	36,430	1,433	30,197	58,539	909,000	33,700	183,920	148,100	4.060 m	23,424	430,330	176,801
Agriculture's share of GDP (latest year available)	52.8%	40%	15%	3.7%	3.6%	20%	5%	10-15%	5.50%	4%	12.6%	8.4%	5.08%	13%	26%
% Labor in agriculture (latest year available)	50%	55%	26%	5%	5.2%	NR	NR	30%	16.60%	11%	42.8%	13%	5.73%	23.2%	45%
Total Irrigated Land (km^2)	3,242.2	2,870	12,370	1,550	NR	NR	820	22,000 [3]	<50 [4]	1,000	850	45,600	800	24,405	NR
Forest land - % of total land area	36.4%	12.6%	34%	34%	44.6%	40%	19%	4.8%	31%	28.5%	28%	64.1%	41%	17.3%	6.2%
Protected Areas as % of total area	3.9%	12%		NR	12.1%	4.5%	8.6% [5]	5.83%	11.85%	NR	38%	1.9%	1.8%	3.9%	NR
Privatization Facts and Figures															
Land Privatization Process Initiated (year)	1991	1991	1991	1989	1991	1992	1989	1990	1989	1989	1991	1991	1991	1991	1991
Methods of privatizing Agricultural and/or Forest Land															
restitution	X [6]		X	X	X				X [7]		X		X		
vouchers or land certificates		X				X	X	X				X		X	
per capita land distribution	X														
auction, sale or lease			X	X	X	X	X	X	X	X		X	X	X	X
Land registration and titling established		X	X	X		X			X	early stages	X	X	X	X	
Percentage of Agricultural Land privatized	78%	75%	97%	96%	51%	25.2%	90%	0	53%	92.7%	85%	62% [8]	96%	50%	0
Percentage of forests privatized	15%	0	NA	22%	30%	0%	41%	0%	25.90%	<10%, exact NA	15%	0%	53%	2.20%	0%

Footnotes:
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. The majority of this privatized land is held by small-scale family farmers.

All of the countries studied reported that land privatization was initiated between 1989 and 1992 although in some cases (for example Poland) some land had been privatized far earlier than that. A wide variety of methods for privatizing land have been reported in the countries studied and in most cases more than one method has been used.

The methods of privatization included restitution, vouchers or certificates, *per capita* distribution, and auction, sale or lease. The most common method of privatization involved some form of sale or lease of lands. Sixty seven percent of the countries studied used this method at some point. Restitution of family agricultural and, in some cases, forest lands is characteristic of the countries of Eastern Europe. Only Albania made *per capita* distributions. Most countries used, on average, three or more methods of privatization. Eight of the countries had some form of land registration and titling established although the reports indicate that this is one of the more difficult aspects of the entire process.

The amount of agricultural and forest lands privatized appear to be significantly different. Of the 15 countries studied an average of 69 percent of agricultural land and 14 percent of forests had been privatized. The range of the percent of land privatized was very wide in both cases. Privatized agricultural land ranged from 0 (Kazakhstan) to 97 in Bulgaria. Five of the countries studied had not privatized forests and the remaining had a range of 2 to 53 percent of forests privatized.

3.2 Key Trends Identified by Sector

Key trends in each of the main sectors, agriculture, forestry, and protected lands, are discussed below. For each of the issues identified below, a few examples--taken directly from individual country reports--are included to illustrate the relevance and significance of the identified issue. These are not exhaustive findings of the 15 countries covered in the report; rather they are included to guide further potential analysis. It should also be noted that there was not enough information on urban issues in the country reports to formulate generalizations or identify trends in that sector.

3.2.1 Agriculture

1) **Pre-privatization land use and ownership patterns affect each country's approach to and outcomes of privatization of agricultural land.** The country reports indicate that there is a dichotomy between countries of the former Soviet Union, where agricultural land was fully nationalized under collectivization and the countries of Eastern Europe, many of which did not nationalize their agriculture sectors, even though collectivization occurred.

   - In Bulgaria, collectivization of agriculture occurred without taking the further step of nationalization of land. Bulgaria undertook restitution of collectivized land in the interest of equity. This was possible because previous owners still retained title and/or had witnesses who can attest to their ownership rights, which remained even though individual use of their land was not possible.
   - In Albania, where collectivization occurred and all land was state-owned, it has been a difficult or impossible task to locate previous landowners. As such, Albania has decided to distribute agricultural land to all rural inhabitants on a *per capita* basis of 0.1 – 1.0 ha each.
   - In some areas of Eastern Europe, particularly Poland and Hungary, private farming continued even during the collectivization period. In Hungary, collectivization left

cooperatives relatively independent and allowed the co-existence of small private household farms. These household farms were responsible for a full third of all agricultural production. This is second only to Poland, which retained a high degree of private farming, around 75% of the total sector.

- In Russia before 1989, private family "garden" plots were allowed and in fact reportedly produced a good portion of total agricultural output. Privately operated gardens were generally very small plots of land (0.4-0.5 ha) that surrounded homesteads and summer houses (0.08 ha). Today, the author reports that farm production on these private lands, is estimated to produce 50% of the total agricultural production of the country and to be significantly more productive than large agricultural enterprises and newly created larger private farms (50 ha) formed from state-owned collectives.

2) **It has proven more difficult to privatize collective farms, where land use and land title rights were stripped and inefficiencies were built into the system.** For example, in many FSU countries, not only were a whole class of entrepreneurial farmers "purged" (either killed, in the case of the Kulaks in Ukraine, or deported), but farms and farmers who remained were swept into the collectivized system and land titles stripped away. In these cases, privatization is being implemented through vouchers and "land shares," often for "virtual" plots of previous large enterprises. These have generally proven to be an ineffective method of privatization, leaving the door open for corruption and not achieving much on the reform front.

- In Ukraine, for example, land shares were distributed to members of Cooperative Agricultural Enterprises (CAE) in the expectation that this transfer of ownership would lead to de facto privatization of the land. Reality fell far short of this expectation. The author notes,

  "Agricultural land sharing efforts failed to achieve the main objective of reform, that is, to make CAE members "working owners" of CAE land and property. In the aftermath of land sharing, CAE members still remained mere employees. Moreover, there was no zeal to carry on land and property sharing envisaged by the Presidential Decree. Often land share certificates, instead of being issued to CAE members, were locked in safes of CAE general managers. In other words, the collective land and property ownership appeared to rest mostly with the general manager, rather than with ordinary CAE members."

- In Russia, land shares were also issued for a small portion of collective farms, but up until 1996, these were literally "virtual" shares, with no physical plots assigned and nothing on paper that would indicate even the legal right to a plot. Even after 1996, however, the results were not very positive. The author notes that after 10 years "land reform has brought rather negligible positive results in a country dimension/scale." Also, "by 1999 92 percent of new owners of land shares get certificates for the plots, 43 percent of these did nothing with these shares, 38 percent of new owners leased their shares, 17 percent of owners invested their shares in an authorized capital stock. Sixty percent of farmers returned their shares back gratuitously, persons that abandoned villages (moved to towns) often forgot that they are owners of 7-10 hectares (per person)."

- Even in cases where privatization has generally been successful, the privatization of large state-owned farms has been more difficult. Hungary reports, "The low speed of the privatization of state farms is due to lack of market for cropland, the low technical level and the high indebtedness of the state farms, let alone the decreasing demand for agricultural production."

3) **In most cases privatization has been a phased process.** As Table 1 indicates, most countries initiated land privatization early in the transition process, some as early as 1989. In many cases, however, not all of the necessary legislation, regulations and implementing rules have been developed. Full tenure rights developed over the years, which in some cases has been estimated to slow the development of land markets. In other cases, the phased approach allowed for the reform of land policy frameworks to address concerns such as land fragmentation identified during the process.

   - Armenia, which adopted its first land reform laws in 1991, for example, was slow in developing the institutional and legislative underpinnings required for usable land rights and land markets to develop. Instead of providing a quick solution for the problem of what to do with state holdings of agricultural land, the Armenian study indicates that inadequacies in the system for trading, selling, leasing or mortgaging parcels has led to unnecessary land fragmentation in many cases.

   - In Ukraine and Russia, the inability to put in place the building blocks of privatization is less a measured response to a complex issue and more a reflection of the conflicted debate and confusion over how to go about reforming large agricultural enterprises.

   - In Lithuania, phased privatization has allowed for course corrections along the way. Restitution took place as early as 1989, though owners did not initially have full land tenure rights to sell, lease, or mortgage their land. In 1992, privatization of collective farms and other state agricultural enterprises took place. In 1997 substantial amendments of restitution and land reform laws were introduced, including provisions for the transfer of restituted land parcels for equivalent plots in other locations, and the establishment of preconditions for land use. Also size limitations on restituted land were broadened to a maximum 150 ha which is far larger than holding sizes in most of the other countries. Through 1998, however, official land titling was sporadic, while later a more systematic approach was introduced. The next stage of land reform – land consolidation and development of land market – began to be implemented recently. According to previous plans of Ministry of Agriculture, land restitution efforts had to be finalized by July 2002, though currently this deadline is to be extended until year 2004.

The issue of establishing a legal basis for land markets is further explored in the text box below, which highlights the case of Georgia, where relative progress has been made in establishing quick and inexpensive methods of land registration as a way to spur land market development.

The Establishment of a Legal Basis for Land Markets[1]

[1] See Georgia Country Report (Gokhelashvili) in Part 2 for further details.

While privatization in Georgia began in 1992, the land rights to go along with newly privatized property were not in place, deterring formation of efficient land markets and leaving the problem of land fragmentation and land use fragmentation unresolved. Due to the non-existence of a land registration system, landowners were unable to fully exercise their rights to sell, lease, mortgage or otherwise use their land as they saw fit. On March 22 of 1996, in an attempt to resolve this situation, the parliament of Georgia adopted the Law on Agricultural Land Ownership. According of this Law, the allocation of land parcels to private owners was recognized as legitimate.

The Parliament also adopted the Law on Land Registration in 1996. This law provided for the establishment of a system of immovable property registers throughout the country where land ownership certificates, land leases, mortgages of immovable property, and other legal documents which affect rights to immovable property were to be recorded on the basis of specific documents to be presented, including cadastral surveys. A new State Department of Land Management was established to develop and administer the registry system, which will also encompassed all urban land. Later, in 1997 the new Civil Code was adopted, based on which, various kinds of transactions in land were allowed.

In addition, a 1996 law on leasing the agricultural lands remaining in state ownership was adopted (in 1997 the Law was canceled by new Civil Code.) Appropriate commissions were formed in the regional administration; The Ministry of Agriculture had elaborated the regulations and the commissions commenced their work. The agricultural land had to be given on basis of contest. It included the following principles:

1. Price - established through bidding;
2. An obligatory condition - strict observance of agro technical rules and recommendations;
3. Areas above 5 ha had to be taken on lease so that to avoid further fragmentation of the land.

The lease period varies between 1 and 49 years, according to the request. Under this Law all agricultural leases previously made must be transformed into compliance with the new law or they will be considered invalid. There are seemingly no restrictions on sales or leases of privately owned lands as long as they will continue to be used for agricultural purposes. As mentioned above, after enactment of this law 9,396,000 hectares of state-owned agriculture lands or 31.1% of the total agriculture lands were given on lease.

More recently, changes in the Law on Mortgages to allow the utilization of land as loan collateral is under development. This law, if implemented effectively, will be critical for the development of agricultural credit and land markets.

3.2.2 Forestry Sector

Privatization activities in the forest sector vary throughout the countries covered in the study. General trends are noted below, with specific country examples included:

1) **Similar to trends exhibited in the agricultural sector, pre-privatization forest land ownership and/or forest management influenced the process of privatization of forest lands.**

2) **Many countries continue to keep the bulk of forest land under state ownership.** The following countries have retained 100% state-owner ship of forests:
   - Armenia
   - Georgia
   - Kazakhstan
   - Uzbekistan
   - In Poland, foresters, naturalists, and the members of non-governmental organizations have argued against privatization of forests in the late 1990s, and all forests continue to be state-owned.
   - In Russia, 61% of total land area is comprised of forest-land and none of this is privatized. Neither are there plans to privatize forest-land. State funds for care and protection of forest resources have dwindled throughout the 90s.

3) **Privatization of forest land has mainly occurred in Eastern Europe, through restitution efforts.**

- In Lithuania, the restitution of forests is going rather slowly. Only 50 % of forests reserved for restitution have been transferred to claimants' private property so far. As of 2002, 25.9% of forests are private; it is foreseen that after land reform has been completed 40-45 % of forestland will be private.

- Slovakia has a long history of forest legislation and management. Thanks to this history, Slovakia generally has strong regulations to protect forests from being converted into other forms of land use, detailed regulations on reforestation, improvement fellings, and harvesting. This encourages proper usage and management of newly privatized forest parcels. The forest legislation mandates that the forests be managed under Forest Management Plans and be under the control of a specialized forest manager for each type of ownership. Because of the strict regulatory environment and their lack of forest management skills, many new forest land-owners prefer to lease their parcels back to the state. About thirty percent of private owners and twenty percent of community-owned forests lease their forests back to state. While investments and protection measures have generally decreased in state-owned forests, they have increased in the last ten years in privately owned forests.

- In Romania, the author of the country report cites varied results in different regions of the country. In some regions, the absence of the institutional capacity and the legal and regulatory framework to ensure management of forests on private lands have led to increased clear cutting (more than a quarter of the forest lands restituted in

1991 have been clear-felled or now have a canopy closure of less than 0.4.[2], and harvesting in many of the remaining privatized forests has exceeded annual allowable cuts). However, "there are regions in the country where new private owners have followed the more sound forest management practices. The negative environmental effects related to forest block fragmentation have been somehow reduced by restituting the forests in compact groups of parcels at the edge of the state forests."

4) **Alternatives to full privatization of forest land have been identified.**

- Albania: While 85% of forest land remains state owned, 15% has been privatized through restitution to previous owners. An additional 40% of state lands are expected to be transferred to Komunas (communities), which have traditionally held *de facto* user rights. This tradition of community-based management of natural resources is paving the way for improved management through the formal transfer of management control of some forest lands. This transfer of management (in many cases with USAID assistance) to Komunas has already begun and is considered to be a very successful aspect of Albania's privatization efforts (see Text Box under Environmental Impacts).

- Ukraine has an insignificant amount of forestry land privatized. The author of the country report, however, recognized the potential for the transfer of management of some of these forest blocks, particularly where forest management had a history at the local level (similar to the Albania example). While the author states that privatization of forest land could improve the environmental situation, it is also true that privatization of some forest land in specific areas could also give a boost to the economy.

  > "Without doubt, this type of "privatization" could help to provide positive development of the forest environment (but maybe [focused] in mountain areas peopled with indigenous peoples with good historical traditions – Zakarpattia Region, for example). The well being of these people strongly depends on the condition [of the forest]. Some reports said that development of local wood-factories in Zakarpattia areas is a high priority. Perhaps some of these new factories (firms) could be privatized in the future. At the moment there are no official documents (even in preparation) devoted to prospects of privatization of local forests."

5) **Illegal timber cutting is reported in several countries throughout the region, but the causes for and impact of illegal cutting is not fully understood.**

Illegal cutting, including illegal cutting by "poachers" on state-owned lands, by owners on private lands, and by third party "poachers" on private lands, is a reported concern in the countries covered in the report. A direct link between privatization of forest lands and trends regarding illegal cutting, however, is not clearly evident from the country reports.

- In both Russia and Armenia, for example, where all forests remain state-owned, illegal cutting is reported as a major problem from a national resource management and enforcement perspective. However, while both countries report regions where

[2] The Romanian system for scoring the degree of canopy closure in a forest stand ranges from 0.1 for an "almost" completely open site, to 1.0 for full canopy closure. See Romania Country Report (Abrudan) in Part 2 for further details.

deforestation is a concern, it is not clear that illegal timber cutting is necessarily causing deforestation or forest degradation.

- In the case of Estonia, where forest privatization is more advanced, it is estimated that up to 60 percent of private forest owners are not physically based on their forestland, and therefore are not able to prevent poaching or illegal forest cutting.

- In Lithuania, illegal forest felling by private owners on private holdings is noted as a special concern. Currently, almost half of cases of illegal felling are registered in private forests and it accounted for 75 percent of illegally felled forest by volume in Lithuania. In 90 percent of cases, the owners themselves perform illegal forest cutting.

Most country reports discuss illegal cutting as an issue in some detail. Given the wide range of trends and impacts discussed in the limited examples above, however, further country-level analysis of the root causes and possible responses to illegal cutting would be an effective way to identify and address these pressures for both state-owned and private lands.

3.2.3 Wetlands and Protected Areas

Privatization activities specifically focused on wetlands were not generally reported. It is common that wetland areas are included in nationally protected areas, which remain state-owned or are included in other land categories, such as forest lands, or located at the margins of agricultural lands. Across the region, it is reported that after 1990 almost all draining of wetlands ceased, partly as a result of ownership changes and partly due to the economic downturn experienced throughout the region. In many of the countries studied, the restoration of wetlands as well as the creation of new wetland areas is commonly reported.

Land belonging to existing or newly created protected areas has remained under state ownership and under state management throughout the region. In most country reports, there are noted instances of encroachment on public lands, mainly by hunters poaching wild animals, people illegally cutting timber, developers illegally building structures on public and protected lands, and fisherman. Generally speaking, however, there have not been any noted impacts on protected areas from privatization *per se*, but mainly due to economic pressures.

3.3 Economic, Political, and Institutional Context of Privatization

This section covers the major issues identified in the country reports regarding the relationship between economic, political, institutional, and environmental issues. Separate studies[3] focusing on the general environmental impacts of economic transition to the market economy have found that market reform has a number of environmental benefits. Key environmental indicators, such as air and water quality indicators have improved throughout the region, with the most significant improvements in those countries most advanced in economic and political reform. These studies also highlight, however, that institutional, market, and financial barriers exist

[3] See "Environment During the Transition to a Market Economy" (OECD, 1999), "Economic Reform and Environmental Performance in Transition Economies" (World Bank, 1999).

during the transition process that prevent the full exploitation of the environmental benefits that market reforms (in this case land privatization) offer.

The transition to market-based economies has created both general economic conditions and specific sectoral trends that influence land privatization processes and its associated environmental impacts. For example, structural changes, reductions of subsidies for production, and overall economic decline have led to a significant decrease in the share of GDP produced by the agricultural sector throughout the region. Lack of access to finance/credit for small farmers also is noted throughout the region as having an impact on their ability to maintain levels of livestock as they were, to produce on their land, to purchase inputs of fertilizers and pesticides, and to irrigate their land. All of these factors have impacted environmental quality in the region. As such, it is difficult to isolate the impacts of land privatization from associated economic, political and sectoral reforms.

Country consultants reported on a number of issues that have directly influenced the privatization process, with both positive and negative results for the environment. Among the key issues currently identified as priority issues are:

1) Administrative problems associated with the transition in land ownership, the discontinuation of land record keeping, and delays caused by modernization of land titling systems have not been systematically solved in most countries. Inadequately disseminated or poorly enforced regulations have created conditions for low management efficiency and corruption, sometimes with direct environmental impacts, such as illegal forest cutting in Estonia and conversion of rural lands for development in Russia.

2) Decreased intensity of the agricultural sector as a percentage of total economic activity. This is reportedly a result of the reduction of subsidies for inputs to production and, in many cases, initial loss of market demand following the breakdown of Soviet markets. For example, the share of agricultural production decreased from 20% to 5% in Lithuania and from 15% to 5% in Hungary during the 1990s.

3) The major restructuring of the farming system has severely impacted rural infrastructure. Some of the infrastructure, often created for large-scale farming collectives, has been damaged, or completely destroyed due to lack of maintenance (this includes irrigation facilities and buildings and equipment in livestock complexes). New emerging farms reportedly have little capacity or incentive to invest in infrastructure projects.

4) Lack of access to working capital and working land markets has reportedly exacerbated problems of already economically depressed agricultural sectors in many countries. The initial lack of an ability to sell, lease, or mortgage land and the lack of financial means to make efficiency, input or equipment improvements also has had a negative impact on newly privatized farms.

5) New landowners and users of privatized land are generally not fully aware of the rights and responsibilities regarding land use or environmental management best practices. They tend to lack the knowledge and information needed to make the best decisions regarding investments, fertilizer and pesticide application, and handling or other farm management issues. It is much the same situation for owners of restituted forest land.

These new owners are either too far away from their plots to adequately safeguard and manage their land or not knowledgeable about how to manage them appropriately.

The above are some of the key issues, which are influencing privatization and its associated environmental impacts. Some of these, such as the decrease in agricultural production and the agriculture sector's lowered share of GDP, are fundamental results of the transition process. Others, however, are obstacles encountered during market transition and directed activities could be taken to overcome them.

Table 2, highlights the issue of land fragmentation and fragmentation of land use. In a number of countries, relationships between post-privatization plot sizes and agricultural productivity are discussed, but regional inferences cannot be made because many factors appear to influence this relationship. Variation appears not only between countries but within countries. These issues are discussed in more detail in the individual country reports and some interesting differences have emerged among the countries studied. Relevant data was not available for all countries. Where countries have not provided directly comparable data, footnotes have been added to explain these differences. The table is intended to highlight both the significance of these issues (e.g. fragmentation and changes in land use), and the variation throughout the region.

Table 2: Land Use Trends Post-Privatization in Select Countries	Albania	Armenia	Bulgaria	Czech Republic	Estonia	Georgia	Hungary	Kazakhstan	Lithuania	Poland	Romania	Russia	Slovakia	Ukraine	Uzbekistan
Total percentage of agricultural land privatized	78%	75% [1]	97%	96%	51%	25.2%	90%	0	53%	92.7%	85%	62%	96%	50%	0
Percentage of planned privatization completed														30%	
Percentage of privatized land owned and managed by individuals/families	100%	99%	68%	26.4%	42%		88%			84.5%	74%	10% [2]	56% [3]	25.3%	
Percentage of privatized land owned and managed by cooperatives				29.1%			2%			8.2%	0		64.5	0	
Percentage of privatized land owned by other private entities, potentially including joint stock companies, limited liability companies, churches, NGOs, etc.				42.9%							26% [4]			22.9%	
Percentage of state-owned agricultural land	22% [5]			0.7%		74.8% [6]	10%	100% [7]				38%		49.7%	100% [8]
Average plot size of privatized parcels	.1-1 ha [9]	1.3 ha	<2 ha	39 ha	NR	0.75 ha	3.65 ha	NR	16 ha [10]	7 ha	2.3 ha	0.4 ha [11]	0.45 ha	NR	20.3 ha
Observed increase in productivity on privately owned and managed farms?	Y	N	N	Y [12]	NR	Y [13]	N	N	N	Y	Y [14]	N	NR	Y	Y
Fragmentation of plots?	Y	Y	Y	N	N	Y	Y	N	N	Y	Y [15]	N	Y	N	N
Fragmentation of land use?	Y	Y	N	N	N	N	Y	N	NR	N	N	N	Y	N	N

Footnotes:

1. The [illegible]
2. 10% [illegible]
3. Rate [illegible]
4. [illegible]
5. While [illegible]
6. [illegible]
7. 657.2 [illegible]
agricultural [illegible]
8. While [illegible]
of [illegible]
9. 65% [illegible]
10. 6% [illegible]
11. Rates [illegible]
12. The [illegible]
13. There [illegible]
state farms, [illegible]
14. There [illegible]
15. The fragmentation [illegible] is being worked on through consolidation of plots.

Land fragmentation has been noted in several country reports as a serious issue, with associated impacts on environment as well as economic viability of parcels. These impacts have in some countries led to shifts back towards collective management, if not ownership, of land while in others this trend has been avoided. Below are some examples of discussions by the country report authors on the issue of fragmentation and attempts to resolve the problem.

- Romania: "A high level of fragmentation in parcels of land, each usually too small to be productive and economically sustainable in and of itself, the poverty of the new owners (family farmers), the lack of agricultural credit mechanisms, and poor state support and incentives for farmers [have all contributed to a decline in production over the last ten years.] However, the management of the private agricultural land has improved in many areas, especially where the process of consolidation took place." Where consolidation has not occurred, the author notes a decrease in private investment interest.

- Armenia: "The problem of land fragmentation is the result of the complex soil pattern in many areas of the country and the need to distribute land of different quality among village residents on an equitable basis. Plots are therefore split to ensure access of all farmers to some land of relatively good quality. Such plots managed by an individual farmer may be as much as 15 km apart, and are difficult to farm efficiently and economically. This combined with the other reasons mentioned has led to 150,000 ha of privatized land being out of production." The author further explains that there are now no limits on the amount of land a person can purchase or lease, but Armenia's land reform process still lags due to lack of a clear policy and planning framework on land use, inadequate legislation, limited enforcement of regulations, limited awareness of rights and responsibilities by land users, and poorly defined institutional responsibilities.

In other countries, conditions have created an environment in which small-scale farmers are the most efficient producers in the agriculture sector. The fundamental causes for this require further examination, but could include: historical land use rights, appropriate farming techniques for small plot sizes (e.g. crop selection, efficient levels of labor/physical inputs), and/or the relative decrease of commercial agricultural production. Among the cases reported:

- In Poland, there was already a strong private farm culture prior to 1989. This private sector mentality has meant that very few farms have been aggregated into cooperative structures, most remaining in the hands of small, private farmers working independently.

- In Lithuania, since 1990 agricultural production has been growing in household farms and that in agricultural enterprises and partnerships have been decreasing. In year 2000 agricultural production from individual farmers and household farms accounted for 82 % of total production.

- In Russia, small-scale farming conducted on 10% of agricultural land accounts for 50% of agricultural production. The author does note, however, that this production, while efficient in terms of production per unit of land and agricultural inputs, is heavily labor dependent.

In some cases policy responses have been developed to address the issue of fragmentation. Although it is too early to assess the effectiveness of these responses, the following measures have been noted:

- In Lithuania, in 1997 substantial amendments to restitution and land reform laws were introduced, including provisions for the transfer of restituted land parcels for equivalent plots in other locations, and the establishment of preconditions for land use. Also size limitations on restituted land were broadened to a maximum 150 ha.

- In Slovakia, as the table indicates, privatized plot sizes averaged 0.45 ha each. In the early phases of privatization, the potential for restituted to lands to become inefficient due to small and dislocated plots was identified as a concern. As part of the 1991 land reform laws, the Slovak Land Fund was authorized to exchange new land for fragmented parcels. However, potential exchanges of parcels have been largely delayed due to the restructuring of cadastre offices and the low interest of the government. The author estimates that effectively addressing fragmentation will only be possible after cadastral offices are restructured and the records updated.

Text Box: Environmental Liability in Hungary and Czech Republic[4]

The issue of environmental liability for past environmental damages to land is a pervasive one throughout the region. **"In Hungary** at the beginning of privatization neither Parliament, nor government nor the proprietary organizations dealt with environmental problems. By 1995 the act on environmental protection also contained a section on environmental concerns regarding privatization process. However it was quite late [in the process]: the main privatization and liquidation transactions were completed, with changes in ownership [already] affected. The question of environmental [liability], therefore, formed part of the privatization negotiations individually, depending on the contracting partner's power, actual will and knowledge.

In response, the government began financing remediation of many "inherited" contaminated sites (caused by mainly chemical industry, energy production, large-scale agricultural companies, communal and hazardous waste landfills, pesticide stores, etc.) in 1996.The resources allocated so far suggest that improvement will be very slow, considering that the total number of potentially contaminated sites have been estimated at 1,500 to 3,000, with a cost of over HUF 100 billion (USD 382 million).

The Czech Republic established a wide and comprehensive indemnification program. Under certain conditions, investors can indemnify all the cleanup costs up to the purchase price of the investment. The National Property Fund (NPF) signs the agreement with investors on the basis of the Government Resolution on the particular privatization case. The NPF commits in the agreement to indemnify the cleanup costs used for removal of environmental contamination preceding the privatization. NPF commits to indemnifying only the appropriate costs expended to solve the environmental liabilities; these are exactly specified in and result from the decision of Czech Environmental Inspection.

3.4 Overview of Environmental Impacts by Sector

The text box concerning *Regional Trends in Environmental Management* illustrates regional progress or lack thereof in basic areas of environmental management pertaining predominantly to the agricultural sector.

[4] See Hungarian Country Report (Zalatnay) and Czech Republic Country Report (Jilkova) in Part 2 for further details.

TEXT BOX: Regional Trends in Environmental Management

Management of organic fertilizers and animal waste	**Bulgaria** has reported a notable improvement in the treatment and management of animal waste. **Uzbekistan** has also made strides in management of animal waste. After privatization, the large cattle-breeding complexes were almost completely done away with. Small-scale private farms now use solid animal waste as organic fertilizer and spread liquid waste around larger areas to avoid the kind of widespread environmental contamination that came from the settling pits utilized prior to privatization. In **Hungary**, there is an increase in environmental awareness. Where traditionally sewage sludge was spread on lands, private farms are now resisting this practice due to the toxic metal content of the sludge. Further, the number of companies dealing with ecological farming has increased six-fold and the area used for eco-farming increased eight-fold.
Management of chemical fertilizers and pesticides	Although there has been a decrease in use of fertilizers and pesticides due to financial difficulties of most newly privatized small farms, management of chemical inputs appears not to have improved in many of the countries studied. Anecdotally, the reports often indicate, the use of old storage facilities and obsolete equipment continue by private farmers. . These chemicals present a potentially serious environmental and human health risk – especially with the additional dangers of fire and theft. (There are many cases reported where outdated chemical preparations were removed from their original packaging and offered for sale for example in **Bulgaria, Uzbekistan.**) It has been reported that some new private farms that do have financial means to carry on with agricultural production, such as in **Poland and Romania**, are beginning to exhibit increased use of pesticides and fertilizers.
Farm Infrastructure Management	The major restructuring of the farming system has severely affected the infrastructure in rural areas. Some of the irrigation infrastructure, storage facilities and equipment have been severely damaged or completely destroyed due to lack of proper maintenance. New emerging farms have little capacity or incentive to better manage this infrastructure by investing in improvements. This exacerbates the environmental problems such as water loss and wastage as well as allowing improper storage and disposal of chemicals and waste.
Afforestation and reforestation efforts as well as other sustainable forestry practices in place	An example of land privatization producing positive impacts on environment and environmental management comes from **Slovakia**. The finding is that after privatization, privately owned forests are being better managed, both from an economic and an environmental standpoint. In **Romania**, positive trends are coming out of negative initial experience with restitution of forest land. After uncontrolled deforestation in privatized forest land, leading to increases in soil erosion, stream and river sedimentation, and landslides, the government has begun to provide support for afforestation and pest control on private forest lands, it also is supporting forest management planning for individual owners, and supported establishment of local private forest owners' associations. The establishment of private forest nurseries and afforestation of degraded lands is also foreseen. In other cases, such as **Poland**, the forest sector is still almost entirely in state hands due to concerns from environmentalists over the quality of environmental management that might occur if forests were privatized. In still other countries, such as **Uzbekistan**, forest lands on former collective farms (kolkhoz) and state farms (sovkhoz) have reportedly become neglected post-privatization. These forest lands are unprotected from fires, pests, and cutting due to a basic lack of accountability for the condition and monitoring of such forests.
Compliance with Environmental Regulations	One major issue to be addressed is the basic lack of awareness of rights and responsibilities conferred on new private landowners in many countries studied. In **Poland**, for example, where privatization itself has been largely successful, there reportedly is still a basic lack of environmental awareness. As the author notes, "The level of farmer's ecological awareness in Poland is very low, most of them do not believe that agriculture is a source of environment pollution (it could be added that the level of ordinary citizen's awareness is also very low). If any new regulation is implemented (or rather if public authorities try to implement it) most of the farmers are against [it] because they believe that it will create barriers for agriculture. Most farmers reportedly do not follow environmental regulations and monitoring and control services are too weak to force implementation of all requirements."

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Table 3, Environmental Impacts on the next page provides an overview of some major environmental impacts of privatization on land, air, water, and impacts of land privatization by sector. Below is a discussion of some of the more notable impacts by sector as well as a few specific country examples.

Drainage of Wetlands

As Table 3 on the next page illustrates, across the region, it is reported that after 1990 almost all draining of wetlands ceased, partly as a result of ownership changes and partly due to the economic downturn experienced throughout the region. Instead, in many of the countries studied, the restoration of wetlands as well as the creation of new wetland areas seems a common occurrence, often naturally as a result of former marginal agricultural lands being left fallow.

Soil Erosion

There has been an increase in soil erosion reported in most countries surveyed. This trend has mainly been attributed to increases in deforestation and over-grazing. In the countries where soil erosion was reported to be decreasing, there has also been a reported decrease in deforestation.

Physical State of Irrigation Infrastructure

Irrigation and drainage infrastructure is reported to be in generally very poor condition throughout the region. Irrigation systems are continuing to deteriorate, and are difficult for small, fragmented private farms to manage given that they were designed for use by large, collectivized farms. Drainage canals in some countries are being filled up to create more crop growing areas, and in general suffer from lack of maintenance and repair.

Table 3: Environmental Impacts Associated with Privatization	Albania	Armenia	Bulgaria	Czech Republic	Estonia	Georgia	Hungary	Kazakhstan	Lithuania	Poland	Romania	Russia	Slovakia	Ukraine	Uzbekistan
Drainage of Wetlands	⇔	⇧	⇧	⇩	NR	NR	NR	⇔	⇩	⇩	⇩	NR	⇩	⇔	NR
Soil Erosion	⇧	⇧	⇩	⇩	⇧	⇧	NR	⇧	NR	⇔	⇧	NR	⇧	⇧	NR
Physical State of Irrigation Infrastructure	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	NR	⇩	⇩	⇩
Inefficient Water Use	⇧	⇧	⇧	⇩	NR	⇧	⇩	⇧	⇩	⇩	⇩	NR	⇧	⇧	⇧
Salinization	⇧	⇧	⇩	⇩	NR	⇧	NR	⇧	NR	⇔	⇩	NR	NR	NR	⇧
Groundwater contamination	⇩	⇩	⇩	⇩	NR	⇩	⇩	⇧	⇧	⇧	⇩	⇧	⇩	⇧	⇧
Pesticide and Fertilizer Use	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩	⇩
Pesticide and Fertilizer Misapplication	⇩	⇧	⇧	⇩	NR	⇧	⇩	⇧	⇧	⇧	⇩	⇩	⇧	⇧	⇧
Over-grazing in and around settlements	⇧	⇧	⇩	⇩	NR	⇧	⇩	⇧	⇩	⇩	⇩	⇩	⇔	NR	⇧
Deforestation [1]	⇧	⇔	NR	⇔	⇧	⇔	⇔	⇔	⇔	⇩	⇧	⇔	⇧	⇔	⇔

SCALES

[illegible]

Footnotes:

1. Since indicators in Armenia, Georgia, Kazakhstan, Russia, Ukraine and Uzbekistan [illegible] deforestation [illegible] these countries are not noted on the table, as they are not associated with land privatization.

Inefficient Water Use
As irrigation infrastructure continues to deteriorate, inefficient water use continues to increase, with leakage throughout irrigation systems, inefficient irrigation practices continuing, and lack of sustainable management practices in place. In interviews conducted in Hungary for this report, a director of a state-owned agricultural company explained, "In most of the cases the usability of the irrigation system has become dependent on the other owners' activity, since if one of [the farmers] stopped with irrigation, the others were affected through smaller or even insufficient water pressure. The small farms are unable to finance the operational and maintenance costs of the irrigation system regularly, therefore in many areas the system is obsolete and not in use."

Salinization
Increases in soil salinity appear to be a growing problem throughout the region, linked with the deterioration of irrigation and drainage systems.

Groundwater Contamination
With the reduction in pesticide and fertilizer use and the reduction in cattle and therefore reduction in animal waste, there has been a reported reduction in groundwater contamination. Like many of these environmental impacts, this should be noted as a result of both privatization of land and cattle and financial difficulties causing farmers to cut back on inputs and in the number of cattle. There were some interesting reports, covered in the environmental management table above, of improvements in handling of animal waste leading to reductions in groundwater and soil contamination. In the case of Lithuania, local groundwater problems have anecdotally been linked to poor manure handling.

Pesticide and Fertilizer Use
Pesticide and fertilizer use throughout the region has declined, primarily due to end of state-subsidized inputs to production and financial hardships during economic transition rather than a result of privatization *per se*. As discussed above, there is an alarming trend reported in some countries of illegal and banned pesticides making their way into informal, black markets for smaller, financially strapped farmers. This is leading to an increase in use of these types of pesticides.

Pesticide and Fertilizer Misapplication
Despite overall decreases in the use of these inputs, misapplication of pesticides and fertilizers appears to be on the rise in many areas. Storage facilities for stockpiles of collective farm pesticides and fertilizers are falling apart, leading to improper and hazardous storage and handling of obsolete and in some cases banned chemicals. This, combined with lack of basic knowledge of some new small farmers of application techniques and appropriate amounts of chemicals to use, is leading to environmental problems.

Overgrazing In and Around Settlements
A consequence of the breakup of collective farms in most countries surveyed is the reduction in the number of cattle, with a trend towards smaller private farmers managing smaller herds, with larger collective farms focusing more on grain and other mono-culture crop production. This in turn has in some cases led to a reduction in the number of overgrazed areas, as the table illustrates. However, there have been instances reported of overgrazing being a growing problem near settlements, as small farmers cannot afford the fuel costs to transport herds to more remote, traditional pastures.

Deforestation

While in some instances, forest restitution has led to better environmental management and therefore been beneficial, in others it has led to increased exploitation of natural resources and an increase in the rate of deforestation, erosion and other associated environmental problems. It should be noted, however, on the table above, that deforestation indicators provided here indicate that some deforestation is occurring within countries. In some cases this may be limited to certain regions and is not necessarily indicative of an overall national loss of forest area. Moreover, deforestation was also noted as a concern in Armenia, Russia, and Ukraine, where all forests are state-owned.

Romania – Restitution and Deforestation in the Damuc Valley[5]

In Romania, most recipients of forestland are focused on short-term economic concerns, such as the cost of food and heating, and fear that the state might reclaim the land or impose restrictions on its use. This led to extremely rapid deforestation as individuals sought to cash-in on the windfall.

In the Damuc Valley, for example, less than 3% of the restituted forestland remains intact. Forests were seriously over-harvested with significant negative environmental impacts. The Damuc river is now loaded with silt resulting from erosion of the denuded slopes, and further polluted with sawdust and machine oils as a result of the practice of using the river bed as the site for milling much of the timber. The restitution program has provided a short-term cash injection for the communities of the Damuc Valley. A thriving saw-milling industry has developed and most houses have large stacks of timber in their yards. In the absence of Government controls that can be used to manage the level of timber harvested from private lands, access to this easy market, together with the lifting of export restrictions on wood, has further exposed restituted forests to rapid exploitation.

In the short term this could be viewed as a positive economic impact. In the longer term, however, an opportunity for sustained income generation has been lost. From a total economic valuation perspective, the program clearly had a significant negative impact on the value of the nation's asset. For example, reduced game populations represent an economic as well as an environmental loss, whilst the likely future landslides from deforested areas could seriously impact downstream communities.

One of the more disturbing aspects of the changes that have taken place in the Damuc Valley is the impression of anarchy. NFA staff provide accounts of threats as well as acts of physical violence against them as they have sought to prevent illegal forest clearance. New forest owners care little about the forest code, and do not understand how their actions on private land are any business of the State.

On the other hand, there are regions in the country where the new private owners have followed good forest management practices. The negative environmental effects related to forest block fragmentation have been somehow reduced by restituting the forests in compact groups of parcels at the edge of the state forests. As a general rule the forestry practices on private land have been significantly poorer than on state held land, as it appears that this was a common situation even before the 1948 nationalization.

It appears that larger privatized forest blocks are also being better managed in the Czech Republic. The government obliges owners of blocks greater than 50 hectares to follow a forest management plan and have qualified managers on hand. Owners of private forest blocks between 5 and 50 ha also appear to be managing their stands more effectively than owners of blocks 5 ha and under. In addition, there are some advances in sustainable forest management being made in Albania, where state forest land, though still state-owned, is being "transferred" to local "komuna" management. The text box below gives more detail on this successful aspect of Albania's privatization program.

[5] This anecdotal description of environmental impacts of forestry privatization is provided in the Romanian Country Study (Abrudan). See Part 2 for further details.

Privatization of Forests and Forestry Management in Albania

The restitution of "user rights" to rural communities is another form of privatization within forest and pasture sectors. Albania has a rich tradition for the management of local resources, and in some areas this is reflected in the traditional codes of law. Some komunas and villages in certain districts have decided to continue managing their forests in their own traditional way, even though the State officially controls forests there (as part of its total 85%). Other villages have protected and improved nearby degraded forests during the last years. Similarly, a number of farmers have protected and improved degraded forests near their own agricultural land, and during the past 4 to 5 years have managed to achieve adequate rate of growth. Other farmers, likewise with trees located near gardens, agricultural lands, roads and canals, have created new forest nurseries, especially with fast growing species such as poplars and black locust, with their own resources. Overall, komunas and farmers have demonstrated an active interest in managing the forests and associated watersheds near them.

Regulations established by the Ministry of Agriculture and Food determine the criteria for decentralization and management of forests at the local level. Parcels of forest from 0.4 to one hectare are to be given in use to villagers residing permanently in the village. The Government, through decentralized administration of giving a forest area "in use" to the komuna, aims at fulfilling the local needs of villagers for wood and non-wood materials, and to otherwise increase resources and income generation at the local level.

While the process of the state forest and pastures transfer in use to rural communities started in 1995 and is going very well, from overall socio-economic studies done in various areas, it has become clear that there are certain real obstacles to the transfer of forests to komunas, including:

(i) lack of long-term policies regarding priorities and relationships among various types of tenure claims;
(ii) lack of legal provisions for management of natural resources, including forests; and
(iii) lack of funds for protection, improvement and management of forests by the komuna/village.

Urban Issues

As mentioned earlier, urban issues were not reported on in great detail in most of the country studies. However, there are some interesting initial findings:

1) Unregulated use of privatized agricultural land for conversion to land for development has both economic and environmental repercussions. In Russia, the author notes, that lands being developed for housing and other buildings are partly agricultural land being illegally converted into other categories in order to sell it to developers at a huge profit. "While agricultural land usually costs several dollars per hectare, plots for development [are] thousands of times more expensive. For example, in [the larger] Moscow area, prices vary from $500 to $4,000 per 1/100th of a hectare.

2) The Romanian report notes the problem of reduction of green spaces in urban areas. The main reasons noted were changes in land use as a result of restitution, the concession of public lands to private companies (which built offices, shops etc.) or encroachment into public parks. In some cases concession contracts have been signed between local administrations of the public urban land and private companies, without fulfilling all legal requirements (including environmental permits) and without the consultation of the neighboring community.

3.4 *Summary of Key Issues*

"It must be emphasized that there were no previous targeted studies conducted concerning the issue of environmental impacts of land privatization."

Lithuania Country Report (Semeniene)

This study was commissioned as an initial effort to gather data on environmental impacts of land privatization. Given the short amount of time available to complete the study and the breadth of the information gathered it is not possible to provide a section on "conclusions" at this stage in the process. The information gathered here is an important first step in defining what environmental issues are important in the context of land privatization. Below is a brief list of the issues that were identified either by the country report authors or as a result of the review of their reports.

- Land privatization processes are heavily influenced by pre-privatization land ownership and land use trends. In countries with historical experience of formal ownership or informal use rights, the privatization process appears to have moved more quickly and agricultural productivity of small farmers is higher. In countries where nationalization of land occurred, privatization appears to have been slower and might not happen at all in some cases.

- The creation of efficient land markets has been inhibited by delays in modernizing the land titling administrative process, and privatization programs are negatively affected by corruption due to lack of clear, transparent and publicly disseminated rules. Environmental pressures from systematic land titling inefficiencies have been reported in Russia and Estonia; barriers to market formation from titling problems are noted in Slovakia, Bulgaria and the Czech Republic.

- Potential positive impacts of land privatization are impeded by lack of market conditions and legislative frameworks in other related areas such as financial markets, environmental legislation, and the enforcement of existing regulations. Lack of access to working capital for farmers and working land markets has exacerbated problems of already economically depressed agricultural sectors in many countries.

- In many cases, people farming newly privatized agricultural lands reportedly are beset with problems acquiring and properly using chemical inputs, financing the maintenance of irrigation infrastructure, and managing grazing lands and feedlots.

- Smaller family plots and small farms have been reported to be more productive in Poland, Hungary, Lithuania, and Russia; while larger, collective, state or even cooperative farms have tended to be less productive.

- There is a general lack of awareness in rural communities and among new landowners regarding the rights and responsibilities of land ownership. In some cases this results in poor land management or neglect; in other cases land has been returned to cooperative management under pre-existing management structures. Lack of public information has also led to distrust of reform efforts.

- Similarly in forested lands lack of close supervision is in some cases allowing illegal logging to take place. Apparently in many cases where this has happened there has

been an increase in soil erosion and associated losses in both biodiversity and productivity.

These issues are the result of this "first look" analysis and represent only a rapid review of the country reports. It has been identified that privatization and its associated impacts on the environment are heavily dependent on national and regional economic conditions and the level of reform in other sectors of the countries studied. Further, detailed, country-level analysis of the information in these reports is likely to yield additional issues and a better understanding of those identified above.

4.0 COUNTRY REPORTS

As stated in the Section 2, regional consulting specialists identified by DevTech Systems, Inc. developed the following country reports. The team of country specialists was comprised of agricultural specialists, environmental and ecology specialists, foresters, and environmental economists. The consultants made use of available information and personal knowledge of the situation. Each report contains a full list of references, with information generally coming from government statistics, written materials, personal knowledge, or information obtained through interviews with other local sector experts. Most reports contain detailed information in Annexes attached to the report. In some cases, where relevant data could not be found or did not exist, consultants provided anecdotal information and an overview of current research in the field. These areas are identified in the report.

4.1 Albania

Author: Thimaq Lako

Background

Albania is located in the western part of the Balkan Peninsula. The country borders the Federal Republic of Yugoslavia to the north and northeast, the Former Yugoslav Republic of Macedonia to the east, and Greece to the south. Its western coast faces the Adriatic and Ionian Seas. (See Annex 1). Much of Albania's 28,748 square kilometers is mountainous. The country has 3.354 million inhabitants, 53,5 % of which live in rural areas.

Between 1944 and 1991, Albania's Government was controlled by the Communist Party, known most of that time as the Albanian Party of Labor. During this period, the state controlled economic activity – private ownership and private enterprise were forbidden. Approximately half of Albania's labor force worked in agricultural cooperatives.

Substantial resources were invested in reclaiming, irrigating, fertilizing farms, and increasing arable land area through deforestation, but environmental criteria and soil conservation measures were not employed in the process. After 1945, Albania inherited less than 400 thousand ha agriculture land, whereas in the '80-is, due to the policy for the development of an extensive agriculture, the area of the agriculture land reached up to 710 thousand ha. This land was provided through the reclaiming of coastal and continental lagoons (~ 150,000 ha), deforestation, and by changing the winter and summer pastures into agriculture land. Through a simple analysis we can come to the conclusion that within the period 1945-1980, the cadastre has registered almost 160.000 ha agriculture land from forests and pastures area, and during the same period the forest and pasture area was reduced respectively 240,000 and 400,000 ha.

1. Overview Of Privatization

Agriculture land privatization

The overthrowing of political system at beginning of 90s dictated the need to radical changes with respect to land. The transition from centralized economy toward market economy was associated with massive destruction of cooperative and state farm assets. Therefore the implementation of the agrarian reform was both indispensable and urgent. In July 1991, the Albanian Parliament approved the Law 7501 "On land". It was both an agrarian reforming law that dealt with land distribution and a property law that considered the ownership right over the land and recognized private property, a right denied since the Constitution of 1976.

The approval of land law led to the formulation of various laws, bylaws and regulations intended to implement a reform that still remains unfinished. According to this package of laws and in contrast with other ex-communist countries, agriculture land was entirely distributed to families registered as village inhabitants before July 31, 1991, instead to be restituted to ex-owners before the agriculture cooperatives' establishment. Land was distributed on a per capita basis and any family inside the territory of an ex-cooperative was to receive as much land as resulted from equal division of land based on number of people and quality of land.

Scarce amount of agriculture land in Albania (at average 0.22 hectares per capita of population) and high proportion of rural population (64 percent) were an argument in favor of the implementation of the law "On land". Another argument was the long time and the changes that had occurred in Albania during 1994-1990 period which complicated the task of identifying old land boundaries, documentation on previous property ownership, etc.

Distributed land per capita varied by village to village. In lowlands, this figure amounted from 0.30 to 0.35 hectares or more. In higher altitudes, many villages in the mountains and especially in the northeastern part of the country, the amount of land per capita was less than 0.1 hectares, an amount insufficient even to meet basic nutritional requirements. (See Table 1)

Table 1 Distribution Of The Rural Population And The Natural Resources

No	Zone	Rural Population		Agriculture land		Forests		Pastures		Agriculture land (ha/family)
		000/inhabitants	%	000/ha	%	000/ha	%	000/ha	%	
1	Low land	1 359	65.4	512.0	73	418.1	40	160.2	39	1.44
2	Mountain	718	34.6	191.0	27	627.9	60	249.2	61	1.22
	TOTAL	2 077	100	703.0	100	1 046.0	100	409.4	100	1.40

Source: An Agriculture Strategy for Albania. World Bank Report, October 1992

About 426 thousand hectares of ex-cooperative land, split to 1.5 million smaller plots, were distributed in ownership to 365 thousand peasant families. While, 120 thousand hectares of state farms land split into 0.4 million parcels were distributed to 101 thousand families in rural areas.

Land privatization rates were high. Four months after the land law was enacted, about 50 percent of the agriculture land of Albania had been privatized. The progress of agriculture land privatization is given in table 2. In all, there were privatized about 546 thousand hectares against 702 thousand of the total. Most of the difference or 130 thousand hectares were non-divided/refused by peasants because of low fertility, lack of irrigation, distance from inhabited centers, etc. This land remained in state ownership and was delegated to the local unit of government (komuna) for administration. A small part of agriculture land was left to state research institution or joint venture enterprises.

Table 2 Privatization Of Arable Land

YEAR	HECTARES	PERCENT
1991	308 000	58
1992	412 000	77
1993	508 000	89
1994	522 000	92
1988	546 000	96

Source: Review of Albanian Agriculture, Tirana 2000.

Forest and pasture land privatization

During the transition period to a market economy, aspects of forest and pasture policies are found under the government's general economic framework. The Government Program envisioned the promulgation of policies for privatization of public property in all economic sectors, in order to accelerate the privatization process. Special attention was accorded to the forestry and pasture sector, strengthening the policies and legislation in order to limit illegal forest cutting and deterioration of pastures.

The Government of Albania's «Public Investment Program» for 1996 to1998 was concentrate on:

- Formulating appropriate policies and the legal framework for better use of forest resources;
- Establishing effective forestry extension, information services and training of forestry staff;
- Developing private forestry and community management of forest and pasture land; and
- Improving state forest management.

According to the Forest Law of 1992, the forest fund is comprised of: state forests, komuna forests (which are owned by the state and «given in use» in common to the village or komuna (Local Government Units) under the supervision of Local government), and private forests (those forests returned to ex-owners or located within privately owned land). Actually, the processes of transferring state forests for komuna management, and restitution of forests to ex-owners have just begun.

Private ownership of forests and pastures in Albania appears to have been fairly stable before 1939. After the communist regime took control in 1945, the large nationalization of all properties began and the area of private forest and pasture decreased year by year, while forests under state and cooperative ownership grew. The decrease of private forest areas is demonstrated in Table 3 below.

Table 3. Forest Area According To Ownership In 1939 And 1957

CATEGORY	1939 (HA)	1957 (HA)
Private Forests	63,000	3,400
State Forests	1,050,000	1,322,900
Communal Forests	16,000	2,400
Forest Land	250,000	-
Total Forest Area	1,379,000	1,328,700

Source: Annual Statistic Book, Tirana, 1958.

By the mid 1960's all forests, pastures and meadows were under the state ownership, while only a small area was given to agricultural cooperatives for their use. The decrease in state land shown in the Table 3 is a consequence of deforestation to open new arable lands for crop and fruit trees.

The main objective of the forestry policy in terms of the development of private forestry, during the transition period, has been the recognition of the ownership over the forests and pastures before 1945, and their partial/full restitution to the ex-owners. The right for the ownership recognition and the restitution of the seized property during 1945-1990 is stipulated in the Constitution of the Republic of Albania, approved in 21.10.1998 (Articles 41 and 181). The article 181 defines that the goal of the Parliament is to amend and complete within 2-3 years the legal provisions to regulate several issues related to seizures and confiscation's, accomplished

before the approval of the Constitution. The recognition and restitution of private forests to the ex-owners started after 1996, according to the Law "On compensation in value or site of ex-owners of agricultural lands, pastures, meadows forest lands and forests". Thus only 10,000 ha or 15 % of the private forest area and about 27,000 hectares of pastures were restituted to the ex-owners until end of year 2000. The ongoing restitution process is very slow and the ex-owners are facing various problems.

The restitution of "user rights" to the rural communities is another form of privatization within forest and pasture sector. Albania has a rich tradition for the management of local resources, and in some areas this is reflected in the traditional codes of law. Some komunas and villages in certain districts have decided to continue managing their forests in their own traditional way, even though the State officially controls the forests there. Other villages have protected and improved nearby degraded forests during the last years. Similarly, a number of farmers have protected and improved degraded forests near their own agricultural land, and during the past 4 to 5 years have managed to achieve adequate rate of growth. Other farmers, likewise with trees located near gardens, agricultural lands, roads and canals, have created new forest nurseries, especially with fast growing species such as poplars and black locust, with their own resources. Overall, komunas and farmers have demonstrated an active interest in managing the forests near them.

Regulations established by the Ministry of Agriculture and Food determines the criteria for decentralization and management of forests at the local level. Parcels of forest from 0.4 to one hectare are to be given in use to villagers residing permanently in the village. The Government, through decentralized administration of giving a forest area "in use" to the komuna, aims at fulfilling the local needs of villagers for wood and non-wood materials, and to otherwise increase resources and income generation at the local level.

Based on studies conducted by the Directorate General of Forest and Pastures, done in cooperation with the District Forest Services and Local Government, it is expected that around 400 thousand hectares of forest (40% of state forests - especially shrub and coppice areas), and 260 thousand hectares of pastures and meadows would be transferred in use to the Local Government Units (Komuna). Meanwhile, ex-owners are expected to reclaim around 5% of the forest area. The process of the state forest and pastures transfer in use to rural communities started in 1995 and is going very well. During the period 1996-2000 the transfer is finalized in more than 100 Komuna, from 315 units in total and the forest and pastures areas transferred it's over 160 thousand hectares.

From overall socio-economic studies done in various areas, it has become clear that there are certain real obstacles to the transfer of forests to komunas, including:

- Lack of long-term policies regarding priorities and relationships among various types of tenure claims;
- Lack of legal provisions for management of natural resources, including forests; and
- Lack of funds for protection, improvement and management of forests by the komuna/village.

2. Overview Of Environmental Impacts

The main feature of the agricultural policy implemented so far in Albania is the neglect of the environment conservation and protection. It is well known that the main factor of the land degradation in our country is erosion. The current studies indicate that 24% of the territory is

completely threatened by soil erosion, 59% of the territory is half- threatened, whereas 17% is erosion free. The erosion effects are evident in terms of reduction of the irrigation capacity of the reservoirs, which is due to the sediments, and the change of the coastal line.

For the first time in the Strategy for Agriculture Sector Development – 1998 (The Green Strategy), the environmental policy is mentioned and it stipulates, « *The strategy of the agricultural development is based on the ecological principles for a sustainable development*». The most important instruments to achieve the main objectives of the environmental policy for the rehabilitation of the agriculture environment include the legislation and institutional and financial aspects.

The agriculture land, forests and pastures constitute 75% of the Albanian territories, but the policy for almost 50 years in terms of the development of extensive agriculture, had a negative impact on the these resources. The deforestation and the intensive opening of new lands did not justify the accomplished investments, and due to this, around 120,000 ha of agriculture land are not divided or refused. A major part of the agriculture land, provided by the reclaiming of the wetlands and lagoons are salted, whereas the forests, particularly those situated close to the rural zones, are very degraded, due to illegal cuttings and overgrazing. The area of the unproductive lands was increased more than 300,000 ha because of the forests and pastures incorrect management.

The land privatization, the restitution of "user rights" to rural communities and the restitution of the private forests and pastures to the ex-owners, created potential possibilities to restrain the degradation of the environment and for the sustainable management of the natural resources. The development of the communal forestry, private forestry and agroforestry and their integration to the conservation policies will enhance intensively the rehabilitation the environment in Albania.

The social-economic changes after the 90-is were associated with new developments. The market driven economy created premises for the development of the private farms as well as to support agriculture production through private initiatives. The recognition of the land ownership, regardless of the legal framework lacking, created the premises for the leasehold/sale process of the agriculture land. According to the legislation, the owner has the right to change the use: vineyards, fruits/olive orchards, in line with his own interests. The legislation on agriculture does not stipulate the prohibition of the land use change into forests and pastures. The owner should ask to be provided with the permission by the local government only in cases when the agriculture land changes its use into unproductive land.

The transfer of state forest and pastures "in use" to komunas is another example on the sustainable management of natural resources. The transfer process is achieved through a number of steps as follows:

- Awareness of rural community members on the transfer process and communal forest and pasture management;
- Participation of community members in the process of boundary designation and in decision-making process on haw to divide village forest and pastures: in village basis, neighborhoods basis or family basis;
- Development of a participatory village forest and pasture management plan;
- Establishment of Village/Komuna Forest and Pasture Users' Association (FPUA);
- Implementation of forest and pasture management plan by FPUA;
- Evaluation and monitoring of forest and pasture management plan implementation.

Some positive impacts on environmental rehabilitation of the implementation of komuna forest and pasture management plan are:

- Restoration of degraded oak coppice forest in Dibra, Elbasani, Hasi, Mati districts,
- Reforestation of degraded land with fast growing and multipurpose trees in Zall Bastar (Tirane), Pishaj (Gramsh), Shishtavec (Kukes), etc.;
- Watershed management in Melani komune, (Diber), Zall Bastar (Tirane), Qelez (Puke), etc.;
- Establishment of water points for livestock in communal pastures;
- Change of structure of livestock (substitution of goat flocks with sheep) in some komuna and villages like Tomin, Shimcan, and Melan (Diber), etc.

After decades of environmental neglect, economic factors have slowed Albania's industrial sector. As result, less smoke, less effluent, and less solid waste is flowing from the factories and mines. In the wake of years of industrial activity, however, remain a number of severely contaminated sites that are threatening human health and environment. The map (Annex 2) shows the water quality in Albania.

During the period of 1993-1994, the industrial enterprises that cause environmental pollution have worked only partially and in general below their projected capacity. Despite this, the pollution caused by the active enterprises has been in the same levels as before, because no technical measures were taken for the improvement of the production technology, rather backward one. Also, no measures were taken for the re-functioning of the few existing plants.

One of the most potential polluters of this operational system is the industry of oil and gas extraction and processing. The out-dated technology which is still applied, the little concern about the effective utilization of the equipment which avoid water and soil pollution, as well as non-compliance with the environmental protection requirements during oil searching and drilling are major factors of the environmental pollution in this sector.

Principal industrial "hot spots" in Albania are: Chemical Plant – Durres, Chlorine alkali and PVC factory – Vlore, Marinze Oil Fields – Patos, Oil Rafinery – Ballsh, and Waste Disposal Site – Shara (*Source*: Post-Conflict Environmental Assessment-Albania. UNEP, 2000). Other industrial sites that require urgent attention in the interest of protecting public health are: Nitrate Fertilizer Plant – Fier, Metallurgical Complex – Elbasan, Copper Factory – Rubik, Phosphate Fertilizer Factory – Lac. Most of them have been collapsed and the actual key issues related with industrial pollution are as follows:

- Several-square-kilometer areas are severely contaminated by hazardous chemicals and residues;
- Thousands of families in urban areas (Vlore, Durres, Ballsh, etc) are living amidst and around the toxic contamination;
- Grave risks are being posed to human health, groundwater, and marine habitat;
- Contamination of 20,000 Hectares of arable lands within Marinze Oil Fields;
- Sulfurous gas and several toxic gases are polluting the surrounding atmosphere, etc.

UNEP "Post-Conflict Environmental Assessment – Albania" recommends a two-track approach to addressing industrial contamination in Albania. First, risk reduction strategies should be quickly developed and implemented to remediate the problems identified in the "hot spots" sites. Similar, if less urgent, strategies will be needed for the other industrial sites discussed. Second, the pressing need to clean up Albania's polluted industrial facilities calls attention to a host of the countries more structural environmental management issues. Today in Albania, all of these

issues, and others, require strong leadership and sustained investments that will support the efforts of the country's dedicated environmental experts.

Albania must lead the way by demonstrating a strong commitment to protecting and improving its environment. In this connection, Albania can benefit by working closely with neighboring states. In turn, the international community should be prepared to support Albania's efforts in the interest of protecting human health and promoting a strong and prosperous regional environment.

The policies for the land privatization in Albania have excluded the following categories:

- Forest and pastures included in Strict Nature Reserve, National Forest Parks and Protected areas (Categories I – VI, according to IUCN classification)
- Forest and pasture areas situated in the priority tourism development areas, approved by the Council of Ministers; and
- Wetlands and lagoons.

3. Environmental Impacts By Sector

3.1. Agricultural Land

The privatization of agriculture land has increased the agriculture production, due to a better management of the arable land. The table below shows that the yield of agriculture crops is increased after the privatization of agriculture land.

Table 4 Yields Of Agricultural Crops (Ton/Hectare)

NO	CROP	1950	1970	1990	1998
1	Wheat	0.97	1.53	2.99	2.80
2	Maize	0.88	2.07	3.35	3.34
3	Potatoes	7.22	5.44	6.43	12.72
4	Dried beans	0.31	0.84	0.61	1.11
5	Vegetables/Melon	9.20	11.10	14.0	19.72
6	Tobacco	0.36	0.68	0.58	1.10
7	Sunflower	0.50	1.05	0.80	1.60
8	Soybean	0.00	0.00	0.64	1.43
9	Sugar beet	4.50	23.60	26.70	30.49
10	Fodder	0.96	0.70	0.75	1.29
11	Forage	9.65	18.10	18.80	26.35

Source: Review of Albanian Agriculture, Tirana 2000

Another factor that has contributed to the lessening of pollution from agricultural activities is the rather low level of pesticides use in the last years, mainly due to the little concern shown by the farmers and the generally restricted possibilities for elimination of agricultural crop damages. Thus, a reduction of soil contamination level from pesticide tracks has been observed. However a critical environmental issue is the presence of inherited pesticides, which are located and deposited in all country districts.

Among European countries, Albania has one of the lowest rates of fertilizer usage. In 1989, an average of 158 kg were used per hectare, whereas during 1990-1991, because of the shortage

of raw materials and work interruptions experienced in fertilizer plants, fertilizer use dropped in stages from 135 kg to only 38 kg. The nitrate-phosphate ratio was 3:1, whereas the potassium fertilizers were only used in small quantities. The table below shows the trends of fertilizer use in Albania.

Table 5 Fertilizer use in Albania (000/Tones)

NO	FERTILIZER	1950	1970	1990	1998
1	Nitrogen	0.6	66	185	82
2	Phosphate	4.0	109	148	42
3	Potassium	0.7	2	6	-

Source: Review of Albanian Agriculture, Tirana 2000.

In the field of agricultural production, the considerable decrease of the fertilizers use has led to the reduction of their accumulation in soil. Hence, soil contamination and its contribution to the contamination of water resources (surface and ground waters) was reduced as well.

Until 1990, more than 60 % of cultivated land (or 423 thousand hectares) could be irrigated. Free flowing, gravity irrigation was applied to 160 thousand hectares. Also, 276,000 hectares were drained, from which 206 thousand by gravity and 70 thousand by pumping. In addition, about 15 thousand kilometers of draining canals and 420 km of protecting embankments were built in the coastal areas. (*Source*: Review of Albanian Agriculture, Tirana, 2000)

Recently, the geographical environment has become worse, because many investments made in years, for protective works of terrain from natural agent actions, are misused and has been and still is damaged. Thus, the irrigation system in hilly regions is damaged, channels are full and erosion on slopes has increased considerably. Also, many water collectors are being filled. Stony dams built in streambeds are full and are also destroyed by the residential people to be used for construction purposes. These phenomena have been intensified as result of forest cutting in per-urban areas, too. The consequences are felt in Pogradec, Lezhe, Berat, Kruje etc.

Rather critical is the situation in field zones, where irrigation channels function partially, while draining channels are continuously filled because private farmers lack mechanical and financial means to clean them up. Further more in some cases the farmers have filled up the draining channels to profit more land. All these factors have affected the increase of groundwater level, which pose a serious threat to the uncontrollable rebirth of marshes in coastal zone that is presently an intensive agricultural production in the country.

Erosion has been intensified in non-divided/refused land, terraces and polyphyte pastures, which most of the time were inappropriately opened or created. They already have been abandoned and are quickly degrading. In terraces, where draining system has been deserted, old slides have been reactivated and new ones have been created.

Livestock numbers has been increased sharply during the first year of agriculture land privatization (See table 6). By the end of 1993, there were about 57 thousand more cows and 414 thousand more goats and sheep than in 1990. During the last years the substitution of goats with sheep is a new trend of livestock sector in Albania. By the end of 1998, there were about 95 thousand less goats and 230 thousand more sheep than in 1990. This trend shows that the pressure of goats grazing in forest is diminished and it's a good opportunity for the restoration of degraded forest and winter pastures.

Table 6 Number of Livestock (000 animals)

NO	DESCRIPTION	1938	1950	1970	1980	1990	1998
1	Cattle	391.2	419.2	407.6	606.4	632.6	705
	From which: - Cows	113.2	113.6	161.9	253.1	300.5	423
2	Sheep and Goats	2 506	2 537	1 984	2 064	2 791	2 923
	From which: - Sheep	1 574	1 707	1 202	1 253	1 646	1 872
	From which: - Goats	932	830	782	811	1 145	1 051
3	Pigs	15	46.7	114.9	179.5	219.7	83
4	Poultry	1 037	660	2 171	3 492	5 259	4 862
5	Equidae	109	117	121.9	119.9	181.2	221
6	Beehives	48.3	71.4	99.7	110.4	80.0	57

Source: Review of Albanian Agriculture, Tirana 2000.

3.2 Forest Land

The recognition of the ownership and restitution of private forests and pastures to ex-owners have created a new reality, but it is evident that the proper instruments and mechanisms to the forestry policy are lacking. The private owners are mostly interested to increase incomes through the management of their forests, but the Forest Act does not treat the management of the private forests. Further more, the forestry policy changes and developments related to ownership recognition are not included in the relevant legislation. The legal framework on the sale and leasehold of private land is lacking too. Anyway, this did not obstruct several owners to bargain for selling them, especially were close to the urban areas.

The restitution of "user rights" to the rural communities is another form of the privatization. Usually the restitution of user right and the transfer of the state forest and pastures process need the development of the komuna/village forest management plan. DGFP, in collaboration with local government and other donors (WB, USAID, etc.) has supported technically and financially the transfer of state forests and pastures to more than 100 komunas, covering over 160,000 hectares of forests and pastures, through a broad community participation. The transfer was based on old traditions regarding the common use or the division of the areas by users.

During the transfer process, are organized workshops in all komunas/villages involved into the transfer, as well as the training of DFSs directors and specialists and private contractors in charge of the transfer. It's gained a good experience in this field and the results are:

- Villagers are aware on transfer for having «in use» their own forest and pasture land;
- Villagers are committed to protect and manage their plots;
- The implementation of the komuna forest and pasture management plans have begun through Forest Users Associations, funded by Albania Forest Project, founded by Albania Government and World Bank (AFP/WB).
- The concept of local communities and foresters on community forests and pastures has changed looking for the future.

In both cases (restitution of private forest and pastures and restitution of "user rights") the environmental impact in general is positive. The private forest and forest users have started the work for the restoration of degraded forest and pastures, have forbidden the cutting of trees, the incidence of forest fires in private and communal forest is very low related to state forest and pastures, etc.

The reforestation and the erosion control are common works in communal forests. According to the forest management plan, the Forest User Associations work for the reforestation of degraded and eroded lands with fast growing and multipurpose trees like black locust, chestnut, walnut, poplar, etc. Also the private owners also are interested to implement the agroforestry practices in arable land. The main results achieved through the application of the agroforestry practices, implemented by private owners and farmers, are: the establishment of the windbreaks, or wood lot with fast growing species (poplar, eucalyptus, black locust, willows, etc.), the cultivation of the medicinal/ aromatic plants, the planting of forest trees into pasture, etc., are very positive steps and confirm the advantages of the agroforestry.

The illegal cuttings are a continuous damaging factor for the state forests. The most affected state forest from illegal cuttings activities are situated in the northeastern part of the country, in poorest areas. Since 1992, every year the Directorates of Forest Service in the districts have identified an average of 15 thousand cases of illegal cuttings, damages and misuses in state forests. The quantity of timber and fuel wood harvested in illegal way is above 50 thousand cubic meter, with a maximum of 200 thousand cubic meters during the year 1997.

Overgrazing of goats remains a problem for state forest areas. This is more evident in the Southern part of the country, where goats are more spread per forest hectare. Mostly endangered by this phenomenon are especially the regenerated oak forests and those which are reproduced on seeds and which have undergone the first phase of harvesting. The approval of a legal act which would sanction the prohibited zones (as well as those allowed) for goat breeding or the application of a taxation system, which stimulates other type of animal raising it's very urgent.

Another negative environmental impact in state forestland is related with other problems. Near residential areas of hard rocks, many quarries, which damage the landscape, have been opened. An example is the view of Dajti Mountain, which although being a national park the activity of stone extraction and other damages still continues to occur. The same happens in the cultivated forest of Krasta in Kruja. The construction of several limekilns has rather damaged this natural wealth of natural and recreational values not only for Kruja and Fush Kruja residents. Also the extraction without criteria and for many years of the sand at the seaside has influenced the damaging of beaches and has endangered coastal forests.

3.3 Wetlands

Before 1945 all the area covered by wetlands and lagoons were state property. During the former system substantial resources were invested in reclaiming and drainage of wetland and lagoons. The first effort for the drainage started after 1946 in Maliq (continental lagoon) and later on other lagoons and wetlands has been reclaimed and drained (Kakariq, Thumane, Terbuf, Hoxhare, etc.). The arable land provided through the reclaiming and drainage of coastal and continental lagoons and wetlands were about 150 thousand hectares, but the ruin of lagoons and wetlands has destroyed the equilibrium of both: maritime and earthy ecosystems, and as a consequence, the major part of the arable land provided was salted. Till now, there are not cases of wetland restoration.

The lagoons and wetlands actually cover an area of 8, 360 hectares and law in Strict Protected and Protected Areas includes all of them.

3.4 Current public lands

The main current problem faced in public lands is the lack of an appropriate policy and legal framework for the management of public lands, including coastal areas, forest and pastures, wetlands, green spaces in urban areas. As the result of weak state control and gaps in legal framework the current public lands are affected by some phenomena like:

- Illegal building in coastal area and chaotic establishment of private beaches;
- Temporary illegal building (kiosks) within green spaces in urban areas,
- Illegal building of restaurants and other constructions in Protected Areas and National Parks, etc.

REFERENCES

A Proposed Set of Policies for the Improvement of the Private Forestry Development in Albania. USAID – Albania Private Forestry Development Program, Tirana, 2000.

Agolli, Shkelqim. Review of Albanian Agriculture – Figures, Facts, Comments. Tirana, 2000. Agriculture and Food Statistics of Albania. Duncker & Humblot, Berlin, 1994.

Albania – Integrated Forest Management Project (Preparation Report). Investment Center, FAO/World Bank Cooperative Programme, Rome, 1994.

Albania State of Environment Report 1993-1994. (Electronic copy revised and updated in 1998). Committee of Environmental Protection and Preservation. Tirana.

An Agricultural Strategy for Albania. A report prepared by a joint team from the World Bank and the European Community. Washington D.C., 1992.

Annual Statistic Book, Year 1957, Tirana, 1958.

Annual Statistic Book, Year 1991, Tirana, 1992.

Muharremi Vezir. Consideration on Forest and Pasture Restitution to Ex-Owners in Albania. USAID – Albania Private Forestry Development Program, Tirana, 1977.

Muharremi Vezir, Lako Thimaq. The Transfer of State Forests to Komunas for Local Management in Albania. Paper presented in XI World Forest Congress, Antalya, Turkeye, 1998.

Post Conflict Environmental Assessment – Albania. UNEP, 2000.

The Development of Policies on Komuna Forests and Pastures Transfer and Management in Albania. USAID – Albania Private Forestry Development Program, Tirana, 2000.

4.2 Armenia

Author: **Ramaz Gokhelashvili**

I. Overview of land privatization

The republic of Armenia is a relatively small, mountainous country with a total land area of 2,974,259 hectares and a population of about 3.75 million. It is located in the South-Central Caucasus, and is bordered by Georgia, Azerbaijan, Iran and Turkey.

One of the first steps made in Armenia's transition to a market economy was agricultural reform. The law "On Farmers and Collective Farmer Economies" entered into force in February 20, 1991, and began the process of privatization of land, livestock, and agricultural equipment. At the same time, private farmers' cooperatives and farmers' collective enterprises were established. During the privatization process, 91% of about 860 collective farms, and agricultural enterprises were privatized, and as of January 1, 2001, there were 332,598 private farms and only 10 collective farms, which included 460,111 ha of agricultural land, including 342.5 thousand ha of hayfields, 54.3 thousand ha of perennial plantations, and 61.0 thousand ha of pasture (Armenia, 2000). As of today, about 151.8 thousand ha of perennial plantations are not privatized, of which 5.3 thousand ha are for state reserves, and 4.2 thousand ha are lands for the forest fund, health care, transportation, industry, settlement and auxiliary economies. One individual farm on average has 1.3 ha of agricultural land, of which 1.1 ha is hayfield. While hayfields have for the most part been privatized, it is GOA policy to retain the extensive pasture areas under state ownership.

Approximately 99% of livestock is privatized, and the privatization of agricultural equipment is in progress: in sum 47.3% of combines, 69.4% of tractors, and 60.4% of trucks have been privatized. In addition, 60-70% of the agricultural services sector is now in private hands and 435 food and processing enterprises have been privatized.

The Government of Armenia (GOA) statistics provides a breakdown of agricultural land use into arable crops, orchards, hay fields, and pasture, and figures are also available showing the distribution of forests (including scrubland), but land under non-agricultural uses is grouped into a single class of 'other uses'. Table 1 gives the total areas of these land use classes in each of the seven cadastral categories, and the distribution of present land use categories in the different *Marzes* (regions) of Armenia is given in Table 2.

Table 1 ***Distribution of Land Use by Cadastral Land Category (Ministry of Agriculture- MOA, 1997)***

Cadastral Category	Land Use *(thousands ha)*						
	Arable	**Orchard**	**Hay fields**	**Pasture**	**Total Agricultural**	**Other**	**Total**
Land of Agricultural significance	367.8	53.9	66.2	20.7	508.6	42.1	550.7
Land under settlements	4.1	2.2	0.1	1.8	8.2	57.5	65.7
Land under industry, transport and communication infrastructure, and defence	1.3	0.5	1.6	4.0	7.4	87.5	94.9
Land under nature or historical reserve, or sports/ recreation facilities	0.3	0.1	0.3	3.6	4.3	201.0	205.3
Forest land	0.5	1.8	3.1	12.7	18.1	357.7	375.8
Surface water (rivers, reservoirs, canals)	0	0	0	0.1	0.1	19.2	19.3
Reserve Land	120.3	5.3	67.6	651.5	844.7	817.9	1662.6
Total	494.3	63.8	138.9	694.4	1391.4	1582.9	2974.3

Although the idea of private land ownership has been seen as a positive thing, it should be noted that many serious mistakes and missteps were made with agrarian reform in Armenia and eventually had a negative influence on the development of Armenia's agrarian system. For example, the multimember farmers' cooperatives do not have a governing body to coordinate their activities and to represent their interests and rights, there is a lack of various interim companies for importing auxiliary equipment and other materials, and there are no rental places for agricultural equipment and supplies. The agricultural sector is generally unproductive due to lack of a functioning market, inefficient and ineffective infrastructure, lack of antimonopoly laws, lack of viable financial and tax systems, and lack of specialists trained in these areas.

Most newly created private farms practice only subsistence agriculture, using only that part of privatized land required to meet those needs. Individual, private farmers are unwilling and often unable to expand production beyond subsistence due to the lack of fertilizers, medicines, fuel, high price of spare parts, and land fragmentation. The problem of land fragmentation is the result of the complex soil pattern in many areas of the country and the need to distribute land of different quality among village residents on an equitable basis. Plots are therefore split to ensure access of all farmers to some land of relatively good quality. Such plots managed by an individual farmer may be as much as 15 km apart, and are difficult to farm efficiently and economically. This combined with the other reasons mentioned has led to 150,000 ha of privatized land being out of production.

Table 2 Distribution of Land Use by Regions (Ministry of Agriculture- MOA, 1997)

Marz	Land Use *(thousands ha)*							
	Arable	Orchards	Hay fields	Pasture	Total Agricultural land	Forests and shrubland	Other	Total
Aragatzotn	56.2	7.7	4.1	68.7	136.7	7.9	131.0	275.6
Ararat	30.0	11.8	2.9	54.4	99.1	13.7	97.9	210.7
Armavir	40.4	13.6	0.2	26.5	80.7	1.1	42.2	124.0
Gegharkunik	95.3	1.8	35.6	107.4	240.1	17.5	277.3	534.9
Lori	48.4	4.5	39.4	99.9	192.2	93.4	93.4	379.0
Kotayk	40.6	7.6	10.9	40.7	99.8	22.0	87.7	209.5
Shirak	84.5	0.5	16.8	63.9	165.7	2.9	99.1	267.7
Syunik	48.3	2.7	9.6	133.7	194.3	58.1	198.2	450.6
Vayots Dzor	20.6	3.3	4.6	47.4	75.9	8.3	146.5	230.7
Taush	27.8	6.8	15.0	49.0	98.6	125.2	46.6	270.4
Yerevan City	2.2	3.3	0.0	2.8	8.3	0.0	13.2	21.5
Total	494.3	63.6	139.1	694.4	1391.4	350.1	1233.1	2974.6

The mistakes made during the privatization of agricultural equipment resulted in the theft of much of this equipment, with a resultant dramatic increase of low technology, hand-till agriculture and an increase in the number of employees involved in the agriculture sector. At present, over half of the employees involved in the food/material production sector in the Republic of Armenia are in agriculture, which equates to a labor-intensive and ineffective agriculture sector. There has been a corresponding gradual decrease in harvest yields, caused by difficulty in developing new and efficient systems for producing on privatized land that is often fragmented, spotty irrigation (60,000 ha of land which were previously irrigated now have no access to irrigation water), and lack of inputs.

The danger if such trend continues is that previously usable agricultural land will soon be lost to increasing desertification. According to the study "The Fight against Desertification in the Republic of Armenia", this process is already intensifying in about 80% of the country's territory.

The table below shows the trends in production of various agricultural products in the pre- and post-privatization periods.

Table 3: Agricultural cultivated plant plough lands (thousand ha), Gross harvest (thousand ton), Number of neat livestock (thousand), Gross output (kg), Production of livestock-breeding goods (thousand ton) and Gross agricultural output in billion drams (Sargsyan, 2001).

	1986	1988	1990	1992	1994	1996	1998	2000
Total plough lands	446.1	450.3	436.6	396.0	365.8	346.5	323.7	303.2
Including wheat	135.6	133.0	138.2	180.6	176.4	183.9	198.7	181.1
Vegetable	18.0	18.0	18.0	25.7	20.4	21.0	19.3	20.0
Potato	19.9	21.1	22.4	29.0	31.8	32.6	32.7	34.2
Vineyards	32.9	31.7	29.2	25.0	25.5	21.9	15.8	15.0
Orchards	54.0	51.4	50.2	33.1	35.5.	34.1	21.6	22.8
Fodder plant plough lands	257.9	264.8	251.3	156.0	125.1	104.8	69.2	61.6
Gross output Wheat	283.5	373.5	271.0	309.6	238.0	328.4	325.7	224.8
Vegetable	619.6	567.0	389.7	497.5	424.3	444.5	395.2	375.7
Potato	305.7	207.3	212.5	322.4	417.2	423.2	440.0	290.3
Grape	253.5	214.0	143.6	142.1	212.4	158.5	106.0	115.8
Fruit	165.5	241.1	155.5	133.2	127.5	158.2	126.7	128.5
Neat Livestock (thousand),	860.8	833.6	690.0	566.4	501.6	507.5	465.7	478.7
including	319.3	312.3	260.1	251.1	269.8	276.8	256.2	262.0
Cows	344.3	344.1	329.3	224.4	81.5	79.6	56.9	70.5
Pigs	1901.9	1730	1291.5	1022.9	735.9	603.7	521.1	548.6
Sheep and Goats								
Poultry	12131	11395	11244.7	9334.2	2985.6	2920.7	2900.2	4255.1
Produced Meat	177.8	181.1	145.1	110.9	79.0	82.6	86.0	88.0
Milk	572.7	565.9	441.9	394.7	415.2	431.3	447.5	452.0
Egg (millions)	608.6	618.1	517.9	252.0	191.3	192.2	219.4	385.4
Average milk from cows (kg)	1816	1876	1625	1536	1512	1534	1670	1668
Agricultural mixed production,	-	-	314.0	324.0	318.0	339.0	361.0	356.5
including			155.0	206.0	203.0	234.0	240.0	213.0
plant processing livestock-breeding			159.0	118.0	115.0	105.0	121.0	143.5

The Legal Basis for Land Reform

Land legislation is still in a transitional state and there are omissions and sometimes duplications in the laws, which are currently in force. Some of these problems are a result of the legal process, in which laws are usually initiated by individual ministries, with often overlapping and unclear responsibilities, and approved with limited public debate and limited consideration of the problems of implementation or enforcement. The land code urgently needs revision to reflect the changes in local government organization, and to harmonize its provisions with those of more recent legislation within the context of clearly defined GOA policy objectives. GOA recognizes these problems and in November 1997, an inter-ministerial committee was established with the mandate to study reform of land legislation. (Table 4, below, provides a description of the main laws related to land privatization, land use rights and regulations on land protection.)

In terms of land rights, the Law on Real Estate (as noted in Table 4) provides for the right of ownership, which comes with the responsibility of land owners to protect their holdings from various forms of degradation or contamination. In particular, Article 60 of the Land Code requires the landholder to protect his or her land from:

- Soil erosion
- Pollution with industrial waste
- Infestation with weeds
- Pollution from domestic garbage
- Salinization
- Water logging
- Fertility depletion

Contravention of these requirements deprives the land owner of the right to own land. The Law on Real Estate upholds these requirements, but places more onus on the State to prove the case in Court before an offender can be deprived of ownership rights. Nevertheless, the legal framework defining the rights and obligations of land holders, and for regulating the use of land resources and ensuring their protection, is incomplete. Enforcement is also problematic due to limited public awareness, legal difficulties in obtaining convictions, and shortage of resources in the enforcement agencies. The result is a lack of clarity of land ownership rights and obligations, meaning that in practice land is only very poorly protected from misuse or contamination.

Table 4 Laws affecting land rights and protection

During the process of land reform, owners could not transfer their ownership. However, since 1995 there is no limitation on the amount of land one person can lease or buy (a proposal on limitation of ownership is under preparation). Land could be owned by individuals (foreigners are excluded from the land ownership); other subjects with legal entity; the State; municipalities;

Date	Law or Decree	Intended function
1990	Privatization Law	Lays down conditions for transfer of state assets to private individuals and groups
1991	Land Code	Divides land of Armenia into categories based on planned use. Presents the conditions for ownership or lease of land of land in these categories, how these rights may be transferred, and stipulates the requirements to conserve land and protect it from degradation or contamination.
1991	Law on individual and collective enterprises	Establishes conditions for ownership of farms by individuals, and lays down principles for management of farms by individuals and collectives.
1991	Bill on principles of environmental protection	Establishes obligation of State to care for environment, prescribes institutional framework for environmental management, and lays down principles, approaches and instruments for environmental protection.
1992, 93,94,97	Armenian Codex on underground resources, Government decisions 374 (1993) and 504 (1993), 221(1997) sub-act on natural resource extraction.	Establishes rights and conditions of exploitation of underground resources, defines terms of contract, licensing responsibility, and schedule of fines for infringements.
1994 (draft revision Sept. 1997)	Law on Land tax	Describes the principles on which land taxation is based, the rates of taxation, privileges and exemptions, and procedures for collection and payment.
1995	Bill on environmental impact assessment	Establishes a framework to define impacts of intended activities on environment, assess feasible alternatives, minimize negative consequences and ensure public involvement.
Jan. 1996	Law on Real Estate of the Republic of Armenia	Establishes rights to possess, use, alter, exclude access to, dispose of, and mortgage land and immovable property, the eligibility to such rights and the conditions under which they may be applied. Specifies that court proceedings are required for the State to alienate land against wishes of right holder. Establishes registration and cadastre system.
July, 1996	Law on Local Self Government	Defines conditions for appointment, service and dismissal of the Chief of Community and the Community Council, and describes their powers and responsibilities.
May 1997	Presidential Decree on Provincial (Marz) Government.	Defines the powers of the provincial government (marzpet)
June 1997	Decision on the Creation of a Real Property State Unified Cadastral Department (RPSUCD) of the Republic of Armenia.	Establishes RPSUCD and defines responsibilities for land cadastre and registration.

NGOs; by the international organizations and the Governments of the foreign States.

The right to own or use land can be restricted in many ways. The restriction could originate from bills, contracts or court decisions. The most important limitation on land use pertains to protected zones, the regional land master plans, and the categorization of land. In addition, the Bill on Real Estate articulates specific ownership rights and restrictions pertaining to the right to use water, trespassing right, and right to irrigation. This bill requires compensation for any kind of land use restriction, but implementing regulations for this have yet to be developed. According to the Bill on Principle, the State is obligated to ensure that land will be utilized properly, based on proscribed limits for pollution and in a way that corresponds with the land category. Legally speaking, land owners share in this responsibility, as aforementioned.

While the government determined zoning, financial aspects, and rules for land use and planning under the Soviet system, the current planning system is fragmented, uncoordinated and suffers from a lack of funding. Although the Provincial Government (Marz) is responsible for regional master plan preparation and providing assistance to municipalities in master plan development according to the Governmental Decrees on Local Administration and Self-government, the reality is that lack of financial means make this role impossible to carry out.

The Bill on Land distinguishes seven categories of land (see Annex 6 for further details). The annual summary (acreage) of the Armenian land is recorded in the Cabinet Decree on the Land Categories. Land category is marked in the Land Cadastre -- a database for transformation of the ownership; transformation of land category, for land taxation, and pricing. The land category is obligatory for users, owners and also for land planners.

The Land categorization had an important role in the centrally planned economy when land was completely state owned. It is questionable, however, whether this instrument is suitable to use in the market economy (NEAP, 1998c).

Table 6 Land Categories

	Cadastral Category
1.	Land of Agricultural Significance
2.	Land under Settlements (land determined to be used for human settlements)
3.	Land used under Industry, Transportation,, Communication, Infrastructure, and Defence
4.	Land under Nature or Historical Reserves, or Sports/Recreational Facilities
5.	Forest Land
6.	Surface Water (Rivers, Reservoirs, Canals - not including Lake Sevan)

The Bill on Land Tax defines tax rates for landholders (land owners and permanent or temporary users). The basis for the land tax is the cadastre value of the land. In the case of agricultural land the tax is equivalent to 15% of the estimated net income from the land and exempts the landholder from payment of additional income tax. The tax rate for lands of non-agricultural importance differs depending on whether it is land under industrial and commercial zones (it is 1% inside of settlement or 0.5 % outside of settlement of cadastre value); or lands of forest stock (it is 1% of the cadastre evaluation of average cost of the non-usable lands of the cadastre circuit zones); and the rest is 1% of the cadastre value. Lands excluded from the tax are: institutions financed by the state budget; lands of historic importance; state reserves, national parks, and botanical gardens; collective farms established during the Agricultural

Reform for a 2-year period; state-owned land; newly planted vineyards and orchards; and land under the educational entities. The tax is paid annually goes into the State budget.

Main problems. The specific problems of the land legal framework are:

- Land categorization as the centrally driven mechanism for determination of land use could be in conflict with the system of land master plans executed by the regional and local governments.
- The obligations of owners to protect land are unrealistic, impossible to enforce and overly strict.
- Lack of usable database and mechanisms for the sale of land hinders development of land markets.
- Absence of legislative basis for master land planning and zoning makes it inadequate as an instrument for greater environmental protection.

It is clear that the institutional support and the regulatory framework necessary to promote the efficient and sustainable use of land resources is not yet in place. The following problem areas are identified as foci for possible intervention:

- Lack of clear policy and planning framework on land use.
- Inadequate legislation.
- Limited enforcement of regulations.
- Limited awareness of rights and responsibilities by land users
- Poorly defined institutional responsibilities.
- Fragmentation of Land Holdings.

Overall, a clear Government policy on land use is presently lacking. Such a policy should state the principle objectives of land use in relation to other Government policies, such as on agriculture and the environment. Lack of policy is exacerbated by a the present rigidly cadastral categories, which are based on actual use rather than on land potential, and are more suited to the needs of central planning than those of a market economy. There is therefore little scientific basis for the planning of land use to optimize its productive potential and limited flexibility for land users to respond to changes in market demand.

Liability for environmental damage is also uncertain. The Armenian legislation does not provide with clear definition of the environmental damage. According to the Civil Codex and the various environmental Bills, "damage" may be caused by the violation of environmental legislation including: (1) damage to health or property caused by pollution; and (2) degradation or destruction of natural sites.

The Bill on Privatization, the Civil Codex and the Land Code arranges for universal succession for enterprises being privatised[6]. There is non sufficient mechanism to separate damage caused by past pollution and damage that a new owner should be held liable, as for instance a legal obligation to identify the ecological state of the enterprise prior the privatisation (environmental audit). Only in accordance with the Land Codex, the characterization of environmental condition

[6] Article 43.:"The ownership right in respect of the privatized property of an enterprise is transferred to the buyer in accordance with the order defined by the legislation of ROA beginning from the moment of signing the agreement in case nothing else is planned by the agreement."
Article 44.: "The buyer of the state enterprise becomes the legal inheritor of the assets and personal non-assets rights and liabilities in accordance with the privatization agreement and the legislation of ROA. The obligation of the seller and rights of the buyer come in force immediately after the registration of the privatization agreement between the buyer and the seller in accordance with the order defined by the legislation of ROA."

of land is required prior the privatisation. However, this provision has only formal value and has never been implemented. Not much work has been done also in order to establish soil standards and methodologies for clarification the scale of clean up.

2. Overview of Environmental Impacts

Land reform following independence in 1991 introduced sweeping changes in the way land was managed in Armenia, and these changes have had implications for the sustainable conservation of land resources. The impact of land privatization was most strongly felt in the agricultural sector, where 99% of arable land and 79% of perennial orchards, formerly part of state (sovkhoz) or collective (kolkhoz) farms, were either privatized or targeted for privatization by July 1994 (World Bank 1995). These reforms conveyed rights of land ownership to a rural population that had not previously enjoyed such rights.

The rationale for rapid privatization of agricultural land was the assumption that the Soviet *sovkhoz/kolkhoz* system had been a failure, and that land reform would spur growth of the nascent market economy. However, while the speed of privatization in Armenia was unprecedented as compared to the other FSU republics, it failed to produce the positive impact hoped for, there was a shift from marketable cash crops to subsistence crops, and the efficiency of agricultural land use was reduced.

Agricultural land privatization created 330,000, small, often fragmented plots. According to the most recent data[7] the average size of one farm is 1.3ha, of which 1.1 ha is hayfield.
Plots allocated to a single individual are sometimes as much as 15 km apart in order to distribute land of variable quality as equitably as possible among villagers. Appropriate technology for economic management of smallholdings has yet to be developed, and agricultural extension is presently weak. Farmers often lack funds for tillage and, due to their previously limited experience of smallholder agriculture; standards of crop husbandry are sometimes poor. The expense and irregular availability of fertilizers and other agro-chemicals means that their use is usually well below recommended levels, leading to depletion of soil nutrients and reduced yields (Table 5). These factors, combined with the decline of the irrigation systems due to poor maintenance and high operating costs, have resulted in a serious reduction in crop yields.

Table 5 compares cropped areas and yields in the Soviet period and in recent years. From 1986 to 1994 there has been a decline in the total cropped area of approximately 85,000 ha or 16%. Field observations suggest a further decline in cultivated area in recent years due to the breakdown of irrigation systems or the high costs associated with their operation. The area producing cash crops, including valuable fruit trees and vineyards, has decreased relative to the area producing subsistence crops, such as grains, potatoes and vegetables. Due to limited markets, the maintenance of orchards and vineyards has declined, and production of such valuable crops as tobacco, geranium and sugar beet has stopped.

[7] Sargsyan 2001, and Environmental Performance Review 2000.

Table 5 Change in Crop Areas and yield in pre- and post-independence period (http://www.armeniaemb.org/)

Crop	Area ('000 ha)			Yield (t/ha)		
	1986	1992-94	% change	1986	1992-94	% change
Cereals	133.2	189.5	42.3	2.4	1.5	-38.0
Vegetables	18.0	21.9	21.8	31.8	20.0	-37.0
Gourds	3.9	2.8	-28.2	16.3	14.1	-13.7
Potatoes	20.3	30.6	50.9	13.0	12.6	-3.0
Fruits	52.1	33.5	-35.7	3.8	3.1	-19.5
Grapes	25.7	25.1	-2.3	8.1	6.5	-19.5
Tobacco	3.8	0.5	-86.8	2.9	2.8	-2.5
Fodder	267.1	134.0	-49.8	10.2	8.9	-12.5

Land privatization was not accompanied by changes in the provision of machinery, fertilizers, or agricultural product purchase from farmers. In spite of a decrease in pesticide and fertilizer application and a decrease in drainage, the quality of the crops has increased (an estimation according to the draft report of the working group 6, Land Resources, Land Use and Protection Management of the National Environmental Action Plan). This is explained by better land processing and attention to plants than under the previous land management regime.

The recent privatization of residential plots and buildings in urban areas is not likely to have any significant impact on land resources, provided there are no changes in the way sewage and municipal waste disposal are regulated. However, the use of sewage water for irrigation in Yerevan is a current problem, which results in contamination of produce and increased health risks.

3. Environmental Impacts by Sectors

3.1 Agricultural Land

As part of the land reform process, approximately 25% of arable and perennial land was left in the State Reserve Fund to be leased to more efficient farmers, i.e. more economically efficient farmer yields a higher agricultural output from a unit of land, (the average period of a lease is one to five years). The pastures and meadows also remain in state/communal ownership. The village councils are responsible for organizing land use. Lease rights are given for 10 years for a fee equivalent to the land tax.

The subdivision of large open fields into smaller farms managed by individuals using less agro chemicals than before privatization may be impacting the environment positively. The reduced use of agrochemicals diminishes the pollution from agriculture and smaller plots generate generally less erosion than large fields with long slopes. However, reduction of erosion is not widespread because irrigated plots frequently have elongated shapes and are oriented down slope to provide access to roads and irrigation facilities.

While the use of agrochemicals may have decreased, however, data on consumption since 1992 are uncertain and there is now much less control over imports and sales of potentially hazardous pesticides. Residues of such pesticides as DDT, DDE, Dieldrin, Aldrin and Endrin may appear in agricultural produce accumulate through the food chain with potentially adverse effects on health. Analysis of soil samples by SanEpid in 1995 and 1996 revealed that 2.4% and 0.5% respectively showed concentrations of pesticides above target limits (NEAP, 1998a).

The pattern of fertiliser use has also changed considerably since land privatisation took place. Fertilisers that were formerly provided through state controlled corporations to state and collective farms according to defined quotas are now sold through small enterprises directly to farmers with no controls. Limited types of fertilisers of variable quality are available and the farmers generally have very limited knowledge about the fertiliser requirements of their crops. The consequence is insufficient fertilisation resulting in inferior crop production.

Inadequate fertilisation not only has direct negative economic consequences of low crop production but may also exacerbate the problem of erosion, as the sparse vegetation provides less ground cover. Inadequate fertilisation also gives rise to increased mineralization of the soil organic matter and further degrades the soil.

The problems of salinisation are primarily confined to the Saline alkaline and Paleo-hydromorphic soils of the Semi-Desert zone. These soils, which cover 29,000 hectares, are not considered to be reclaimable. They have a very high saline content of 1-3%, and the pH value varies from 9 to11. The content of sodium is very high (25-30 mg/100 g), and is in the form of sodium carbonates, which make reclamation very difficult. However it has been possible to reclaim some 5,000 ha of saline-alkaline soils. To maintain the arable status of the soils it is necessary to maintain a continuous drainage, which requires continual drainage. Due to rising energy prices, drainage has ceased and some 2,000 ha of the reclaimed land is estimated to have been taken out of agricultural production due to re-salinization. Approximately 6,000 ha of salinated land is now utilised for aquaculture.

Taking account of the proportion of reclaimed land, which has reverted to saline-alkaline conditions, and deducting the land which is being used for aquaculture, 20,000 ha of saline-alkaline soils are presently out of production. An additional 17,000 ha, comprising reclaimed saline-alkaline soils and irrigated brown soils with groundwater within 1 m of the surface, are either partly salinated or are at risk of salinization if water management is inadequate.

Figure 1 below presents an overview of the water use trends. The reduction seen in water use during the last 10 years is mainly due to a significant drop in use of water for irrigation(1995 use is 33% of 1989 use). In 1995, a total of 172,600 ha of land were irrigated compared to 317,819 ha in 1990, a reduction of a little over 45%. Data from these years also gives an indication of the "efficiency" of the water supply system. Water supply efficiency (defined here as chargeable water use divided by total water extraction), which was 86% in 1985 and 1989, decreased to only 58% in 1995. This shows the increasing percentage of *unaccounted-for-water* (UFW), which could be as much due to physical leakage in the systems as managerial shortcomings.

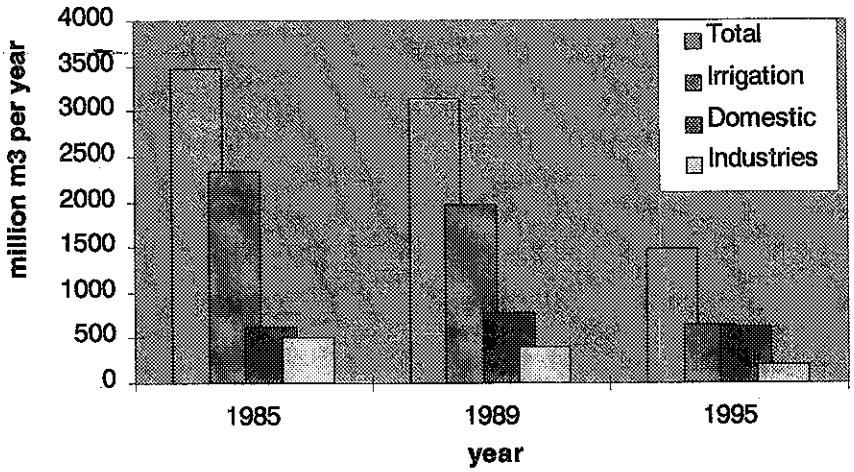

Figure 1 Trends in agricultural, domestic and industrial water use

In total 2.3 billion m^3 of surface water are available annually for agriculture. Out of the total annual runoff of 7.4 billion m^3 (including Araks and Akhurian), the run-off during growing season accounts for 1.4 billion m^3 and 0.9billion m^3 is stored in reservoirs. The availability can be increased by construction of new reservoirs. Furthermore approximately 300 million m^3/yr. of good quality groundwater is available.

Up to the year 1990, the area of irrigated land increased, but from 1991 no more construction activities took place due to lack of funds. Neither were any funds allocated for repair and maintenance of the existing structures, resulting in dilapidated water wells, canals, channels etc., leaving thousands of hectares without any agricultural activity today. Another big problem is that the costs for pumping the water to irrigate land can no longer be covered due to sharply increased costs for electricity.

The efficiency of the irrigation systems (the ratio between the amount of water entering the irrigation system at the sources and the amount which is provided for crops) does not exceed 45% on average, but for some areas of Armenia it is down to 30%. In 1989, the efficiency was around 58% on average for irrigation in the republic. The total water used for irrigation in 1995 (600 million m^3/yr.) is far less than the water available (2,300 million m^3/yr. surface water and 300 million m^3/yr. groundwater).

Table 7 Irrigation characteristics development 1985-1995

Year	Potential irrigated land (ha)	Actually irrigated lands (ha)	Water utilization (mill. m^3)	Irrigation rate (m^3/ha)
1985	311,113	311,000	2,355	7,572
1989	316,401	302,900	1,956	6,457
1990	320,124	317,819	2,145	6,749
1995	285,853	172,602	641	3,714

As seen from the table the irrigation rates for 1985, 1989 and 1990 are in the same magnitude (1985 was a year with scarcity of water), while in 1995 the average norms had decreased to 55% of the 1990 rate.

As mentioned earlier, GOA has privatized livestock along with agricultural land. Armenia had an estimated 663,000 animal units in 1994 (1 animal unit is equivalent to 1 adult cow or horse, 1.7 'other livestock', 3.3 pigs, 6.7 sheep or goats or 50 poultry, World Bank, 1995). This is equivalent to only 52% of the livestock population in 1986, with the biggest falls occurring in the pig, poultry and sheep population. By 1997, the total number of livestock units had decreased further to 594,100 (Department of Livestock, MOA, 1998). The exception to this trend is the horse and donkey population, which has increased by 500% since Soviet times, suggesting greater dependence on equines for transport following the fragmentation of agricultural enterprises.

Production of livestock and sheep is based on extensive grazing during the summer months. During the winter, harvested hay and manufactured feedstuffs form the main fodder source. Pigs and poultry were previously raised intensively, with total reliance on manufactured feed, the production of which was subsidized under the Soviet system. Following the move with privatization to smaller livestock production units, pigs and poultry are now partly produced on a free-range basis, with foraging around villages, and in the case of pigs in adjacent woodlands. The overall performance of livestock was only one third of that in western countries during the Soviet period, and has dropped to only 25% of western performance rates since independence (World Bank, 1995).

According to MOA (World Bank, 1995), permanent grassland is the most important livestock feed source in Armenia. Pasture accounts for approximately half of total agricultural land and remains under state ownership although it is managed by local self-governing communities. Only 5% of grassland has been improved, and much of the remainder has been degraded due to poor management, including overgrazing, lack of rotation and general lack of maintenance. Hayfields, from which the grass is harvested annually, are in similarly poor condition. Soil compaction is a particular problem due to early grazing of stock on pastures, which are still excessively wet from recent snow, particularly in the Mountain and Meadow Steppe Zone. Soil erosion is often concentrated in the vicinity of livestock tracks. There is no current operational system for monitoring range condition.

The main impact of changes in livestock population and management since independence has been to increase the pressure on grazing in the vicinity of villages, while reducing it on high or remote pastures, mainly due to increased costs of transporting stock. Continued political tensions also affect the use of pastures in the border areas. Use of forestland for grazing livestock and foraging pigs is illegal where it affects tree regeneration. The places where grazing is allowed are subject to agreement between the Forest Service and local government.

Existing problems on land potentially to be privatized and potential areas of future liability include high levels of heavy metal contamination in soils on land used for mining operations. An area of approximately 30,000 ha of land is reported to have been contaminated by heavy metals, notably copper, lead and molybdenum, as a result of mining activities in north-eastern Armenia (Soil and Agro-chemistry Institute, 1987). In around 50% of this area copper levels exceed 150 mg/kg, which is close to the Netherlands intervention value of 190 mg/kg. However some of these high contents in soils may be attributed to the ore rich rocks, which form the soil parent material, rather than to pollution.

Derelict mines and factory sites and, in some areas, rubble from demolished buildings occupy significant areas of the country, presenting health and pollution hazards and other dangers, and detracting from the potential productive use or amenity value of the land. Many mine sites were simply abandoned at the end of the Soviet period with no attempts being made at restoration. Municipal waste deposits cover officially 253 ha. This number may be much larger and waste is dumped illegally outside the official waste deposit areas

3.2. Forest Land

All forestland in Armenia is state owned. There are almost no private forests except trees planted inside fences around rural houses. There has been little social and local awareness of the need for conservation of forestland and very little effort has been made to preserve this natural resource base.

Much of the rural land, which is not under agricultural use, is covered by forests or by natural scrubland. Forests occupy approximately 12% of Armenia and comprise natural forests and plantations for conservation purposes. . Armenian forests generally have not been harvested for timber, but illegal cutting is currently taking place due to lack of GOA control over the forest areas.

The primary forested areas in Armenia are in the north, northeast (62%) and south (26%), while the central part of the Republic is almost woodless. As the conventional Soviet 10-year-cycle forest inventory has not been conducted since 1993, the existing forestry data, maps and registers are typically 4-15 years old, sometimes even older. The forest inventory methods used were predominantly subjective, and it is impossible to evaluate results with objective statistical methods. The datasets, besides being outdated, are also unreliable due to large systematic errors, such as misleading forest growth data due to provision of purposely-low production numbers during the FSU period in order to decrease the felling quotas. For these reasons, available data is unsuitable as a basis for imminent policy or management decisions.

The area of production forest in Armenia has been estimated to be 215,357 ha and the growth in volume 2 m^3/ha/yr[8]. The sustainable yield from the production forest would therefore be 431,000 m^3. The estimate[9] of illegal cut of 500,000 m^3 is only 69,000 m^3 more than the estimate of the sustainable yield of the production forest. It is possible that the sites where timber cutting is taking place and the techniques used to do the timber cutting may not be suitable for the long-term sustainability of timber production. But it is not clear that timber cutting, no matter how illegal, is necessarily causing deforestation or forest degradation according to the report available.

The total standing volume per hectare in 1993 on forested areas was 125 m^3 o.b, a very low figure that can be explained by (1) the present type of forest management in which clear felling is not allowed and stands therefore become old, sick and lower density and (2) the fact that felling has in reality been much higher than officially reported and therefore the total resource has gone down. Illegal felling in recent years has again reduced the growing stock.

Bearing this out, during the last four-five years about 50% of household energy came from fuel wood. Demand has increased from both city dwellers and from populations in the hills where

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[8]) Agroforestry Subcomponent – Armenia Agriculture Assessment, March 2002.
[9]) Ter Ghazaryan, Ghulijanyan, National Forest Research and Experimental Center, Ministry of Nature Protection of Armenia.

cold winters require heating during 5-6 months of the year. The collapse during 1992-1995 of the transportation system because of lack of gasoline resulted in a break in normal deliveries of fuel wood and was the main reason for severe destruction of tree cover around cities and along the roads, including roadside poplars. It has been estimated that in 1996-1997 the demand for fuel wood decreased, whereas demand increased for construction wood, especially coniferous. As wood cutting volumes and felling areas are not identified in a proper manner, and the illegal cuts are widespread, this creates threats to forest gene resources - particularly to native pine stands - and triggers erosion.

For the last 70-80 years the forests of Armenia have been managed basically for conservation and protection purposes. The productive capacity has not been made use of. The cutting potential is probably 5-10 times higher in terms of wood volume than what is presently practiced. This means that the value of Armenia's forest resources is not made use of. As will be discussed below, and in concluding remarks, the most important prerequisites for a more active and economic forestry are (a) better information about the resource, (b) improved forest management and (c) a network of biodiversity conservation areas - and, of course - policy decisions to enable Hayantar to manage the forests in an economically feasible way.

The environmental situation in the forests is not monitored as prescribed by the legislation.

Identified problems:

- Much of the removals are illegal and the amount of total felling is not known
- There is no recent resource assessment and therefore the status and capacity of the forest estate is not well known
- Many forest areas are degraded and regeneration does not function satisfactorily
- There are large areas that need reforestation after recent fuel wood cuttings
- The increasing amount of unsustainable felling in the quest of construction wood threaten forest genetic resources, especially pine forests
- Monitoring is inadequate for both forest data and environment

Deforestation began in the thirties, at the start of the collectivisation and industrialization of the country. The energy shortage in Armenia after independence led to intensive wood felling. As a result, during the past ten years, about 26.2 per cent of beech woods have become coppice woodland, and only 10.3 per cent of beech woods have preserved their high density. Only 1.3 per cent of oak forests have a high density, and 4.5 per cent have a low density. 31.3 per cent of oak forests are in a critical state.

Fuel wood was used most intensively during the winters of 1991-1993. In Yerevan alone, 60 000-80 000 trees were felled. This also affected air quality. In recent years deforestation has been most intensive near the border with Azerbaijan. The impact of deforestation on erosion is mostly manifest in the northeast (in Ijevan and Tavush).

Grazing has further degraded the forest, partly as a consequence of pasture degradation. Grazing of forests is prohibited, but the pine and poplar plantations around Sevan are full of livestock. Forest fires destroy from 20 to 100 ha annually. The age structure of woods (average age is 90 years) may in the future not only lead to a reduction in wood resources, but also entail increased erosion.

The 50,000 ha of forests formerly belonging to the Sovkhozes and Kolkhozes have been put under Hayantar management (1994). However, it is foreseen that private forestry is going to develop in the near future on recently privatized agricultural lands. Some farmers are likely to

delineate their new holdings and plant fast growing trees such as poplar and willow. Fruit trees such as walnut can generate additional income.

Before the formation of the Soviet Union the vast plain of Araks river was covered by scattered trees, which were cut to allow mechanized agriculture. There still is a "tree culture" with farmers and therefore a potential for community and private forestry development, particularly in lowlands and along the irrigation canals. Communal pasture lands and land reserves kept for city expansion could also be utilized for tree growing.

Generally speaking, the privatization of forestland is not really an issue for Armenia. Forests have a basic protective role and large holdings - such as state ownership - do better cater for services of that type. The same is true for leasehold forestry, which is a difficult issue in which short term, and long-term benefits must be balanced. One example is how to avoid over cutting without extensive control - this is a matter, which has not found a good solution anywhere.

The above however is not to say that private initiatives in forestry are futile. Although privatization of the forestry sub-sectors has not occurred yet, except for a very recent privatization of some wood-based industries, there are several activities that could suitably be privatized. One such area is the NTFP activities, medicinal and aromatic plants and fruits, berries production, fish production and osier weaving. Arrangements for ecotourism and hunting could also be subject to private initiatives. Further, logging and transport activities could be suitable objects for privatizing, initially based on second-hand equipment purchased by operators. There is also room for the development of tree growing on farms, in the form of agro-forestry and boundary plantations, which would be a viable contribution to the energy, supply and prevent wind erosion.

However, before considering the privatization of forest land, careful examination of the effects of this action is needed, including environmental and economic benefits of keeping the forests under state ownership. Given correct stumpage prices, or functioning markets for wood, state ownership of the forests will allow a proper return on the country's forest resources, even when the primary and secondary wood-processing industry is privatized.

Identified problems:

- There is a risk that the forests will be privatized too fast and without proper analysis of effects and/or consequences for forestry production, environment and the society at large;
- Rapid tenure changes have created tensions between former and present owners, which can result in over-use of natural resources (This problem is the same as already discussed in connection with control and monitoring of the forest resource. It needs no other countermeasure than improved monitoring and follow up, which is dealt with elsewhere).
- Private initiatives in the forestry sector are not supported properly.

3.3 Wetlands

There are over hundred lakes, artificial reservoirs and fishponds in Armenia. The total length of the main rivers exceeds 1,700 km. Among them Lake Sevan, which is designated as a protected area, is of vital importance for the economy.

Armenia became a member of the Convention on Wetlands of International Importance, particularly as a Waterfowl Habitat (Ramsar Convention) on July 6, 1993. Two sites are designated in the List of Wetlands of International Importance: Lake Sevan with its basin, and Lake Arpi and surrounding bogs. The total area of Lake Sevan Ramsar site is 489,100 ha. Lake Arpi Ramsar site covers an area of 3,139 ha. The natural communities of Armenian Ramsar sites are seriously damaged. A project "Inventory of Armenian Ramsar sites: in search of ways for restoration and rehabilitation of the lost and endangered waterfowl habitat" funded by Ramsar Small Grants Fund for Wetland Conservation and Wise Use" were carried out in 1998. Another project "Restoration of Lake Gilly", funded by the GEF, is looking into the possibilities for restoration of the internationally important waterfowl habitat in Lake Sevan basin. The concept of restoration has gained broad support even among the farmers farming the land created by the draining of Lake Gilly, as the land has never been as productive as other agricultural land. Other important lakes are Sev (200 ha, volume 12 million m^3), Kari (120 ha, 36 million m^3), Aighr (7 ha, 0.30 million m^3), Parz (3 ha, 0.08 million m^3). The largest reservoirs are Aparan (92 million m^3), Tolors (80 million m^3), Azat (70 million m^3), Joghaz (34 million m^3), Kechut (25 million m^3), Mantash (9 million m^3). Significant bogs and peat bogs are situated in Ararat Valley, in Ashotsk and Gegharkounik Districts. Bogs and mires cover roughly one half percent of the territory of the country. Anthropogenic impacts on wetlands are seasonal fluctuations of water level due to irrigation and power generation, as well as draining and peat mining.

Wetlands are extremely threatened, with 1500 km^2 of swamps in the Ararat valley alone being recently drained and transformed into agricultural land and 80 km^2 of swamps in the lake Gilly area, disappearing due to decline of the lake's water level. The disappearance of wetlands has caused the loss of several wildlife species, and significant changes in the habits and distribution of migrating birds. A significant number of migrating birds have abandoned their original habitat around Lake Sevan and are now using the fishery enterprises in the Ararat valley (Armash area) as a stop over on their migration route (Adamian, M.S. pers. comm.)

The most important wetland habitat is the Lake Sevan basin. Lake Sevan contains 80 per cent of Armenia's water resources and thus regulates the country's water balance. In the period 1933 to 1981, the water level decreased significantly, mainly due to downstream hydroelectric power plants and uncontrolled water withdrawals for the irrigation of agricultural land. Consequently, its temperature has increased and water circulation has slowed down, leading to higher eutrophication.

In view of the significant changes that occurred, the Lake Sevan basin's habitats suffered from:

- Increasing green and blue algae blossoms
- The destruction of the main trout and other fish breeding sites
- A decreasing capacity to provide support to bird populations.

The reduction in Lake Sevan's water level was temporarily halted from 1982 to 1990, when 250 to 270 million m^3 of water flowed in from the Arpa River each year. The water level thus increased by 1.2 m (measured in 1990). Since then, the level has begun to sink again. A further

decrease of about 2.2 m was measured in 1995. According to the First National Report on the Biodiversity of Armenia, a six-metre rise in the water level would be necessary to stabilize the ecosystem.

There is no evidence of direct connection of land privatization to decrease of water level in Lake Sevan. However, Lake Sevan Environmental Action Plan mentions some indirect connection to the issue. Particularly, according to the report[10], Agricultural run-off has been indirectly affected by the extensive privatization of state-owned agricultural lands. Throughout the Lake Sevan watershed, most families have been provided with 1-2 hectares each, resulting in a large number of very small farms. Many of these small farmers are poorly prepared for farm management and some have never farmed at all. There is little awareness of Good Agricultural Practice or its benefits. This results in poor farming practices that increase the rate of soil erosion, causing reduction of productive land and adding pollution to the lake. Even under the Soviet system, Good Agricultural Practice was rarely followed and overuse of agricultural chemicals was common.

Consequently, runoff of pesticides and fertilizers has significantly contributed to the pollution of Lake Sevan. Although economic difficulties have to a large extent reduced the use of these chemicals, their utilization is expected to increase again as farmers obtain the means to acquire them. Nutrient run-off from animal wastes, both urine and manure, remains an important source of pollution to Lake Sevan. This results from the use of manure as fertilizer and through drying of manure for use as a fuel.

3.4. Current public lands

The total area of public land in Armenia is about 1662.6 thousand ha. The distribution is as follows: Total agricultural – 844.7 (including: Arable – 120.3; Orchard – 5.3; Hayfields – 67.6; Pasture – 651.5); Protected areas – 311,000 ha; and other – 516.9.

Approximately 27% of Armenia comprises reserve land, which is not used for agriculture. Bearing in mind the mountainous nature of the country and the volcanic origin of the parent rocks, a large proportion of this comprises barren, rocky land, mainly at high altitude.

The right of ownership includes the right to possess, use and dispose of property. The State retains the right of 'eminent domain', and can take over private property if this is deemed to be within the public interest, with payment of appropriate compensation.

The seriousness of the problems stated above is assessed in terms of their impact, using the following criteria:

1. **Impact on the natural capital resource**. Natural resources such as land, water, trees, biodiversity have an inherent value as part of national wealth. If lost, they are difficult or impossible to replace (e.g. in the case of severe soil erosion which has resulted in bare rock). Degradation or contamination of natural resources damages the integrity of ecosystems.

2. **Economic productivity and efficiency**. How does the problem affect the productivity of the land (for example, when used for crops or livestock production)?

[10]) Lake Sevan Environmental Action Plan, Main Report, 1998.

3. **Impact and human health and welfare.** Does the problem result in risks to human health (e.g. by contaminated soil affecting food or water supply), or have a detrimental effect on human welfare? (e.g. fragmentation of land holdings results in farmers using greater time and energy in walking from one plot to another).

On the next page, Table 8 represents the summary of evaluation of land resource use problems in Armenia (NEAP, 1998d)

Table 8 Evaluation of Land resources use problems in Armenia

Problems		Land type	Impact of problems on: Natural Capital Resource	Economic Productivity	Human Welfare/ Health
Land Degradation	Soil Erosion	Arable	XXX	XX	X
		Pasture	XX	XX	X
	Soil Compaction	All	XX	XX	X
	Declining Soil Fertility	All	XX	XXX	X
	Salinization	All	XX	XXX	X
	Stone Accumulation	Arable	X	X	X
		Pasture	X	X	X
Land Pollution	Applied Agro-chemicals	All	X	X	XX
	Non-agro pollutants	All	XXX	XXX	XXX
	Derelict sites	All	XXX	XX	XXX
	Waste dumping	All	X	X	XXX
Exogenic geological processes and floods	Exogenic geological factors	Arable	XX	XXX	XX
		Pasture	XX	XX	XX
	Flash Floods	Arable	XX	XXX	XX
		Pasture	XX	XX	XX
Weaknesses in Administration and regulation	Lack of clear policy on Land Use	All	XX	XX	X
	Inadequate legislation	All	XX	XX	X
	Poorly defined institutional responsibilities	All	XX	XX	X
	Poor enforcement of regulations	All	XX	XX	XX
	Limited awareness of rights and responsibilities of land users	All	XX	XX	XX
	Fragmentation of Land Holdings	Arable	X	XXX	XX

Key: X - slight impact; XX - moderate impact; XXX - serious impact

References

Armenia, 1999. National Environmental Action Program. Main Report, Ministry of Nature. Protection of Armenia/World Bank, 1999.

Armenia, 1999a. Biodiversity of Armenia, First National Report, Ministry of Nature. Protection/UNDP.

Armenia, 2000. Statistical booklet, Yerevan 2001.

Armenia 2000a. Biodiversity Strategy and Action Plan, Armenia, Ministry of Nature. Protection, UNDP.

Armenia, 2000b. State of the Environment.

Armenia, 2001. Statistical Yearbook of Armenia, National Statistical Service of the Republic of Armenia.

Armenia Herald, 1995.

Burns and Roe Enterprises Inc. 1997. Technical report: Environmental Assessment of Armenian Energy Sector (Draft, September 1997).

Centre for Ecological Noosphere Studies, 1999. Mapping of soil lead content Yerevan.

Department of Livestock, MOA, 1998. Data Sourcebook.

ECE Committee on Environmental Policy, 2000. Environmental Performance Review

IWACO/JINJ/Norconsult, 2000.Volume A: Main Report and Volume B: Appendices.

Ministry of Agriculture (MOA), 1997. Statistical sourcebook.

NEAP, 1998a. Working Group 2, draft report, Environmental Health,

NEAP, 1998b. Working Group 4 draft report, Water Quality and Water Resources Management,

NEAP, 1998c. Working Group 6 draft report, Land Resources, Land Use and Protection Management.

NEAP, 1998d. Working Group 7 draft report, Forestry

NEAP, 1998e. Working Group 8 draft report, Biodiversity

Sargsyan H., 2001. The Economic Policy in Armenia – Role of the State, The Armenian Center for National and International Studies.

Soil and Agro-chemistry Institute, 1987. Research report.

World Bank, 199. 9Lake Sevan Action Program, Main Report, Ministry of Nature Protection of the Republic of Armenia.

World Bank, 1995. Source MOA estimates and figures in Armenia. http://www.armeniaemb.org

Sources for each Data Table.

#	Source
Table 1	Ministry of Agriculture, 1997
Table 2	Ministry of Agriculture, 1997
Table 3	Sargsyan, 2001
Table 4	NEAP, 1998c. Working Group 6 draft report, Land Resources, Land Use and Protection Management
Table 5	Embassy of the Republic of Armenia to the United States, available from http://www.armenianemb.org
Table 6	NEAP, 1998c. Working Group 6 draft report, Land Resources, Land Use and Protection Management
Table 7	Armenia Herald, 1995
Figure 1	NEAP, 1998 b. Working Group 4 draft report, Water Quality and Water Resources Management
Table 8	NEAP, 1998 b. Working Group 4 draft report, Water Quality and Water Resources Management
Table 9	Ministry of Agriculture, 1997
Table 10	NEAP, 1998d. Working Group 7 draft report, Forestry
Table 11	NEAP, 1998d. Working Group 7 draft report, Forestry
Table 12	NEAP, 1998d. Working Group 7 draft report, Forestry
Table 13	NEAP, 1998c. Working Group 6 draft report, Land Resources, Land Use and Protection Management
Annex 1	Armenia, 2001. Statistical Yearbook of Armenia, National Statistical Service of the Republic of Armenia.
Annex 2	Armenia, 2001. Statistical Yearbook of Armenia, National Statistical Service of the Republic of Armenia.
Annex 3	Armenia, 2001. Statistical Yearbook of Armenia, National Statistical Service of the Republic of Armenia.
Annex 4	Armenia, 2001. Statistical Yearbook of Armenia, National Statistical Service of the Republic of Armenia.
Annex 5	Armenia, 2001. Statistical Yearbook of Armenia, National Statistical Service of the Republic of Armenia.

Armenia Annex 1

Main indicators characterizing the impact of human economic activity on the environment and use of natural resources

	1995	1996	1997	1998
Water abstraction from water resources, mln. m^3	2531	2277	1850	1994
Waste water discharge into natural surface water bodies, mln. m^3	636	632	620	630
Air polluting emissions from stationary sources, thousand. t.	13.9	14.4	22.5	19.8

Armenia Annex 2

Main activities in forestry

	1995	1996	1997	1998
Reforestation, ha	1978	3134	1659	1284
of which planting and sowing of forests	948	861	507	432
Replenishment of valuable forests by young plantations, ha	443	343	218	145
Felling of forests of main use and reforestation felling: area, ha	3170	4643	3734	2125
Felling of forests of main use and reforestation felling: liquid timber felled, thsd. m^3 of trunk wood	72.3	84.9	57.5	37.5
Maintenance and sanitary felling: area, ha	5725	6222	4957	2586
Maintenance and sanitary felling: liquid timber felled, thsd. m^3 of trunk wood	98.5	104.2	72.4	44.5

Armenia Annex 3

Fresh water consumption (mln. m^3)

	1995	1996	1997	1998
Total water abstraction	2531	2277	1850	1994
of which, from underground sources	851	816	520	530
Total consumption	1478	1377	1683	1800
of which, for				
irrigation, supplying with water and agricultural water supply	742	776	1343	1456
industrial purposes	209	165	120	120
household and drinking purposes	527	436	220	224
In per cent of total	100	100	100	100
of which for:				
irrigation, supplying with water and agricultural water supply	50	56	80	81
industrial purposes	14	12	7	7
household and drinking purposes	36	32	13	12

Armenia Annex 4

Gross agricultural output by types of farms (at current prices, bln. drams)

	1995	1996	1997	1998
Farms of all types				
Agriculture	333.0	342.7	255.8	402.1
Plant growing	228.0	194.7	194.0	245.6
Animal husbandry	105.0	148.0	161.8	156.5
Commercial organizations				
Agriculture	7.0	3.7	2.9	3.6
Plant growing	5.0	2.7	1.8	2.5
Animal husbandry	2.0	1.0	1.1	1.1
Household's plots				
Agriculture	326.0	339.0	352.9	398.5
Plant growing	223.0	192.0	192.2	243.1
Animal husbandry	103.0	147.0	160.7	155.4

Armenia Annex 5

Main indicators of farming in Armenia

	1995	1996	1997	1998
Number of farms, units	316774	319536	321125	333820
Area of agricultural land, thsd. Ha	452.7	452.1	452.4	447.0
Availability of livestock and poultry				
Livestock	416.9	462.1	430.9	435.2
sheep and goats	522.4	533.7	488.2	510.9
Pigs	60.9	45.6	49.6	76.3
Poultry	2828.6	2841.5	2768.5	2962.6
Agricultural output, thsd. t.				
grain	221.8	274.7	214.1	278.6
vegetable and water melons	458.4	459.6	386.1	408.4
potato	386.2	384.5	321.8	408.0
meat (slaughter weight)	47.5	48.1	48.8	51.0
milk	423.8	428.1	432.3	454.9
eggs, mln. pieces	193.6	189.0	188.1	215.6
wool (physical weight), t.	1455	1363	1305	1266

Armenia Annex 6

The following cadastral categories are used for the land use in Armenia[11]:

Cadastral category	Responsibility for use	Responsibility for protection
1. Land of agricultural significance	Ministry of Agriculture (crop land mainly privatized)	Ministry of Agriculture/Ministry of Nature Protection
2. Land for settlements (cities, towns and villages)	Ministry of Urban Development	Ministry of Nature Protection/Ministry of Agriculture
3. Land for industry, transport/communication infrastructure or defense	Ministry of Urban Development/Ministry of Defense	Ministry of Nature Protection/Ministry of Agriculture
4. Land for nature or historical reserve, or sports/recreational facilities	Ministry of Nature Protection	Ministry of Nature Protection
5. Forest land	Ministry of Nature Protection	Ministry of Nature Protection
6. Surface water (rivers, reservoirs, canals, not including Lake Sevan)	Ministry of Nature Protection	Ministry of Nature Protection
7. Reserve land	-	Ministry of Agriculture/Ministry of Nature Protection

[11]) Chapter 3: Spatial Planning. Environmental Performance Review, Armenia. Economic Commission for Europe, Committee on Environmental Policy, 2000.

4.3 Bulgaria

Author: Yanka Kazakova

1. Overview of privatization

The country's agricultural land amounts to 6,252 thousand ha, which represents around 57% of Bulgaria's total area. Private agricultural land amounts to 5,679.6 thousand ha. Arable land represents 79.4% of the country's total agricultural land. Areas under perennial crops account for about 4% of total agricultural land (of which 97% are on private lands) while meadows, grasslands and pastures cover more than 12.6% (see Annex 1).

Farm restructuring in Bulgaria involved two steps: de-collectivization and privatization. De-collectivization involved the restitution of land used by the Agro-Industrial Complexes (AIC) to previous owners or their heirs, and privatization of state owned land through sale or lease. The process of privatization included land restitution, the reallocation of non-land assets, and privatization of the large state owned complexes and mechanization services, as well as enterprises in the upstream and downstream sectors.

However, many problems exist in practical terms. Firstly, the restitution process itself has resulted in a large number of very small-scale holdings, with associated economic inefficiency. Secondly, in many cases, the ability of new owners to make productive use of their land is limited by their physical separation from the land, as well as continued use of their land by non-owners, generally without permission or rental payment. Thirdly, in spite of land restitution, there is no functioning land market, due in part to the generally depressed economic situation within the agricultural sector, reducing agricultural land values to very low levels. Also, there is presently no motivation for landowners to make full use of their land because of lack of financial incentives.

The restitution of land ownership rights was launched in February 1991 with the adoption of the Law for Agricultural Land Ownership and Land Use. Effectively, this Law provided the legal framework for private sector development in agriculture. The main goals of the law were to restitute land ownership rights, to distribute non-land assets, as well as to liquidate the old co-operative farms. The Law was designed on the basis of historic justice, i.e. to restore ownership and property rights to former (pre-communist era) owners and their heirs. Efficiency of size objectives has not played an important role in the transformation process (Annex 2).

Agricultural lands according to the Law are lands the purpose of which is for agricultural production. Owners of agricultural lands can be private individuals, the state, municipalities and legal entities. Political parties, and organizations and coalitions with political objectives cannot possess the right of ownership of agricultural land. Foreign states and foreign legal entities cannot possess the right of ownership of agricultural land. Foreign private individuals can inherit agricultural lands, however, in a three-year period they have to transfer the right of ownership to eligible owners. Landowners can freely choose the way of managing their agricultural lands according to lands' purpose. When managing their lands they have to preserve soils and keep the sanitary and hygiene, anti-fire and environmental standards.

By the deadline for submitting claims in 1992, 1.7 million claims were collected by the Municipal Land Commissions (MLCs). But taking into consideration the heirs of the original owners it was expected that there could be between 3 or 4 millions of landowners once the land restitution process has ended. The total amount of land claimed is around 5.6 million ha, 91% of which were individual claimants, 1.4% the state, 5.1% municipalities and other claimants 2.4%.

In addition to land restitution, the Law also aimed at distributing non-land assets and liquidating the old cooperative farms. Initially the Law re-established the 1946 Labour Land Ownership Law upper limits of land that could be owned by a household (30 ha in general and 20 ha in regions with intensive crops) as well as minimum size of land (0.3 ha of arable land or 0.1 ha of land under perennial crops). The upper limit was legally removed in 1997 to allow owners to be compensated for land above the upper limit. A 1995 law amendment provides for specific conditions for the restitution of land under permanent crops, rice fields and land with irrigation systems. In these cases, new owners are not allowed to change land use within the period of depreciation and the owners are obliged to maintain the irrigation equipment during that period.

The pace of land restitution was slow in the early 1990s, due to the complexities involved in the privatization process. Several factors contributed to the slow pace of restitution, including complex, restrictive and ambiguous laws and regulations, poor management of the process, difficulties in the identification of land, disputes, and an inadequate operating budget (Annex 3). With the amendments to the law in 1992 some of the restrictions causing delays were removed. However the introduction of further amendments in the following years resulted in the pace of restitution remaining slow. Since 1998 the process has accelerated and by the end of 1999 practically all-agricultural land was in private hands. Despite this rapid progress, many difficulties remain including the high cost and time consuming approach for the implementation of land reforms. The process has resulted in an increase in land ownership fragmentation, and policies to speed up land consolidation through the development of an active land market are being considered.

By the end of 2000, 99.79% of the total land for restitution was altered, of which 26.49% was restored in existing or past boundaries (Annex 1).

In the area of land reform, following the adoption of the Cadastre and Property Register Act of April 2000, the Bulgarian Government adopted in April 2001 a programme for the establishment of a cadastre and property register. The agricultural cadastre should be ready by 2004. The programme for establishment of a property register covers 2001-2015.

Laws and regulations have recently been amended to enhance the possibilities for leasing and/or selling arrangements with the aim to facilitate an increase in the size of individual farms. Initially, there was a 600 ha limit for individuals to lease farmland with a four-year minimum to 50-year maximum period. Amendments in 1999 have ruled out any size and time restrictions for the leasing of farmland. The rental/lease market has developed into an important element in the emergence of economically viable private farms and farm companies. New owners of restituted land seem to prefer leasing their land rather than selling due to emotional reasons and small landowners prefer to keep their land as a social security asset. However, these leasing arrangements tend to be short-term mainly, usually on a year-by-year basis, thus creating difficulties for medium and long-term farm planning.

Whilst land restitution was virtually completed in 2000 and progress was achieved in the implementation of the Cadastre Law, Bulgaria does not yet have a functioning and transparent land market. With some exceptions in the richer agricultural areas, the land market is generally still under-developed due to fragmentation of property, small size of plots and undivided family co-ownership. These factors hamper both domestic and foreign investment in agriculture and limit the possibility of land to be used as collateral.[12]

Seeking to stimulate the land market and to facilitate the process of land consolidation, MAF has made possible, on the basis of the existing legal provisions, the substitution of privately

[12] 2001 Regular Report on Bulgaria's Progress towards Accession, European Commission, Brussels, November 2001

owned plots for identical parcels released from the State Land Fund (SLF). By December 2000, nearly 1900 transactions were registered, involving substitution of plots privately owned by individuals and legal entities for parcels released from the SLF. The long-term lease of state-owned land is another important component of Bulgarian land market. State-owned land has been made available on preferential basis to producers willing to grow vineyards and permanent crops either through long-term lease (up to 35 years) or through substitution of privately owned plots for suitable parcels released from State Land Fund on condition that finance has been provided.

In 2000, a new rregulation on the land-settlement of landless and under-propertied citizens was adopted. Unfortunately, this measure again leads to land fragmentation, because the land plots are too small for modern agricultural activities.

Focusing on the issue of the excessive fragmentation of agricultural land, MAF in co-operation with a specially assigned inter-institutional expert team has prepared a draft Land Consolidation Act. The inception and the implementation of this legislative act will facilitate the enlargement of farm plots thus increasing the profitability of agriculture and therefore will stimulate market prices of agricultural land.

In 2000, the Agricultural Land Commission issued decisions altering the purpose of 674 ha of agricultural land in total. In the first half of 2001, the purpose of 251.2 ha of agricultural land in total has been altered. There are forecasts that other 700 ha of agricultural land will change its purpose.

Bulgaria attempted to combine the demand for full property rights from those who formally owned the land with equity considerations and this culminated in a fairly equitable distribution of land. The land law was designed on the basis of historic justice: to restore ownership and property rights to former (pre-communist era) owners and their heirs, in particular, those small-scale individual farmers who had to give up land due to the collectivization process. Once the restitution started, the structure of land ownership changed radically and different types of farm structures emerged. The private sector (individuals and private co-operatives) became dominant with around 1.8 million small landowners. At this juncture, almost 95% of individual holdings are less than 2 hectares. Land fragmentation continues to be a serious problem in individual farms, which farm around 43% of agricultural land, including 52% of arable land. Land fragmentation is considered to be one of the major obstacles to the development of a vibrant agricultural sector.

Land use pattern, however, is much less fragmented, as much of the arable land is farmed in quite large units due to the proliferation of both formal and informal leasing short-term arrangements[13]. In recent years the lease/rental market has developed quite rapidly and has played an important role in the emergence of private individual farms. While the first stage of restructuring and restitution has been completed, the next stage of farm ownership consolidation has just begun.

Privatization of upstream and downstream industries

In the upstream and downstream sectors, the main objective of the privatization process was the abolition of the state monopoly by changing the ownership of assets from state to private hands. The approach taken has been a combination of cash sales and mass (coupon) privatization. Social justice objectives, such as to protect employment in the restructured

[13] However the producer managing certain amount of land one year may manage the same amount of land but on different site the following year.

enterprises, or to distribute the "national wealth" over the population was an important concern, as was the economic objectives such as improving efficiency and attracting capital for modernization. The process of restructuring and de-monopolization of the state enterprises in the upstream and downstream industries started in 1992, but the process advanced rather slowly. With the exception of electricity, irrigation water supplies and tobacco processing, almost all the enterprises in the upstream and downstream sectors have been privatized (or liquidated). Land under these enterprises has either been restituted to its previous owners or included in the municipal or state land funds.

Restitution of Forests

Bulgaria's forests and woodland amount to 3.8 million ha and account for 34% of the country's total area. Total afforested area is 3.24 million ha, which represents more than 80% of the country's total forest area. This afforestration is manly a result of government activities during the 1960s.

The Forest Ownership Restitution Act and the Forest Act of 1997 have led to profound changes in the former patterns of forest management and use. It is expected that when the restitution process is accomplished forested areas in Bulgaria will be distributed in the following manner according to their ownership titles – municipality – 51% of total areas, state – 36%, private – 10%, others (religious, schools, etc.) –3%.

The analysis of 2000 data reveals that 79.74 % of total area of forests and forestland subject to restitution have been returned to the original owners. As of June 27, 2001, forestry restitution is almost complete and 90% of rights have been restituted. For forests and forestland, ownership rights have been acknowledged for 625 918 hectares. Of this, 565 300 hectares had been returned to previous owners by June 2001, which represents more than 90% (Annex 1).

2. Overview of Environmental Impacts

Although agri-environmental problems in Bulgaria were serious, little attention has been paid to these problems. Until a few years ago agri-environmental and nature protection policies were of minor concern and had a little political priority. The main environmental problems in rural and agricultural areas can be attributed to farming methods and practices of the past and occurred mainly from:

- Pollutants originating from poor handling of animal waste which has contaminated ground-water sources close to former agro-industrial complexes and the big livestock units;
- Soil pollution and erosion due to poor farming practices;
- Excessive and inappropriate use of fertilizers and chemicals has also given rise to environmental problems.

With the dissolution of the agro-industrial complexes and the movement towards more extensive practices the situation has been improved. The dramatic decline in the use of chemicals during the transition period, as well as the important reduction in the livestock numbers, which were slaughtered for subsistence use after privatization, has had positive environmental consequences. But this situation has been more a consequence of the economic crisis that the effects of legislation or specific policies targeted to environmental questions.

Agricultural policy during the transition period was mainly characterized by short-term measures, like subsidized campaign credits, aimed at ensuring production at the turmoil

of land reform. In general, policies tended to be more reactive to immediate problems than to follow a clear and consistent strategy for the development of the agro-food sector.

Although environmental protection has become a priority issue in Bulgaria in mid-1990s, the measures implemented have been rather ad hoc in nature and quite inconsistent. The implementation of measures to protect the environment has been severely hampered by the lack of resources. The Ministry of the Environment and Water is responsible for implementing the national policy on environmental protection, as well as the policy on the sound ecological use of the natural resources. The enforcement of the legislation on the conservation of agricultural and forestry land is the responsibility of MAF. Harmonisation of legislation with the EU is the responsibility of both Ministries. One of the key elements in the National Agriculture and Rural Development Plan 2000-2006 is to promote environmentally friendly farming.

Reliable statistics are a mandatory pre-condition to monitor and assess reforms that have been undertaken in the transition to a market economy, and to design appropriate policy responses. The land use pattern would appear to be much less fragmented than land ownership pattern, but reliable statistics are not available to assess this situation. Moreover, inadequate statistical information makes it difficult to assess the amount of agricultural land that is left uncultivated. The shortage of funds has resulted in the general agricultural census being postponed until 2003.

Following land restitution many large arable fields are now a patchwork of smaller fields and different crops. The large state and collective plantations of orchards and vineyards are gradually being broken-up and destroyed as the new private owners replace the trees and vines with annual field crops, while in other areas new small-sized orchards and vineyards are being planted. In many lowland areas, a new agricultural landscape is therefore re-emerging that is similar to the situation before 1945 (although average farm size is much smaller).

At the same time, however, most of the former state and collective farm buildings, together with irrigation systems and other farm equipment, are now derelict and littering the countryside (Annex 4). Significant areas of land are also abandoned, uncultivated and severely weed-infested, which is creating an increasingly unattractive "post-collective" landscape.

Although there were some further destruction of old orchards and vineyards during land restitution, there are still many places, especially in the hills and mountains, where small gardens with old varieties still remain.

Lands excluded from restitution include: areas in reserves and national parks, as well as areas in other protected areas, when stated by a legislative act; lands which are exclusive state property; areas related to national security; areas under the jurisdiction of the Ministry of Justice or Ministry of Interior Affairs; mines, etc.

3. *Environmental Impacts by Sector*

3.1. *Agricultural Land*

There is generally a significant lack of data on the impact of agriculture upon the environment in Bulgaria. However, it can be stated that since 1990 there has been a combination of positive

and negative impacts arising from the recent agricultural crisis and the intensification, marginalisation and abandonment of agricultural land use[14].

Landscape

Following land restitution many large arable fields are now a patchwork of smaller fields and different crops. The large state and collective plantations of orchards and vineyards are gradually being broken-up and destroyed as the new private owners replace the trees and vines with annual field crops, while in other areas new small-sized orchards and vineyards are being planted. In many lowland areas, a new agricultural landscape is therefore re-emerging.
Significant areas of land are also abandoned, uncultivated and severely weed-infested, which is creating an increasingly unattractive "post-collective" landscape.
Arable land in the mountain regions was not cultivated on a large scale because of the unsuitable terrain and consequently the traditional patterns of meadows, pastures and associated field boundaries remain.

Biodiversity

Local Farm Animal Breeds The loss of traditional breeds is a particular problem in the disadvantaged mountain regions where traditional cattle and sheep breeds are very well adapted to the poor conditions and are therefore also important for the maintenance of grazing on mountain pastures. In these circumstances, the availability of financial support for private owners of local breeds would be highly valuable for preserving genetic diversity, conserving semi-natural habitats and supporting the income of private farmers.
Local Farm Crop Varieties The flora of Bulgaria includes many local crop varieties and wild relatives of cereals, forage grasses, legumes and temperate fruits. Although there were some further destruction of old orchards and vineyards during land restitution, there are still many places, especially in the hills and mountains, where small gardens with old varieties still remain.

The agricultural changes since 1989 have undoubtedly reduced the pressure of agriculture upon many plant and animal species, although there remains the threat of further intensification as economic circumstances improve again.

However, the main threat to occur during the transition period has been the abandonment of farmland. Semi-natural grasslands are particularly vulnerable to abandonment and once regular management by grazing and/or mowing stops they will quickly begin reverting to forest. This is a major problem in many mountain areas where the number of animals grazing the mountain pastures has declined sharply.

Environmental Pollution

Weser Pollution Although there continues to be a lack of accessible water quality data in Bulgaria, it is generally acknowledged that the quality of ground, surface and coastal waters has improved since agricultural reforms began in 1989[15] due to:

- Financial constraints resulting in significantly less fertiliser and pesticide use;
- The liquidation and closure of many intensive livestock farms and a significant decline in livestock numbers, and;
- Better use and management of animal manures by small-scale farmers.

As would be expected national nutrient balances have also declined. For example by 1993, the nitrogen balance had fallen to 23.2 kg N/ha. Although the balance for Plovdiv region was still

[14] Final Report, SAPARD Measure 1.3 Development of Environmentally-friendly Agricultural Practices and Activities, Mark Redman, Phare Project BG 9810-02-01, MAF, 2001

[15] Gorbanov, S.T., Manolov, J. and Kostadinova, S.S. (2000). Balances of N, P and K of Agricultural Soils of Southern Bulgaria and Risk of Soils Contamination with Nitrates and Phosphates, Journal of Environmental Protection and Ecology (1) 2, 132-138

over 70 kg N/ha, in other regions (e.g. Varna) the balance had become negative indicating the start of a potentially serious decline in soil fertility due to lower fertiliser use and reduced availability of animal manure.

Soil Pollution Despite the reduction in the use of pesticides since 1990, there still remains a high risk of soil pollution where pesticides are being used by private farmers[16] - particularly around pesticide storehouses and the areas used for their mixing and preparation.

One of the problems is that old storage facilities and obsolete equipment continue to be used by private farmers and accidents are common. Some of these old storage facilities also contain obsolete and banned pesticides – for example, in 1995 over 2,700 tonnes of banned preparations were being stored in about 500 storehouses throughout the country. These chemicals present a serious environmental and human health risk – especially with the additional dangers of fire and theft (there are many cases reported where outdated chemical preparations were removed from their original packaging and offered for sale).

Soil Degradation

Soil Erosion is one of the major problems facing agriculture in Bulgaria is soil erosion – both by wind and water. The risk of soil erosion occurring is determined both by natural conditions (relief, climate and soil features), and the method of land use (e.g. crops cultivated, cropping patterns, soil cultivation techniques etc.). Soils in Bulgaria are naturally at risk of water erosion due to a number of factors[17]:

- Almost 50% of the country is at risk of intense rainfall (i.e. rain falling at greater than 20mm/minute) with a moderate-strong risk of causing erosion;
- Over 80% of the country is rolling, hilly or mountainous and therefore has a slope with sufficient incline (greater than 3°) and length to cause surface run-off and the risk of serious erosion during heavy rainfall;
- Many soil types are naturally vulnerable to erosion.

It is too early to identify the impact of privatisation and land restitution upon the incidence of soil erosion, but it seems reasonable to suggest that it will remain a major problem in Bulgaria – especially in the current economic circumstances where soil conservation is not a high priority for most farmers[2].

Soil Acidification is a natural process and many soils in Bulgaria display natural acid characteristics. Soil acidification is also caused by the over-use of nitrogen fertilisers, especially those containing ammonium as the nitrogen source.

Although the rate of acidification has declined significantly since the early 1990s due to the reduced use of mineral fertilisers, it is still estimated that acidified soils (i.e. with a pH less than 5.6) cover 1.51 million ha of the country's total arable land (over 24%). This area is divided as follows:

- Slightly acidified soils (pH 5.1 - 5.6) - about 630,000 ha (10%);
- Moderately acidified soils (pH 4.6 - 5.0) - about 460,000 ha (7%);
- Strongly acidified soils (pH 4.0 - 4.5) - about 310,000 ha (5%)
- Highly acidified soils (pH <4.0) - about 110,000 ha (2%).

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[16] Balinova, A. (1998). Environmental risk from point sources of pesticide in the soil. In: Agricultural Science 4, 51-54. Sofia.

[17] Consultation with Dr. Eng. A. Lazarov - Head of the Soil Erosion Department, Institute of Soil Science "Nikola Pushkarov"

Due to the difficult economic conditions liming of arable land is no longer practiced. Therefore, a further increase in acid soils is likely to occur and to contribute to declining crop yields in the medium term. In addition, soil acidity causes changes in the soil microbiological properties, soil structure deterioration, an increase in the nutrient loss associated with the lower soil buffering capacity, and, finally, a loss of soil fertility.

Soil acidification is observed in most lowland regions where intensive communist agriculture was previously practiced. It remains a particular problem in those areas that:

a) Previously received the highest levels of fertiliser application – notably the Plovdiv region where 41% of soils are affected by increased soil acidity.
b) Have soils with a low "buffer capacity".

Soil Stalinization is also a serious problem in Bulgaria and is mainly associated with irrigated land. Soils that are classified as Stalinized account for more than 3 million hectares (excluding slightly saline soils). Much of the secondary Stalinized soils cover the most fertile flat lands, which are suitable for mechanised cultivation and are situated close to natural watercourses and can thus be easily and efficiently irrigated.

Irrigation has been historically vital to sustain crop yields in arable areas, but many irrigation facilities are no longer functioning and the cost of water has increased significantly – consequently only 4-9% of the total irrigable agricultural land is effectively irrigated (Annex 4).

The decline in agricultural output is also closely linked to the significant reduction in use of agro-chemical inputs – especially fertilisers. For example, since 1981 the average application of fertiliser nitrogen has declined from 109.9 kg N/ha to 29.9 kg N/ha in 1999. Similar drastic reductions in the use of phosphorous and potassium fertilisers have also been observed (Annex 1).

Pesticides also remain too expensive for most farmers to use under the current economic conditions. Where pesticides are still applied, they are often used inappropriately and are causing problems of resistance. For example, herbicides are still being used in the more intensive wheat growing areas – but only the cheaper formulations. Consequently many perennial weeds are unaffected and are an increasing problem, while other weeds are developing herbicide resistance (47% of wheat and barley crops in 2000 were affected by 2,4-D resistant weeds).

The previously common practice of aerial spraying is now very rare and only used in the case of extreme pest infestations over very large areas (e.g. 10,000 ha were sprayed because of rapidly growing numbers of grasshopper pests in the Kardjali region in 2000).
A further problem relates to large tracts of land that are damaged from other pollutants. This includes soils that are contaminated by heavy and toxic elements, soils polluted by overuse of fertilizers and pesticides, soils located in the vicinity of mines or industrial emissions of gasses and dusts, soils along the main roads and junctions, polluted by transport emissions like lead and hydrocarbons, as well as soils polluted by oils. There are an estimated 137 000 hectares contaminated by oils, most of which are situated close to plants, refineries, and along oil conduits. The total area of soils in Bulgaria polluted by heavy metals covers approximately 4 300 hectares or 0.9% of the agricultural land. The pollutants that are currently being monitored include lead, arsenic, and cadmium.

Agricultural Infrastructure

The major restructuring of the farming system has severely affected the infrastructure in rural areas. Some of the infrastructure has been severely damaged, or completely destroyed due to

lack of maintenance (*e.g.* irrigation facilities, buildings and equipment of the livestock complexes, etc.), while other parts are obsolete (*e.g.* airports of APK, large storage or processing plants, etc.). Some of the agricultural infrastructure facilities have also changed their use, for example, administrative buildings and commercial facilities of the APK.

Before 1989 the APK was a major investor in production infrastructure (roads, irrigation, etc.) and in general rural infrastructure (kindergartens, sport and other facilities). The new emerging farms have little capacity or incentive to invest in infrastructure projects. There is inadequate production infrastructure for new private farms (such as access to individual land plots, on-farm storage, etc.). Many of the farms also lack adequate waste management and pollution prevention facilities, and consequently there are increasing environmental problems in many villages and small towns.

There is a major lack of resources to deal with some of the inherited infrastructure problems (for example the storage and disposal of 2 700 tones of pesticides from the old APK) that could have serious environmental consequences.

A special "Melioration Fund" has been set up with funding from the State budget to expand the area under irrigation. In practice, the Fund has been almost entirely used for the reconstruction and maintenance of existing facilities and for the completion of unfinished irrigation projects.

Few resources from the National Fund for the "Protection and Improvement of Productive Quality of Agricultural Lands" have been directed to the prevention of soil erosion and pollution, the reclamation of new lands and the maintenance and improvement of arable land. The programmes of the Regional Erosion Protection Centers and for hail protection have almost ceased their activities.

The current agri-environmental situation includes a combination of negative and positive impacts: On the one hand, there has been a significant decline in the use of agro-chemical inputs and consequently an improvement in ground and surface water quality. This improvement in water quality is also likely to be related to the decline in livestock numbers and a reduction in the risk of pollution from the large animal breeding complexes.

On the other hand, one of the main environmental problems to emerge has been the abandonment of farmland – especially in the mountain areas where the maintenance of grazing is essential for the conservation of the valuable semi-natural grasslands. There also remains the risk of further environmental damage as economic circumstances improve and farmers intensify their production systems again.

3.2. Forest Land

Forest is every area over 1 decar under natural and planted stands of trees and brushwood. Forestry fund covers all areas out of the building frontiers of the settlements, appointed with total and local town plans, designed mainly for forests and forestry purposes according to a united register[18]. The forestry fund does not include forests established on agricultural land. Total forest area covers all wooded, non-wooded and non-timber producing areas. Wooded forest area is a land under natural or planted stands of trees or brushwood. The area covered with pine-scrub, varying between 2.1 and 2.3 thousand ha, is excluded from the wooded area. The areas for afforestration cover barrens, clearings, fire-damaged areas and areas designed

[18] Description given in the National Statistics Yearbook

for biological regeneration. Non-wood producing areas include glades, meadows, fields, erosion areas, forest roads, nurseries, streams and other areas unfit for afforestration.

Afforestation is a key measure that has been implemented for years on end to fight soil erosion and improve forest productivity and stability and protect the most valuable genetic forest resources of the country. Afforestation projections point to 23 000 ha in total yearly. Actuals, however, covered 10 000 ha over the last few years and only 7 500 ha in 1998. Scarcity of funds, among other things, is the main reason behind the unsatisfactory level of afforestation and other forest maintenance activities planned.

Problems have been also prompted by the worsening phyto-sanitary condition of forests (desiccation, etc.) and fires, which in turn make afforestation a top priority measure in the next few years. In 1998, the desiccation-affected forest areas amounted to 34 523 ha and accounted for 1% of the country's total forest area.

The existence of 2.5 million ha of abandoned, highly eroded and unfit for agricultural use land, not included in the forestry fund, can develop into a significant area potential for afforestation[19]. Planting new forests is an alternative to gradual soil degradation.
The financial constraints and the difficulties encountered in the process of forest restitution will most likely result in a further decrease of afforested areas in 2001 and later years. The relative share of forests affected by fire in total area afforested will be on increase in the next three years as a consequence of the raging forest fires during 1999 and 2000.

According to the Forests Act forests can be owned by private individuals, legal entities, municipalities or the state. All forests must have management plans, which are to be developed by the respective forestry boards for the state and municipal forests. Private owners may choose to produce their management plans and to hire guards. These plans have to be approved by the forestry boards. The protection, guarding and control of the forest areas however are under the responsibility of the forestry boards.

Information about activities in private forests is not presented in the last three annual reports of the Ministry of Agriculture and Forestry in spite of the fact that the National Forestry Board is the institution responsible for collecting information about forest activities including private.

3.3. Wetlands

Due to some biogeographic and climatic specificities, the territory of Bulgaria is characterized by relatively few and relatively small natural wetlands. At present they cover 11 000ha, which is only 0.1% of the country total territory. In the beginning of the last century, Bulgaria had about 200 000ha of natural lakes and marshes. The first large-scale campaigns for drying up of marshes started in 1920s with the desiccation of the Straldja marsh. The National Action Plan for the Conservation of the Most Important Wetlands in Bulgaria includes them in three groups: 1) drained marshes which includes 12 marshes; 2) Existing lakes and marshes in a natural state – 51; 3) dams – 25.

Many of the most important wetland complexes are designated as protected areas and thus most of the lands are state or municipal property. However, they are surrounded by private lands the practices on which play an important role on their current condition. The analysis of the effect of land privatization on wetlands in 1995 did not view draining as a potential threat[20] since the costs of electricity and maintenance of the draining systems have risen many times.

[19] National Forestry Board statements
[20] National Action Plan for the Conservation of the Most Important Wetlands in Bulgaria 1995 Ministry of Environment, Sofia

Furthermore, the plan states that private land ownership would offer new opportunities for managing these sites, as under the new conditions it would be everybody's obligation to guarantee sustainable utilization and protection of wetlands.

Currently, there is one big project for wetlands restoration along the Danube River funded by the World Bank/GEF and the Ministry of Environment. The project expects to restore 2,340 ha of former marshes in the two already identified sites Kalimok/Bruslen marshes and Belene Island. Additional sites are expected to be identified and restored during project implementation. Selection criteria for site selection include: ecological potential, floodplain type and with, current land use, and nutrient reduction potential.

Additionally, there are other initiatives of Bulgarian nature protection and conservation NGOs to restore drained marshes by purchasing land from private owners. One big problem that they encounter is that land is highly fragmented and it is difficult to find the owners. These initiatives are quite small at the moment, the tendency however exists.

3.4. Current public lands

Information about current public land is not easily available. The National Statistics Institute does not recognize such land type. The Ministry of Agriculture and Forestry divides land in the following groups: private, municipal and state land fund.

REFERENCES

Agricultural Situation and Prospects in Central and Eastern European Countries: BULGARIA, Working Document, European Commission, DG Agriculture, June 1998

Regular Report on Bulgaria's Progress towards Accession 2001, European Commission, Brussels, November 2001

Review of agricultural policies BULGARIA, OECD, 2000

Final Report, SAPARD Measure 1.3 Development of Environmentally-friendly Agricultural Practices and Activities, M. Redman, Pare Project BG 9810-02-01, MAF, 2001

National Action Plan for the Conservation of the Most Important Wetlands in Bulgaria 1995 Ministry of Environment, Sofia

National Agriculture and Rural Development Plan for the Period 2000-2006, Ministry of Agriculture and Forestry, 1999

Annual Report 1999, Ministry of Agriculture and Forestry, Sofia

Annual Report 2000, Ministry of Agriculture and Forestry, Sofia

Annual Report 2001, Ministry of Agriculture and Forestry, Sofia

Bulgaria Annex 1

Table 1
BULGARIAN LAND FUND as of 31.12.2000

Land fund	Thousand ha	%
Agriculture o/w	63 764	57.44
arable	49 769	44.84
Irrigable	7 453	6.71
Forests	37 157	33.47
Urban	4 603	4.15
Water	2 010	1.81
Transport	754	0.68
Mines, etc.	2 710	2.44
Total	111 001	100

Source: National Statistics Institute

Table 2
THE LAND REFORM, 1995 - 2000

Indicators		1995	1996	1997	1998	1999	2000
Ownership rights restituted	1,000 ha	2,686.5	3,202.0	3,710.1	4,393.0	5,453.9	5,679.6
Relative share within total land subject to restitution	%	49.8	58.3	67.0	79.6	96.44	99.79
Ownership rights restituted within existing or recoverable physical boundaries under Article 18g, paragraph 1 of the Implementation Rules to the Land Act	1,000 ha	921.4	1,009.3	1,047.8	1,149.0	1,442.9	1,507.8
Relative share within total land subject to restitution	%	17.1	18.4	18.9	20.8	25.51	26.49
Ownership rights restituted as per land division plans under Article 27, paragraph 1 of the Implementation Rules to the Land Act	1,000 ha	1,765.1	2,192.7	2,662.3	3,244.0	4,011.0	4,171.8
Relative share within total land subject to restitution	%	32.7	39.9	48.1	58.8	70.93	73.30

Source: National Statistics Institute

Table3
LAND AREA AND STRUCTURE BY FORMS OF USE, 1998-2000

Form of Use	All Farm Categories x 1000 ha			Incl. Private Farms x 1000 ha		
	1998	1999	2000	1998	1999	2000
Total Agricultural land	6,203	6,203	6,252	5,021	5,062	5,382
Arable land	4,805	4,805	4,966	4,621	4,633	4,883
Crop fields	4,280	4,284	4,424	4,143	4,160	4,371
Planting area	3,205	3,004	2,922	3,142	2,944	2,886
Other land	1,074	1,280	1,502	1,001	1,216	1,485
Natural meadows	294	294	315	260	259	298
Cultivated pastures and other categories of land	13	13	14	6	6	6
Perennials - orchards, strawberries and other permanent crops	218	214	213	212	208	208
Permanent grasslands and pastures	1,398	1,398	1,287	400	429	509

Source: National Statistics Institute

Table 4
CLASSIFICATION OF AGRICULTURAL ENTITIES* BY FORMS OF OWNERSHIP, 1996-2000

Form of Ownership	Number of Agricultural Entities				
	1996	1997	1998	1999	2000
State-owned	488	475	308	311	232
Municipal	10	18	21	21	25
Private - Total	9 062	9 831	11 246	11 967	13 159
Private - local legal entities	292	263	321	327	327
Private - local individuals	5 245	6 021	7 241	7 862	8 843
Private - farm co-operatives	3 479	3 475	3 589	3 666	3 861
Private - foreign legal entities	12	8	12	12	8
Private - foreign individuals	22	50	68	82	113
Private - foreign individuals in co-operatives	2	2	2	2	1
Private – associations	10	12	13	16	6
Private - religious organizations	3	16	16	16	3
Private - other NGOs	1	1	2	2	-
Total	9 564	10 341	11 593	12 317	13 419

Source: National Statistics Institute.
** Data in accordance with the National Sectoral Classification (NSC).*

Table 5
FERTILIZER USE, JAN 1998-JUNE 2001

Year	Total NPK		Nitrogen		Phosphates		Potassium	
	Tons	kg/ha	Tons	kg/ha	Tons	kg/ha	Tons	kg/ha
1981	10563 69	226.9 8	511 761	109.9 4	419 688	90.16	124 920	26.84
1995	142 127	30.69	129 545	27.60	12 426	2.68	156	0.03
1996	164 894	35.61	151 883	32.36	12 824	2.76	187	0.03
1997	163 922	36.47	145 773	32.49	16 275	3.58	1 864	0.40
1998	113 146	24.11	97 497	20.77	8 900	1.89	6 749	1.44
1999	156 344	33.31	140 269	29.88	10 376	2.21	5 699	1.21
2000	163 569	34.85	144 928	30.88	16 104	3.43	2 537	0.54
First half 2001	88 434	-	84 274	-	3 167	-	993	-

Source: National Plant Protection and Agro chemistry Service

Table 6
THE RESTITUTION OF FORESTS AND FORESTLAND, 2000 - JUNE 2001

Indicators		2000	June 2001
Ownership rights restituted total	1000 ha	508.7	565.3
Relative share within total forest and forestland subject to restitution	%	79.74	90.7

Source: National Statistics Institute

Table 7
AFFORESTATION, SAPLING GROWING AND ANTI-EROSION MEASURES, 1999-2001

Activities	Units	1999	First half 2000	2000 Expected	2001 Forecast
Seed-collecting – total	Kg	218,773	1,055	246,099	220,700
O/w – coniferous	Kg	3,961	277	807	700
- Deciduous	Kg	214,812	778	245,292	220,000
Sapling growing	X1000	90,005	-	70,000	70,000
Afforestation	ha	7,740	5,140	6,169	6,000
Barrage erection	c.m.	474	-	-	200

Source: National Forestry Board

Bulgaria Annex 2

Concepts and Institutions in Bulgaria's Agricultural Reform Process

Land restitution

Land restitution is the process by which farmland is returned to its former owners (based on the situation after 1946) or their heirs. The claimants must furnish proof or evidence of former ownership. The former communist collectivization of land was not formally nationalized. Only a small part of the land is state owned. Most of the landowners kept their titles to the property. In the case of absence of documents, witnesses can help to put forward a claim. The household plots, which were created during the communist period, were not privately owned and are included in the land restitution process.

Privatization
Privatisation is the sale of state assets (state farms, seed selection stations, feed mills, and livestock complexes). The Agency of Privatisation and the Ministries of Agriculture and Industry are responsible for this task and operate either by negotiations with potential buyers, foreigners or nationals, by public auction or sale of shares, including to plant workers or labourers on preferential terms, by debt-equity swaps or sales on leasing.

Liquidation
Liquidation is the dismantling of the collective farming structures (TKZS, existing agri-firms and agricultural brigades, all of which are referred to as "state controlled co-operatives"), with the attribution of their assets to those who contributed to the land and non-land assets, and to their workers.

Municipal Land Commissions
Municipal Land Commissions (MLC) issue different types of certificates during the process of land restitution. They examine individual claims, provide certificates permitting the temporary use of the claimed land, allocate the land to the claimants according to a land reallocation plan, and deliver ownership certificates at the end of their work.

Liquidation Committees
Liquidation committees are responsible for the liquidation of state controlled co-operatives and the allocation of their non-land assets to eligible owners; on a transitional basis, they also prepare and sow the land that remains under their responsibility, mainly the land that is in the first stages of the restitution process.

Bulgaria Annex 3

Factors That Caused the Slow Pace of the Land Restitution Process[21]

The slow pace of land restitution process may be attributed to a series of different technical, financial, legal and political factors, summarized as follows:

- *Financial*: insufficient funds provided by the government to pay for land surveys and administrative costs for the process. As land reform is financed by an extra-budget fund, which is not adjusted for inflation, the annual budget has decreased substantially in real terms and has been frequently insufficient to cover the cost of the reform. Besides this financial shortage one should not forget the complicated and expensive pattern on the land reform procedures, additionally complicated by political loops and indecisiveness;
- *Legal*: the MLC reallocation plans have been frequently controversial. A large number of disputes, partly resulting from over claiming occurred in certain areas. As the Supreme Court gave an interpretation, which ruled that the MLCs could not change their decisions, the courts have been inundated with appeals. The vast number of people concerned live in other municipalities, which results in a huge administrative burden increased by the need to divide the property among heirs. Also the conflicts resulting from the separation of land restitution and the distribution of non-land assets of collective farms have considerably increased the volume of work of the different competent Courts;
- *Excessive compensation for irrigation infrastructure or tree plantations*: the State requested compensation fees for the existing irrigation equipment (amounting up to 20.000 BGL/ha) or for planted trees (orchards, vineyards, price depending on the age of plantation). People have considered these fees excessive and in many cases, this has brought about the destruction of these assets in an attempt to avoid payment. The continuing use of the land by liquidation committees (until the changes brought about in May 1995) has slowed down the restitution process by creating conflicts concerning the reallocation of land. It is also probable that in some municipalities there has been unwillingness to break up the former farming structures, thus bringing about abnormal delays in the implementation of land reform;
- *Behavior of landowners*: may people benefiting from the land reform are small holders between 0.5 and 1 ha living in the cities. Under the present low profitability of agriculture and the lack of land market they did not exert political pressure to speed up the land reform. They have perceived that the transaction costs to legalize their ownership will offset the potential in the short to long-term benefits. An additional factor has been the allocation of land for temporary use, which has satisfied a large number of people, as it is a source of production for self-consumption and generated a small additional income. Some groups of new owners have even preferred this situation fearing a future land tax or tax on land left idle. In this way, a substantial portion of new landowners has been rather passive and has not contributed to the speeding up the reform process;
- *Political*: the land reform process has been during the first few years of the transition, a field of political battle, between the former Communist and anti-Communist reformers.

[21] Agricultural Situation and Prospects in Central and Eastern European Countries: BULGARIA, Working Document, European Commission, DG Agriculture, June 1998

Bulgaria Annex 4

Irrigation In Bulgaria

Bulgaria is not a country rich in water resources. Its geographical location and hot summer climate make irrigation an important productivity factor for the Bulgarian agricultural sector. Until 1989, the country's irrigation system covered some 1.2 million ha of irrigated land out of 4.8 m ha of total arable land in the country. Drainage systems were constructed mainly in the most intensive agricultural regions and covered an area of about 196,000 ha in 1998. The status of these systems is similar to the irrigation systems with much of the pumping equipment and channels in a poor or derelict state of repair. Little information exists about the detailed state of the infrastructure, although a basic inventory of the drainage systems exists.

The state-owned irrigation and land improvement network is managed and used by Napoitelni Sistemi plc. Apart from the state-owned irrigation and land improvement network, there are also smaller irrigation networks built by former farm co-operatives and agricultural complexes, now owned by municipalities. These are mainly micro dams and local networks of canals and irrigation facilities. Following the completion of the land reform, the management of irrigation infrastructure has changed dramatically. Various private landowners, tenants and farm co-operatives often share the same on-farm facilities, which results in frequent conflicts of interest.

Irrigation, 1995-2000. 2001-2002 Forecasts.

No	Indicators		1995	1996	1997	1998	1999	2000	2001*	2002*
1.	Irrigable areas	ha	593 000	636 419	636 417	631 778	577 859	537 558	537 558	502 112
2.	Irrigated areas	ha	41 325	103 383	42 411	41 383	23 738	49 328	52 035	55 000
3.	Proportion of irrigated to irrigable areas	%	6.96	16.24	6.66	6.55	4.11	9.18	9.68	10.95

- *Data for 2001 and 2002 is forecast data by Ministry of Agriculture and Forestry*

Source: Ministry of Agriculture and Forestry

The state-owned hydro-melioration infrastructure used for collection, storage and delivery of irrigation water comprises 235 irrigation systems and a large number of independent irrigation areas covering 740 600 ha in total.

Irrigable areas total 537 500 ha including 247 300 ha irrigated through gravitational methods and further 290 200 ha irrigated with pump water.

In recent years the effectively irrigated areas accounted for 4 % to 9 % of total irrigable agricultural land.

In 2000, irrigated areas and irrigation water resource increased significantly compared to 1999. It has been largely attributed to the fact that irrigation water was delivered either free of charge, where gravitational methods applied, or at half the normal price, where pump water used, from July 10, 2000 until August 31, 2000.

There is a need to repair and/or restructure the irrigation systems to reflect new land use patterns organised around private ownership of smaller production units and sharply changed relative prices for energy, inputs and irrigated output, to improve the irrigation management through transfer of operation and maintenance tasks to the water users, and to put in place supportive public and private institutions. Investments in rehabilitation and restructuring of the

irrigation systems must be justified using economic criteria and financing mechanisms in which water users play a major participatory role.

Stemming from the instability and disturbances in the agricultural market, the decreasing water demand for irrigation purposes, poor technical condition of irrigation facilities, low percent of actually irrigated land areas have grown into a major problem encountered by agriculture. It is noteworthy that about 40% of the country's irrigation system is of low efficiency while 80% of the internal canal system is practically unusable.

Drought Management Program There is an increasing awareness within Government about the urgent action required to reactivate both the irrigated agriculture sub-sector and the water management sector as a whole in Bulgaria. The clear evidence for the strong shift in Government priority towards development of the irrigation sub-sector has been seen in the last year with the growing pace of institutional reform measures being implemented by the Government and the recent importance attached to realisation of a number of irrigation measures under the Drought Management Programme (Decision 43/30, January 2001).

The main focus of the Plan for immediate action relates to the following aspects of the Drought Programme: cconservation of water resources; oovercoming drinking water supply crisis; gguarantee of irrigation water supply; and ccreation of knowledge and awareness for water resource conservation.

Establishment of Water Users Associations As economic conditions changed, a solution was found in the establishment of water users' associations intended to take over the management of irrigation infrastructure to the level marked by their own capability of utilizing and maintaining either whole facilities or detached parts. In accordance with the new Irrigation Association Law, WUAs are to contribute at least 20% of the investment costs. The development of the Water User's Associations (WUAs) has been obstructed by:

- degraded hydro-meliorative infrastructure and lack of adequate financial resource for their operations

unreasonable terms of tenure to hydro-meliorative infrastructure imposed by Irrigation Systems plc

- The fact that only temporary tenure is granted and not full ownership
- Lack of equipment (sprinklers etc.) needed for efficient utilization and maintenance of infrastructure.

Reviews of the irrigation sub-sector have been carried out by JICA, World Bank, MAF Investment Division and SAPARD consultants. Most of their analyses show that the financial and economic viability of irrigation development projects is likely to be marginal and it will be of up-most importance that only the best projects are implemented. They also state that the economic returns from drainage (and flood protection) projects are less attractive than those for irrigation.

Documents:

National Plan for Agriculture and Rural Development under the SAPARD Programme for the period 2000-2006, Ministry of Agriculture and Forestry, Sofia, 2000

Agrarian Report, Ministry of Agriculture and Forestry, Sofia, 2001

Agrarian Report, Ministry of Agriculture and Forestry, Sofia, 2000

Agrarian Report, Ministry of Agriculture and Forestry, Sofia, 1999

Bulgaria Annex 5

Legislation And Regulation

There are a number of laws adopted or pending adoption in Bulgaria that include reference to agriculture and the environment. For example:

Water Act, SG 67/1999– Chapter 8 of the Act deals with the protection of water and water bodies from pollution and includes a number of legal obligations upon farmers e.g. the prohibition of the storage of pesticides or construction of cattle-breeding farms on river banks.

Regulation No. 2 on Water Protection from Nitrate Pollution Originating from Farm Sources (SG 87/2000) - prepared in accordance with the requirements of the EU Nitrates Directive 91/676 for the protection of ground- and surface-waters from nitrate pollution by agriculture

Agricultural Land Ownership and Usage Act, SG 17/1991 and the **Regulation for Application of Agricultural Land Ownership and Usage Act, SG 113/99** – this Act and its implementing Regulation controls the ownership and use of agricultural land e.g. land must not be used in a manner that is "detrimental to soils".

Act for Protection of the Soil from Contamination, SG 84/1963 and **Regulations on the Enforcement of the Protection of Air, Waters and Soil Against Pollution Act, SG 80/1964** - this Act and associated implementing regulations aims to restrict the pollution of soil, air and water from a number of sources, including agriculture e.g. it is prohibited to pollute soils with herbicides and other agricultural-plant pest control chemicals in concentrations exceeding maximum admissible levels.

Nature Protection Act, SG 47/1967 – this Act (and its many subsequent amendments) provides the basis of nature protection and biodiversity conservation in Bulgaria and requires that "natural flora and fauna, the natural habitats, landscape and nature objects should be preserved and utilised according to the regulations".

Other relevant legislation under development includes:

- Act for Mountainous Areas
- Act for Fertilisation of Agricultural Lands
- Act for Management of Chemical Substances and Products
- Regulations concerning the Application of the Plant Protection Act

4.4 Czech Republic

Author: Jirina Jilkova

1. Overview of Privatization

There are several political circumstances in 20th century, which have influenced the situation in land privatization in the Czech Republic after "the Velvet Revolution" in 1989:

- Land reform 1918 - 1939[22]
- Reform 1945 – 1948
- Collectivization 1948 – 1989
- Economic Transformation since 1989

Table 1.1 Ownership of agricultural land in former Czechoslovakia and the Czech Republic

Type of ownership	1956	1960	1989
state farms	10%	Less than 5%	28%
Cooperative farms (state ownership)	37%	More than 80%	68%
Others	53%	About 15%	4%

Source: LINDEMANS, I., SWINNEN, J. F. M. (ed.), Political Economy of Agrarian Reform in Central and Eastern Europe, ISBN 1 85972 560 0, Ashgate Publishing Ltd, Aldershot, England, 1997

The development of the agricultural policy and situation before the communist regime breakdown in 1989 is briefly described in Annex I.

When did land privatization begin? To what extent is the process completed? (i.e. provide an estimate: "land privatization is in its early stages" or "land privatization is about 75% complete".)

The basic document which enabled the legal solution and realization of privatization, restitution and transformation of owners and users relations in agriculture was the Act No. 221/1991, "on the owners relations to land and to other agricultural possession". The process of transformation and privatization in the agriculture started with the higher intensity than in other parts of national economy. Compared to 1948, which was the starting point for the correction of relations, the structure of farms and production technology changed significantly.

The execution of the **restitution** claims in agriculture has been in action since 1989. By the end of 1995 81.9 per cent of restitution claims were finished and 97.3 per cent by the end of 2000. By the end of 2000 1,591,000 hectares of the agricultural and forestland were restituted. The **privatization** of state farms and similar enterprises farming on agricultural land was almost finished in 1998. Until 31.12.1998 the holdings included in the privatization projects made 95.96 per cent of total holdings for privatization. The process of privatization has not been finished in some cases due to complicated restitution claims under the Act No. 221/1991 and its amendment but also by revocation of privatization process. The case of revocation was connected with a retraction from the privatization project or not paying of the privatized property by the new owner.

[22] The objectives of the reform were to break the power of former foreign elite and winning the support of the peasantry for democratic ideology. The Confiscation Act prohibited ownership of more than 150 hectares of agricultural land or more than 250 hectares of nonagricultural land.

In the case of the state farm the most used method of privatization of capital assets was a direct sale. It is necessary to distinguish between the companies itself (buildings etc.) and the land. Talking about the privatization of the state farm refers to the facilities such as buildings but not the land. The land is in the state hands and has not been privatized yet.

Table 1.2 The Possession Of Approved Privatization Projects Of The State Farms According To Methods Of Privatization By 31.12.1998

Method of privatization	Total property (mil. CZK)	Percentages
Public sale	1887	9.96
Public tender	3146	16.61
Direct sale	10449	55.17
Stock company	1600	8.45
Free of charge transfer	1858	9.81
Total	18940	100.00

The transformation of agricultural cooperatives was realized under the Act No. 221/1991. The state cooperatives were transformed into the business companies or cooperatives.

As briefly mentioned in Annex I, during the collectivization from the beginning of the fifties, there were two basic legal form of agricultural farms:

- State farms (in Czech Statni statek): the land managed by these state farms was state property (land of German population which was relegated in 1945, land of former large land owners expropriated after 1948). The average size of these state farms was 6 259 in 1989. The current land privatization is an issue dealing with state land mostly managed by former state farms.
- Agricultural cooperatives (in Czech Jednotne zemedelske druzstvo, JZD). Farmers were forced to create cooperative farms usually within the boundary of the municipality. Formally, the ownership of the land was preserved by original owners/farmers even after the land had been handed over to the socialist enterprises. In other words, formally the ownership has not changed, and was kept by the farmers. However, the owners lost the right to decide about the land and to use it! The average size of the cooperatives was 2 574 ha in 1989.

The cooperatives have changed their legal status according to Czech business law to the limited company (spolecnost s rucenim omezenym), to the cooperative (druzstvo) or to the joint stock company (akciova spolecnost). Part of the former owners has taken the land for their individual use and has established individual farms. The main part of the land have stayed in the use of the former companies transformed, in most cases, into other legal bodies such as limited company, cooperative, joint stock company. These new agricultural companies rent the land from individual owners.
Mostly the same people who managed them prior to privatization manage these new agricultural companies. Only a very limited number of the original landowners has ownership rights to the companies or is actually in the management of the companies.

The property, livestock for the purpose of farming was returned to the original owners on their request. In many cases this property transfer was very complicated. Still there are complications in settling the transformation claims of the entitled persons who didn't become members of cooperatives and also didn't start to farm.

How much private land currently exists in your country? (Please include the definition of "private" used in your sources, i.e. does it include land held by groups, associations, municipal

owned companies, communities, etc.) Compare current situation (% private land) with before privatization. Provide available breakdown of privatized land: agricultural/urban. Further, if possible include here the specific amount of each type of land that has been privatized (agricultural, forest, industrial, wetland, and rangeland)? What privatization activities are currently being implemented?

There have been enormous changes in the structure of Czech agricultural companies after 1989. However, there is still the large-size production character of farming in comparison with other Eastern European States due to the process of transformation. All individual members of former state cooperatives could start to farm independently. The ones who did not want to or could not farm individually has grouped in transformed cooperatives or established different types of business (stock company, limited company). The huge cooperatives with area of several thousands of hectares have broken down to smaller companies. The state farms were privatized, the new social class of private independent farmers has occurred.

While the private farmers managed only 0.3% of agricultural land in 1989, in 2000 it was nearly 27%. Newly established companies managed 23% of agricultural land in 1995 and reached 42.9% in 2000. The share of land managed by cooperatives is decreasing; from 61.4 in 1989 to 38.9% in 1995 and reached 29.1% of agricultural land in 2001. The average size of the cooperative has been gradually decreasing and the areas of state companies have been dramatically limited.

Table 1.3.I The Total Managed Agricultural Land For Different Legal Forms And Its Share On Total Agricultural Area

Form of enterprise	**1989**	**1995**	**2000**	**1989**	**1995**	**2000**
	Total area (thousands of ha of agriculture land)			**Percentage of total area**		
Private farmer	13	826	962	0.3	19.3	26.4
Agricultural cooperatives	2 636	1 666	1 059	61.4	38.9	29.1
Limited liability company		714	784		16.7	21.5
Joint-stock company		269	780		6.3	21.4
State farm	1 089	53	24	25.3	1.2	0.7
Others	558	753	34	13.0	17.6	0.9
Total	4 296	4 281	3 643	100.0	100.0	100.0

Source: Statistical Yearbook, Czech Statistical Institute and Report on Czech Agricultural Situation, Agrocenzus 2000

Table 1.3.2 Average Size Of Company According To The Legal Status

Form of enterprise	*1989*	*1995*	*2000*
	Average size of one enterprise (hectares)		
Private farmer	***4***	***40***	***39***
Agricultural cooperatives	***2 574***	***1507***	***1 465***
Limited Liability Company	***-***	***756***	***669***
Joint-stock company	***-***	***1206***	***1 502***
State farm	***6 259***	***660***	***363***

Source: Statistical Yearbook, Agrocenzus 2000, Czech Statistical Office and Report on the State of the Czech Agriculture 2000.

The restitutions have been the most intensive in years 1994 and1995. The very most of the owners who wanted to farm were enabled to do so. So far the problems connected with the break up of ownership, unclarity of ownership caused by discontinuation of the land record keeping, inaccessibility to the parcels, etc. has not been systematically solved.

2. Overview of Environmental Impacts

The field roads, natural border elements and other characteristics of the landscape were destroyed as a result of the large-area farming during the Soviet-era infrastructure. The environmental stability of the landscape was impaired, the soil resources were devastated by water and wind erosion, the biodiversity decreased and the overall landscape pattern was disrupted.

The high share of the arable land on agricultural land is a typical relict of this period. This high share of arable land and used technologies has a significant impact on the soil erosion, which is a cause of lower yields and watercourses silting.

Tab. 2.1: Endangerment of agricultural land by erosion in the Czech Republic

Level of endangerment	Annual soil decrease	% Agricultural land
Very low	< 1.5 t/ha	3
Low	1.6 – 3.0 t/ha	26
Medium	3.1 – 4.5 t/ha	25
High	4.6 – 6.0 t/ha	17
Very high	6.1 – 7.5 t/ha	11
Extremely high	> 7.6 t/ha	18
Total		100

Source: Ministry of Environment of the Czech Republic, 2000

The effects of privatization on the elimination of these damages have been extensive. Mainly, the average farm area has significantly decreased and consequently the borders and margins has arisen being an important landscape elements and anti-erosion barriers.

There were 3025 private farms in the CR in 1989 with average area 4 hectares, 1024 cooperatives with average area 2574 hectares and 174 state farms with average area 6259 hectares *(Statistical Yearbooks of Czech Statistical Institute, 1990)*. According to *Agrocenz 2000* there are more than 41,000 farms with area smaller than 10 ha. Nearly 10,000 farms have an area 10 to 50 ha, which is together with the previous category more than 8% of total agricultural land. The highest rate of farmed land (44%) is managed by farms of size 500-2000 ha. Only 127 farms have a larger area than 3000 ha. These changes of the farm size structure have positive environmental effects.

What have been specific problem areas (e.g. liability for industrial sites, land contamination)? Have specific incidents of human health/environmental impacts been reported? Are these primarily urban or agricultural?
2.3 How have these problems been addressed? Is there a process by which polluted sites have been/are being remediated? Have agricultural lands identified as being contaminated been taken out of production as a result of the "privatization" process, either by individuals, communities, associations, or other interested parties?

The land contamination is, in most cases, caused by industrial activities, which have significantly decreased since 1989. Furthermore, the legal duty for factories to operate the devices protecting water and soil from pollution has been introduced after 1989. Some risk elements such as cadmium and lead have gotten into the soil through chemical fertilization. There can be found soil contaminated by lead in Pribram region, total area of more than 1000 ha of agricultural land, of which about 830 ha of arable land, is in this region *(Source: Database of Research Institute for Soil and Water Management, Zbraslav)*. This land has been excluded neither from the transformation nor the privatization; there are farms on it. The areas are categorized as less favored areas for agriculture and the state subsidize their grassing. However, the examinations and monitoring of the risk elements (cadmium, mercury, lead, chrome) in the soil have proven that the soil does not represent a danger of the transfer of the contaminants into the food chain *(Source: The report of Central Institute for Supervising and testing in Agriculture, 1996)*.

The negative effects of agriculture on soil quality have decreased since 1989 as a result of general agriculture production decrease. It can be documented by the data on chemical fertilizers consumption. Although, it is not solely consequence of the privatization but it is also a result of the unfavorable economic situation in agriculture.

Table 2.2: Consumption of chemical fertilizers in CR

Year	N	P_2O_5	K_2O	Total
1989	103.2	67.1	59.7	230.0
1990	86.3	52.5	47.2	186.0
1991	50.0	8.0	7.0	65.0
1992	50.0	8.0	7.0	65.0
1993	40.0	13.0	10.5	63.5
1994	57.6	10.3	13.0	80.9
1995	55.6	14.6	12.7	82.9
1996	61.3	11.8	8.0	81.1
1997	55.1	11.7	10.1	76.9
1998	53.3	12.6	7.3	73.2
1999	51.1	8.6	5.9	65.6
2000	58.9	10.8	6.2	75.9
2001	72.6	12.3	7.3	92.2

Source: Ministry of Agriculture of the Czech Republic, 1997-2001

The contamination of sewage water caused by farms has been significantly higher before 1989. But still, the water in one third of watercourses, important for water industry, is categorized as IV (highly polluted) and V (severely polluted). Water in most wells (95-98%) does not comply with the drinking water standards, mostly due to contamination by bacteria and nitrates *(Source: SAPARD).*

National Property Fund

The effects of the privatization of environmentally unsound properties have been a strain on the Czech emergent economy. Foreign investors are deeply concerned over the burden of financing cleanup of the past environmental contamination. The problem of dealing with environmental damages connected with a privatized property has appeared in the very beginning of the privatization process. The Czech Republic established a wide and comprehensive indemnification program. Under certain conditions, investors can indemnify all the cleanup costs up to the purchase price of the investment.

NPF signs the agreement with foreign investors (alienee) on the basis of the Government Resolution on the particular privatization case. NPF commits in the agreement to indemnify the cleanup costs used for removal of environmental contamination preceding the privatization. NPF commits to indemnifying only the appropriate costs expended to solve the environmental liabilities; these are exactly specified in and result from the decision of Czech Environmental Inspection (NPF CR, 1999).

Document called "Regulation of NPF and MoE for preparation and realization of environmental liability settlements within privatization" represents a blueprint for the cleanup procedure. The document is based on Government Resolution (GR) 51/2001 and also GR 691/2000. It comprises technical details on risk assessment, exploration, and bid for remedy firm, remedy, supervision, and other related issues.

All the liabilities are transferred to alienee together with the privatized property according to the Act No. 92/1991. The alienee is not entitled of any discounts from the purchase price (Government of CR, 1997).
Environmental liabilities are related only to so called environmental damages. Environmental damages according to GR No. 810/1997 are defined as:
Groundwater contamination;
Contamination of rock environment;
Contamination of buildings or their parts;
Existence of harmful waste dumps; that is, existence of a material that can endanger environment by its chemical, physical or biological character.

NPF provides guarantees up to the purchase price of the privatized property or up to the maximum stock price level in case of join stock companies in the environmental contracts (Government of CR, 1997) – So called environmental guarantee.

Table 2.3 NPF cleanups development

Year	1991-1992	1993	1994	1995	1996	1997	1998	1999	2000
Real costs (in million CZK)	-	-	139.2	817.7	949.7	1357.3	2173.6	1758.9	2173.44
Cumulative real costs (in million CZK)	-	9.1	148.3	966	1915.7	3273	5446.6	7205.5	9378.94
Guarantees	3500		49457	-	-	-	*4050*		2888
Cumulative guarantees	3500	-	56457	39200	-	-	*116700*	136345	139233
No. Of Contracts	90		81	-	-	-	*7*	3	23
Cumulative No. Of contracts	90	-	171	124	-	-	*305*	234	257

Source: National Property Fund, 2000. National Property Fund, 2001b. 2000 data www.fnm.cz, retrieved Feb. 2, 2001.

What kinds of lands, have been excluded from privatization (forests, wetlands, contaminated properties, riparian zones, biologically rich lands)? (Please provide definitions used by the government in characterizing any lands that have been excluded.)
According to Act No. 95/1999 Coll. on condition of transfer of agricultural and forest lands from state to other bodies following lands **cannot** be transferred:
Forests in protective forests and special forests (according to § 7 and 8 of Act No. 289/1995 Coll. on forests) with exemption of state joint ownership,
Forests in managed forests (according to § 9 of Act No. 289/1995 Coll. on forests) with continuous area larger than 10 ha,
Agricultural and forest lands at military sites,
Agricultural and forestlands in national natural sites, national natural reservations and in the I and II zones of national parks[23].

[23] See Annex 3 for further information on protected lands in the Czech Republic. National Parks are extensive areas, unique at national or international level, which mostly consist of natural or by human activities little influenced ecosystems where plants and wildlife have an extraordinary scientific and educative importance. There are four national parks in the CR with total area of 110 304ha.

Zone I: Restricted all agricultural production, only grassing and forestation
Zone II: Limited structure of agricultural crops, decreased amounts of fertilization and chemical plant protection

3. Environmental Impacts by Sector

3.1 Agricultural Land

Has there been an increase, a decrease, or no change in agricultural production on privatized land? Does it appear that these changes are related to changes in land tenure or are they the result of some other factors?

The agricultural production has decreased significantly since 1989; mainly in the sphere of animal production Table 3.1.1-I shows the comparison of production of 2000 and 1989.

Table 3.1 Changes of agricultural production

Crop	Year	Area under crops (thousands of ha)	Harvested area (thousands of ha)	Yield (t/ha)	Production (tis. t)
Cereals total	1989	1 669.9	1 661.9	4.69	7 793.1
	2000	1 647.5	1 650.1	3.91	6 454.2
	Index 2000/89	*98.7*	*99.3*	*83.4*	*82.8*
Legumes total	1989	58.9	58.2	2.17	126.1
	2000	40.6	39.8	2.13	84.9
	Index 2000/89	*68.9*	*68.4*	*98.5*	*67.4*
Potatoes total	1989	115.4	115.3	21.01	2 421.8
	2000	69.2	69.2	21.33	1 476.0
	Index 2000/89	*60.0*	*60.0*	*101.5*	*60.9*
Beet root	1989	127.1	126.6	35.52	4 497.0
	2000	61.6	61.3	45.83	2 808.8
	Index 2000/89	*48.4*	*48.4*	*129.0*	*62.5*
Oil bearing crop total	1989	121.7	121.5	2.79	339.0
	2000	408.7	404.7	2.33	943.6
	Index 2000/89	*335.8*	*333.1*	*83.6*	*278.3*
Flax	1989	.	21.2	4.20	88.9
	2000	8.5	8.3	1.82	15.1
	Index 2000/89	.	*39.3*	*43.3*	*17.0*
Hops	1989	.	10.5	1.03	10.8
	2000	.	6.1	0.80	4.9
	Index 2000/89	.	*58.2*	*77.4*	*45.1*
Grape vine	1989	.	11.3	4.56	51.3
	2000	.	11.2	5.96	66.9
	Index 2000/89	.	*99.8*	*130.6*	*130.4*

Source: Final data on agricultural crops yield, Czech Statistical Institute

Crop production has been lower due to decrease of yields implicated by decrease of production intensity, which is a factor favorable to the environment. The areas with beetroots and potatoes have significantly decreased. At the same time, the average yields of beet roots has increased as a result of the fact that the root beets is no longer cultivated in less favored areas (mountain areas, etc.). Also this factor is favorable to the environment, especially for decrease of soil erosion.

The place of root crops and feed grains has been overtaken by rape. The production of flax has decreased to less than 20% of 1989. The privatization of agriculture has had a very negative effect in this case as flax has limitations when being implemented into the crop rotation and requires a special mechanization. That is why it is cost effective only for large specialized farms. Also, the privatization of hop gardens has had negative effects.

The numbers of cattle and cows has decreased by more than 50%. However, the number of cows without market milk production is increasing as well as is the livestock breeding on pastures. The livestock efficiency has increased, mainly the average milk yield.

Table 3.1.2 Changes Of Numbers Of Livestock (Thousands Of Animals)

	1989	2000	Index 2000/89
Cattle total	3 481	1 574	45.2
Of which cows	1 248	615	49.3
Pigs total	4 685	3 688	78.7
Of which sows	312	297	95.2
Poultry total	32 479	30 784	94.8
Of which hens	15 699	11 739	74.8

Source: Czech Statistical Institute

Table 3.1.3 Changes Of Production And Efficiency In The Sphere Of Livestock Production

	Unit	1989	2000	Index 2000/89
Milk production	Mil. l	4 900	2 708	55.3
Average milk yield	l/pc/year	3 982	5 255	132.0
Beef meat production	Thousands of tons	518.5	208.0	40.1
Average cattle gain during fattening [2)]	Kg/pc/day	0.75	0.88	117.1
Pork meat production [1)]	Thousands tons	778.0	583.9	75.1
Average gain during fattening[2)]	Kg/pc/day	0.63	0.65	103.2
Poultry meat production[1)]	Thousand ton	199.0	294.3	147.9
Total egg production	mil. Pieces	3 643	3 064	84.1

Source: Ministry of Agriculture and Research Institute of Agricultural Economics, Czech Statistical Institute

These changes are the result of the privatization as well as of the unfavorable situation of farms especially in the first half of nineties.

As for the comparison of private farmers and corporate farms, the private farmers are significantly more successful in the area of cattle and cow breeding. Also, costs for milk production are lower in case of private farmers. The total costs of a diary cow per year has reached 43,114.00 CZK, the costs for one liter of milk 7.91CZK and 73.9 CZK for one kg of live weight of calf in case of corporate farms in 2000. The private farmers has reached total costs per diary cow per year 38,084.00 CZK, costs per one liter of milk 7.17 CZK and 65.3 CZK per

live weight of calf *(Source: Research Institute of Agricultural Economics: Analysis of costs on Czech agriculture in 2000).*

See **Annex II** for comparison of yields and efficiency of private farmers and corporate farms depending on the size of the farm.

Has pesticide use on private land increased or decreased? What have been the primary causes for this?

Consumption of plan protection active substance has dramatically decreased in the beginning of the privatization process. The main reason for this was the unfavorable economic situation. As the economic situation has improved, the use of pesticides has been increasing.

Table 3.1.4 Consumption of plan protection active substance (KgG/ha)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1.98	2.01	1.57	1.09	0.89	0.88	0.89	.	0.91	0.97	0.98	1.00

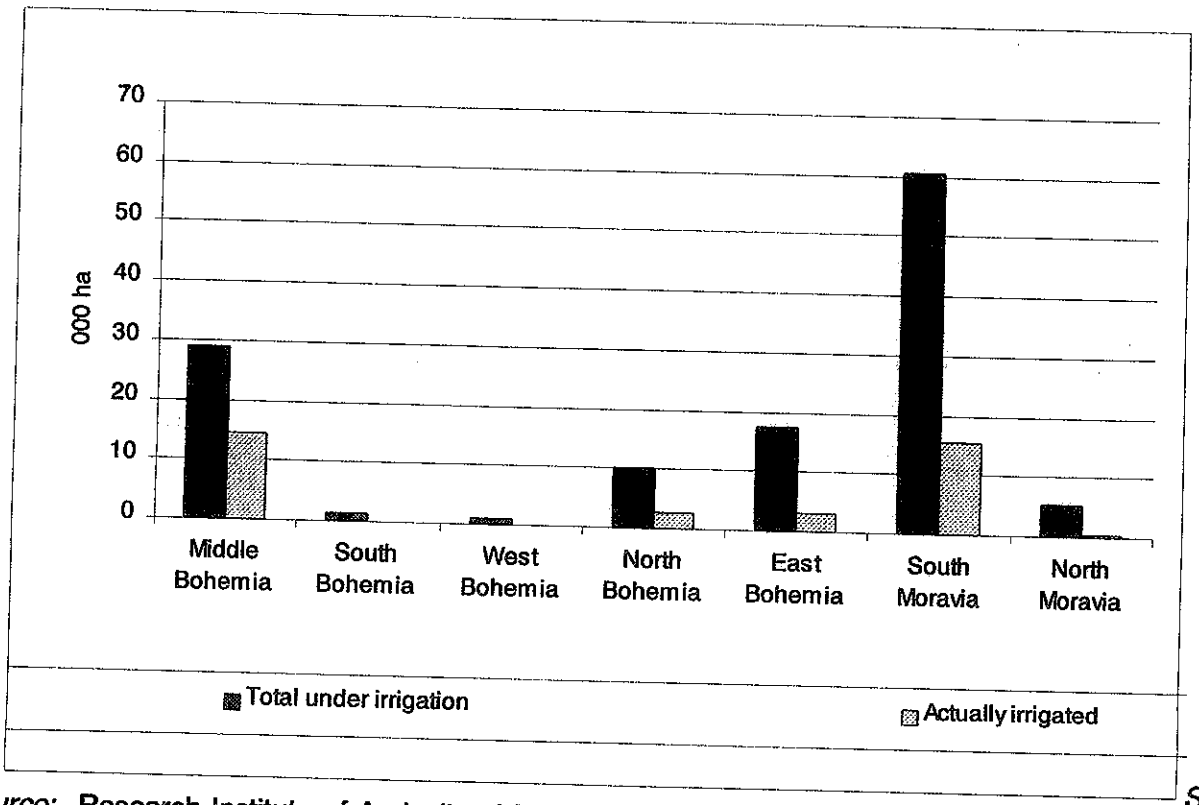
Source: *Ministry of Agriculture of the Czech Republic, Statistical Yearbook , Czech Statistical Institute.*

The use of plan protection active substance has stabilized in the past few years *(Report on the State of the Czech Agriculture for 1999, MoA).*

Have there been changes in irrigation practices? If so, describe any positive or negative environmental impacts. (Positive impacts might include an increased focus on water conservation by local farmers while negative impacts might include increases in soil salinization or increases in the amount of irrigation water per unit area.) Have there been other significant beneficial or negative environmental impacts reported as a result of changes in land tenure?

The extent of irrigation networks was 155,000 ha by the end of 1998, which is 3.6% of agricultural land. The extent has not been changing since 1990. Most of the irrigation, mainly the large-area ones, is not used as they are inefficient and due to the unsolved property rights. For example, there was used only 28,8% of the whole irrigation potential, e.g. 34,000 ha in 1995. The extensive water reservoirs, originally build to supply the irrigation systems (Nové Mlýny, Rozkoš), are not used for their original reasons any more.

Table 3.1.5 The Situation In Use Of Irrigation In Czech



Source: Research Institute of Agricultural Economics and Ministry of Agriculture " Soil - situation and perspective report, 1996".

The changes in land ownership have reflected the management of drainages. The drainage and reclamation were realized on 23.5% of agricultural land *(Research Institute of Agricultural Economics and Ministry of Agriculture " Soil - situation and perspective report, 1996")*. The breakdown and privatization of large units and return of the property to individuals has caused problems with the management of extensive drainage networks. Many of the drained areas have been returning to their original state, there are new wetlands appearing and the biodiversity is increasing.

What have been the trends regarding grazing lands (public and private grazing rights) and what have been the broader trends regarding livestock numbers? Environmental impacts of grazing (soil degradation, water pollution, etc)

The pasture was minimum during the period of large-size technologies as the cattle were stabled mostly in large-capacity buildings. Any regulations or laws did not treat the pasture. The rate of grasslands on arable land was law; fodder plants and silage plants were grown extensively on the arable land. Only in past ten years the rate of grasslands has been gradually increasing.

Table 3.1.6 Development Of Different Land Types

Situation to date	Arable land	Grasslands	Agricultural land	Forests	Rate of grasslands on agricultural land
	.000 ha	.000 ha	.000 ha	.000 ha	%
1.4.1966	3 352	950	4 514	2 600	21.0
1.4.1971	3 320	929	4 470	2 608	20.8
1.1.1976	3 316	901	4 444	2 612	20.3
1.1.1981	3 293	851	4 374	2 624	19.4
1.1.1986	3 269	823	4 327	2 626	19.0
1.1.1990	3 232	828	4 296	2 629	19.3
1.1.1991	3 219	832	4 287	2 629	19.4
1.1.1996	3 143	901	4 280	2 630	21.1
31.12.2000	3 082	961	4 280	2 637	22.5
31.12.2001	3 075	966	4 277	2 639	22.6

Source: Statistical Yearbooks of soil fund of the CR, UZAK, Prague

The grazing of cattle has started as the privatization continued. Till 1996 the number of cows without market production of milk and of meat breeds, which are bred mostly on pastures, was not monitored. Their rate on the total amount cows has been increasing.

Table 3.1.7 Development Of Number Of Cows

Years	Cows	Of which without market milk production	Rate of cows without market milk production on total amount of cows
	.000 pieces	.000 pieces	%
1989	1 248	.	.
1996	751	38	5.06
1997	702	46	6.55
1998	647	49	7.57
1999	642	59	9.19
2000	615	67	10.89
2001	611	82	13.42
2002	596	100	16.78

Source: Czech Statistical Institute

The amount of grasslands that are used for pasture is still quite low in the CR; contrary the amount of unmanaged grasslands is increasing. Only about 14% of total grasslands areas are managed by pasturing. The highest rate of pasturing has the limited companies (Ltd.) and private farmers.

Table 3.1.8 Management of Grasslands

Legal status	% The area of grasslands managed by				
	Mowing or pasturing	Only pasturing	Mulching	Lying fallow	Not specified
Private farmers	81.5	15.4	1.1	1.5	0.5
Companies – farms	82.8	13.1	2.4	1.4	0.3
Of which Business company	81.9	13.7	4.3	0.0	0.1
Limited companies	76.5	18.5	3.4	1.1	0.5
Stock company	84.7	10.9	2.1	2.2	0.1
Cooperatives	88.4	8.8	1.4	1.3	0.1
State farms	89.7	9.2	0.7	0.4	0.0
Companies total	**82.4**	**13.9**	**1.9**	**1.4**	**0.3**

Source: Agrocensus 2000

Together with radical decrease of the cattle, the rate of pastures lied fallow has been increasing after 1989. The unsuitable located pastures are not rented by the owner to corporate farms and they often stay lied fallow, which have a negative environmental impact. Such lands become the seedbed of weeds, they are covered by seedaged of woods and some species, such as partridges, are disappearing.
The grasslands managed by pasturing have a special importance for biodiversity and for landscape. The current state subsidy system also protects the environment before the potential damages from pasture by limiting the amount of animal on hectares *(Government Resolution 505/2000 Coll., that sets the support programs for non-production functions of agriculture, support of activities helping to preserve the landscape, programs for help to less favored areas and valuation).*

The regulation requiring fencing of the special environmentally valuable places such as: watercourses, wetlands and places with diffuse verdure is being prepared (Source: prepared measurements within HRDP).

3.2 Forest Land

Has tree cutting increased, decreased, or not changed significantly on privatized land?

The rate of private forests on the total area of forests has stabilized on the level of about 22% (see Table 3.2.1). There were virtually no private forests in the Czech Republic before 1990. The biggest changes happened in 1991-1993. The amount of private owners has stabilized at 150,000 by the end of 2000. Most of the private owners are the very small ones with 69% having area smaller than 1 hectares, 14.3% having area between 1.1 and 2 hectares, 11.7% between 2.1 and 5 hectares, 3.3% between 5.1 and 10 hectares, only 1.3% between 10.1 hectares and 50 hectares and 0.4% having area larger than 50.1 hectares. The broken structure of ownership causes problems of forest management and control.

Table 3.2.1: Changes In Forest Land Ownership In The CR

Forest ownership	Years							
	1850	1920	1930	1945	1947	1950	1990	2000
	% Forest land areas							
State	2.5	3.6	12.4	18.3	60.1	70.1	95.8	63.1
Municipality	9.1	10.0	11.3	14.9	17.4	16.6	-	13.6
Church	8.0	7.9	7.1	6.1	7.1	-	-	-
Cooperatives	-	1.9	1.8	1.7	3.2	3.2	4.1	0.9
University								0.3
Foundation	1.7	0.8	1.2	0.9	-	-	-	-
Private	78.7	75.8	66.2	58.1	12.2	10.1	0.1	22.1

The volume of timber mining has been gradually increasing. It has reached 6,66 m^3/ha in private forests in 2001, but it is still significantly lower than the increment (the increment means the positive difference of grown trees and cut trees. The yearly tree cutting is below what is grown annually).

Comparison of forestry practices on private with practices on state held land

The very small owners have, in most cases, no experiences with the forest management, many of them live far from their forest and they virtually do not manage the forest. This is true for the owner with forest smaller than 2 ha (83.3% of all private owners) respectively the owners with forest smaller than 5 ha (95% of all private forest owners). The illegal cutting appears the most frequently in this category of owners. However, the State Forest Management does take care of these forests as well. The problem of very small plot owners is that they do not have any experiences and they, very often, do no live close to their rural property. They do not want to spend much energy and time on taking care for their "small piece" of forest.

A better situation is in the group of owners with area between 5 and 50 ha. The owners bellow 50 hectares may undertake the Forest Management Plan approved by State Forest Administration (SFA), created for their forest under financial support of the SFA. If they do not undertake the Plan, every cutting must be approved separately. Thus, the best forest management is found at forest property larger than 50 ha where the owners are obliged to follow the Forest Management Plan and which have the qualified managers.

The managers of state forests, mainly the state company Forest of the Czech Republic, manage 1.4 millions ha of forest and have the best-qualified experts that implement the state forest policy into practice. The main principles are: sustainable forest management, increasing environmental stability of forest, increasing biodiversity, environmentally friendly ways of forest management, increasing the share of natural forest reproduction and share of leafy woods. There is an increasing focus on non-market functions of the forests.

Description of specific localities where increases or decreases in tree cutting has occurred.

Generally, there are no large localities where increases or decreases in tree cutting have occurred. The economic and legislative instruments are in action to ensure the principles of sustainable forest management.

The increase of cutting has not been evident in any of the regions. However, we can distinguish the areas with higher share of illegal cutting although the total number of such case is not high. The highest number of illegal cutting can be found in northeast Moravia and on Czech-Slovak border.

The decrease or even elimination of cutting has been realized in specially protected areas, such as national parks. The problem of illegal cutting is a minor matter in the forest management. The cases of illegal cutting are taken to the court and the sanctions may be very high and strict. Based on the damage assessment, the illegal cutter may be adjudged up to several years in prison! The ownership of the forest does not excuse him/her from cutting his/hers tree illegally.

The illegal cutting was found in 669 cases in 2000 and reached volume of 148,100 m^3. The illegal cutting means for example excess of cut/cleared areas-1ha, cutting without the permission, etc.

Description of environmental impacts: soil erosion and river sedimentation? Have large blocks of relatively uncut forestland been fragmented? Impacts on old-growth forests? Impacts on habitats?

As there have not been any big changes in the cutting and in the forest management during the transformation, there were no significant negative environmental impacts.

The large blocks of old growth forests (primary forests, natural forests) or uncut forest have not been conserved due to decades of intensive use of the landscape.

The uncut forests similar to the natural forests have been saved only on very small areas (areas of few dozens of hectares) in natural reservations (Boubin, Zofinsky prales, Zakova hora) and as fragments in I. zones of national parks especially on wetlands and peat bogs.

Recently, there has been discussion on leaving parts of the forests in protected areas to grow spontaneously. The first attempts in Sumava National Park have had catastrophic results as forest ecosystems have been damaged by a beetle blight.

There was exploited more than 13 millions of m^3 under bark wood a year in 80-ties in the CR on average, which was under the yearly increment that was 16 millions of m^3 on yearly average. In nineties, the average yearly wood increment reached 16.3 millions of m^3 and since 2000 it has been 16.8 millions of m3.

As showed in Table 3.2.5 the cutting was far low under the increment for the dozens of years which has had a negative impact on forest quality. The forest are getting older, they incline to diseases, to affection of contaminant, to wind and water calamity and insect pests.

The average rotation was 92.5 years in the CR in 1930, in 1980 it was 108.1 years, in 1990 it was 112.4 years and in 2000 it reached 115.8. The average age of forest has increased from 60 years in 1990 to 62 in 1999. The stock of wood in forests increased from 536 millions of m^3 to 564 millions of m^3 in 1990 and reached 630.5 millions of m^3 of wood in 2000.

Czech Republic has one of the highest average wood stocks in forest per one hectares in the whole Europe (European average 247 m^3/ha).

Although the cutting has increased in past few years (from 13.3 million of m^3 of wood in 1990 to 14.4 million m^3 in 2000), the timber mining is still deep under the level of increment. The decrease of cutting in 1991-1994 was caused by ownership changes.

Table 3.2.2 Development Of Under Bark Cutting In Selected Years

Cutting	1985	1990	1992	1995	1998	1999	2000
Soft wood	12.82	12.17	8.72	11.31	12.25	12.42	12.85
Lefly wood	1.09	1.16	1.15	1.06	1.74	1.78	1.59
Total	13.91	13.33	9.87	12.37	13.99	14.20	14.44
Per 1 inhabitant	1.34	1.29	0.95	1.20	1.35	1.37	1.39
Per 1 ha of forest	5.29	5.07	3.75	4.70	5.31	5.39	5.48

3.3 Wetlands

As the privatization continues and the large-area state cooperatives have been broken down into smaller farms, it has had a positive impact on the environment. The breakdown of irrigation systems, re-creation of margins and field borders and other environmental characteristic has helped to return the nature into its original shape in some areas, where for example new wetlands are appearing and the biodiversity is improving.

3.4. Current public lands

The Land Fund

The Land Fund was established in 1991, it manages the real estate property in the state ownership. e.g. agricultural land, forestland and buildings. The task of the Land Fund is to settle and administer the restitutions, privatization and rent of the state land and other property.
The sale of state land is realized through Land Fund and it started on the basis of Act No. 95/1999 in 2000.

Table 3.4 Sale of Czech Land

	1999	2000	2001
Number of parcels	18	1278	11076
Total area (ha)	12.90	677.40	9054.30

Average area (ha)	
	0.72
	0.53
	0.82
Purchase price (CZK/m2)	
	67.04
	8.08
	5.56

Source: Land Fund.

The rapid increase in 2000 was caused by the amendment of the Act 253/2001 on land sale that enabled decrease of the purchase price given by Ministry of Finance to 10%.

Annex I

In the period of collectivization, since the beginning of the fifties, the extensive state farms were created. Farmers were forced to create agriculture cooperatives usually within the boundary of the municipality. Formally, the ownership of the land was preserved even after the land had been handed over to the socialist enterprises. However, the owners lost the right to decide about the land and their ownership was not registered.

During the seventies another wave of the land merge took place. The cooperatives and state farms merged into big socialistic agricultural units with a complicated management structure under the instructions given by state administration. The share of private farmers was negligible and there was the tendency to neglect it in registration. The settled structure stayed constant until the beginning of the transformation.

Legal forms of holdings evolution during socialism

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	-	-

Source: Statistical Yearbook, Czech Statistical Institute

During the seventies the average size of state farms and cooperatives increased substantially and the number of private farms diminished. It was conditioned by the fact that the old farmers, which didn't agree with collectivization and were authorized to stay on their holdings, were expiring. For young people the farming was without perspective, while it was based on the manual work and on the old machines.

The development of agriculture area and average size of farm follows:

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		

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	-	-

Czech Republic Annex II

Comparison of yields and efficiency of individual farmers and corporate farms depending on the size of the farm is presented in Table I-IV.
Individual farmers have better results in plant and animal production that require higher level of care (root beet, cows, etc.).

Table 1 Individual Farmers Hectare Yields In Tons (2000)

	Individual farmers				
	5 - 50 ha	51 - 100 ha	101 - 300 ha	nad 300 ha	total
Wheat	4.12	4.20	4.59	4.53	4.46
Rye	3.60	3.68	3.61	3.55	3.59
Barley	3.27	3.34	3.54	3.58	3.49
Oat	2.80	2.74	3.05	3.15	2.93
Corn for grain	7.60	6.26	7.30	6.07	6.51
Grains total	3.74	3.88	4.34	4.27	4.18
Pea	2.22	2.18	2.31	1.97	2.16
Root beet	48.16	47.62	47.58	45.33	46.44
Potatoes	24.66	24.86	24.46	27.62	25.27
Colza	2.68	2.54	2.58	2.47	2.52
Corn for silage	33.67	34.66	31.20	31.57	32.25

Table 2 Corporate Farms Hectare Yields In Tons (2000)

	Size groups of corporate farms according to the size of the farm in v ha				Index
	Up to 1000 ha	1001 - 2000 ha	More than 2000 ha	total	Total private farmers/corporate farms
Wheat	4.37	4.53	4.75	4.63	96.33
Rye	3.30	3.68	3.72	3.64	98.63
Barley	3.49	3.57	3.76	3.65	95.62
Oat	2.80	3.27	3.30	3.20	91.56
Corn for grain	5.93	5.98	6.21	6.10	106.72
Grains total	4.04	4.21	4.02	4.09	102.20
Pea	2.21	2.08	2.49	2.33	92.70
Root beet	48.43	44.36	51.72	49.55	93.72
Potatoes	24.69	23.19	27.32	25.09	100.72
Colza	2.57	2.80	2.86	2.80	90.00
Corn for silage	30.43	33.91	36.18	34.62	93.15

Source: Network of test companies FADN – CZ. Research Institute of Agricultural Economics.
Calculations: Štolbová

Table 3 Average Animal Efficiency At Individual Farms In 2000

	Unit	Individual farmer				
		5 - 50 ha	51 - 100 ha	101 -300 ha	Over 300 ha	Total
Milk cow	l/day	12.76	14.28	14.9	11.95	13.75
Calves	Kg/day	0.64	0.64	0.63	0.66	0.64
Heifer	Kg/day	0.61	0.6	0.59	0.66	0.61
Cattle feed	Kg/day	0.85	0.85	0.87	0.86	0.86
Pig feed	Kg/day	0.63	0.67	0.66	0.58	0.63

Table 4 Average Animal Efficiency At Corporate Farms Per 2000

	Unit	Size groups of corporate farms according to the size of the farm in ha				Index
		Do 1000 ha	1001 - 2000 ha	Over 2000 ha	Total	Total individual farmers /corporate farms
Milk cow	l/day	13.72	14.02	13.2	13.57	101.33
Calves	Kg/day	0.71	0.75	0.76	0.75	85.33
Heifer	Kg/day	0.62	0.64	0.64	0.64	95.31
Cattle feed	Kg/day	0.67	0.85	0.88	0.71	121.13
Pig feed	Kg/day	0.63	0.64	0.63	0.63	100.00

Source: Network of test companies FADN – CZ. Research Institute of Agricultural Economics. Calculations: Štolbová

Czech Republic Annex 3

Protected Lands in Czech Republic

According to Act No. 95/1999 Coll. on condition of transfer of agricultural and forest lands **from state to other bodies following lands can not be transferred:**

- Forests in protective forests and special forests (according to § 7 and 8 of Act No. 289/1995 Coll. on forests) with exemption of state joint ownership,
- Forests in managed forests (according to § 9 of Act No. 289/1995 Coll. on forests) with continuous area larger than 10 ha,
- Agricultural and forest lands at military sites,

Agricultural and forestlands in national natural sites, national natural reservations and in the I and II zones of national parks. The privatization has not virtually influenced the protected areas in the Czech Republic, as the areas were established and protected already before 1989. National Parks are established by Government Resolutions; and Protected Landscape Area by resolution of the Ministry of Environment of the Czech Republic, the resolutions also set the rules of management.

National Parks are extensive areas, unique at national or international level, which mostly consist of natural or by human activities little influenced ecosystems where plants and wildlife have an extraordinary scientific and educative importance. There are four national parks in the CR with total area of 110 304ha.

Normally, there are three protection zones within the NP boundary. The zones represent the level of limitation of the human activities and its impacts on the quality of the nature. Zone I is a strictly natural zone, includes the most valuable and stable areas with original ecosystems. The areas are referred to as the core zone and they are left to natural development without undesirable human interference. Within the 1st zone it is forbidden to:

- Allow any building,
- Change existing structure and area of plants, unless it is part of the NP Plan of Care,
- Use manure; use liquid manure, and other liquid wastes.

Following activities are forbidden within the National Parks boundaries:

- Farm by methods requiring heavy technologies
- Change the existing water systems
- Change existing environment in contradiction with the rules of the NP

There are 4 National Parks in the Czech Republic. Only one of them, Czech Switzerland – Ceske Svycarsko, was established after 1989. The total area of National Parks is 110,000 hectares, which is 1.3% of the Czech total area. There is a minimum amount of agricultural land within the NPs: 0.2%

Protected Landscape Areas (PLAs)

PLAs are extensive territories (generally 100 to 1,000 square kilometers) with harmonically created landscape and considerable part in natural ecosystems. The landscape is created by the combination of natural parts and the human activity. Protected landscape areas can preserve also monuments of the historical settlements. The economic and tourist use depends on a dissection of the area into independent zones of the protection with the goal to keep an ecological stability and a natural state of the area.

As in the NPs, PLAs are usually divided into three to four zones
Zone I:

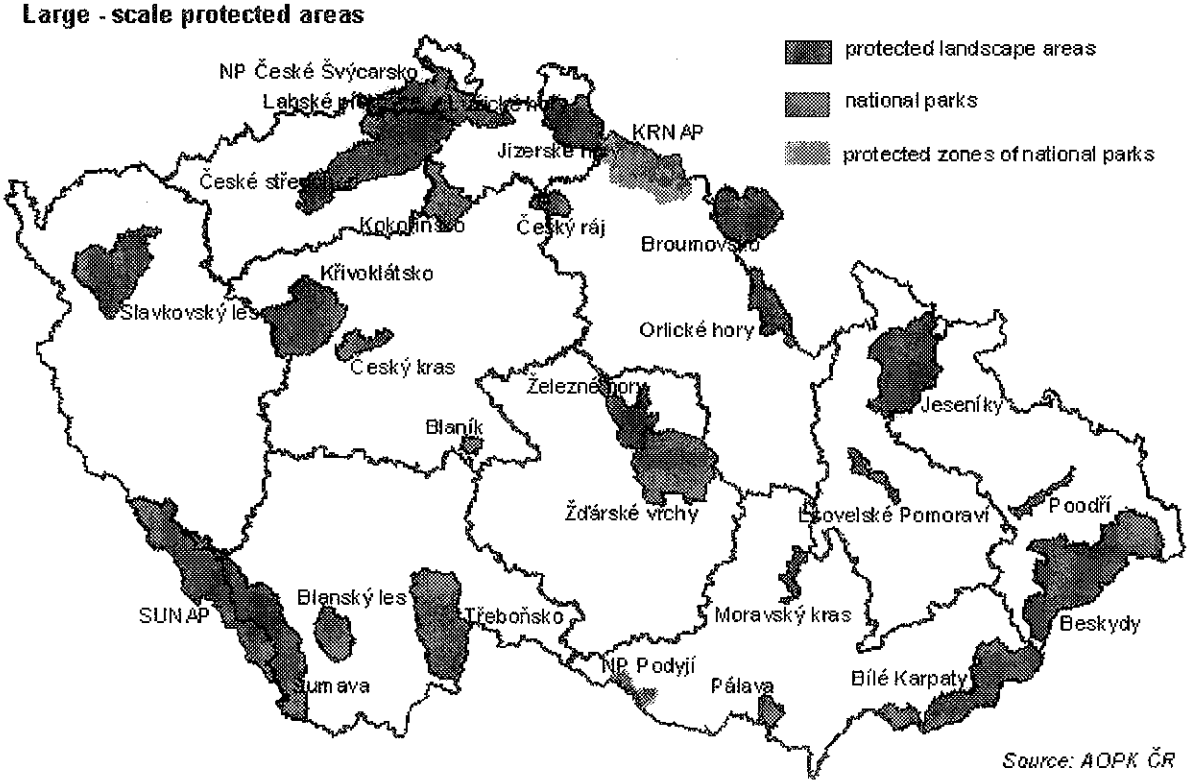
- Allow any building,
- Change existing structure and area of plants, unless it is part of the NP Plan of Care,
- Use manure; use liquid manure, and other liquid wastes.

Zone II: Limited structure of agricultural crops, decreased amounts of fertilization and chemical plant protection, no use of heavy machineries, forbidden are activities that may cause the decrease of biodiversity, damage the soil or change the water systems.

There has not been change in Protected Landscape Areas (PLA) after 1989. There are 24 PLAs with total area of 1,042,000 hectares covering 13% of total area of the CR. There is about 8% of the agricultural land within the PLAs.

The limitation of agricultural activities is compensated by the state subsidies within the protected areas boundaries.

Large - scale protected areas



Source: AOPK ČR

4.5 Estonia

Author: Ljuba Gornaja

1. Overview of Privatization

Land reform began in June 1991 with the entry into force of the *Principles of Ownership Reform Act* (RT 1991, 21, 257).[24] The *Land Reform Act* (RT 1991, 34, 426; consolidated text RT I 2001, 52, 304) followed in October 1991. The actual process started in February 1993 with approval of the procedure for the return of unlawfully expropriated land.

According to the *Land Reform Act*, the purpose of land reform is to transfer mainly to the private ownership of land, considering the interests of both former landowners and the present land users, and to create preconditions for a more effective use of land.

The process of transferring land to private ownership can be divided into two main categories – restitution of illegally expropriated land and privatization. Sub-categories of privatization are privatization with pre-emption (privatization of land adjacent to buildings and privatization of land that is granted for perpetual use according to the *Law on Peasant Farming*), privatization of land by auction (which is divided into privatization by public auction and by closed auction), and privatization of vacant forest and agricultural land free from claims of restitution, privatization, retaining in state ownership or municipalization. Restitution of land and privatization with pre-emption were stipulated by the *Land Reform Act* since the adoption of the Act, privatization by closed auction was added in June 1996 and privatization of vacant forest and agricultural land in March 1999. Also the determination of land to be retained in state ownership or municipalized has to be considered as a part of land reform.

Entitled subjects of land reform are:

- For land restitution – Estonian citizen and residents whose land was unlawfully expropriated and their successors and organizations whose land was unlawfully expropriated;
- For privatization – Estonian citizen, aliens (may privatize land granted for perpetual use pursuant to the Estonian SSR Farm Act and the land under buildings and structures owned and the land for servicing them), foreign legal persons (may privatize the land necessary for servicing a structure owned by the foreign legal person with the permission of the county governor; in such case, the branch of the foreign company must be entered in the commercial register of Estonia), Estonian legal persons in private law (may privatize land if the legal person is entered in the register maintained by the registrar of the commercial register of Estonia), persons operating pursuant to the Churches and Congregations Act, the Non-profit Associations Act or the Foundations Act who is entered in an appropriate register (may privatize land for specific purposes in accordance with the activities specified in the articles of association of the person).

[24] The first steps in changing of the land use were made in the Estonian SSR in 1998 under the influence of declaration of economic independence from Moscow and with different agrarian acts supporting private agriculture. According to the Estonian SSR Farm Act in 1989 altogether 252,255.2 ha of land was granted for perpetual use to 10,152 farms. Those farms and holdings were legalized with the Land Reform Act in 1991.

The land reform strategy prescribes the termination of land retained in state ownership as the first stage. This was followed by the return of land to lawful (former) owners, taking into account the pre-emptive right of the present land users, and the privatization of the remaining land by selling. The following is retained in state ownership:

- Land under buildings and structures retained in state ownership and the land for servicing them;
- Land under state protection and land adjacent to objects under state protection if the established protection regime makes it impossible for another person to use the land;
- Land under bodies of water retained in state ownership;
- Public land;
- National defense land;
- State forest land;
- Agricultural land of state enterprises and state agencies;
- State land reserves;
- Sand with deposits of national importance, within the boundaries of an existing land grant;
- Land necessary for servicing the building of another person on which a building lease is established;
- Land used pursuant to the Estonian SSR Farm Act on which a usufruct is established.

Land, which is not returned, privatized or transferred into municipal ownership, is also in state ownership.

Besides land restitution, the reform structure allows land privatization through a pre-emptive right for those, who own buildings on said land, to service buildings, up to 2 hectares for a private individual, up to 50 ha for agricultural producer (entity). Pre-emptive rights go primarily to persons who have been granted land for perpetual use pursuant to the Estonian SSR Farm Act, owners of residential buildings, residential building, apartment, garage, cottage, and gardening associations. Through simplification of the reform process it became possible for agricultural producer to privatize up to 200 ha of agricultural land and up to 15 ha of forestland. This procedure is valid for parcels, where there are no claims from former owners for restitution or for pre-emptive privatization. It is worth mentioning that according to the law, provided that there is more than one applicant, the local government has the right to prefer the person, who has longer been involved in the agricultural production (in case of forest land natural person is preferred).

It was initially considered possible to complete the reform in fife years, but several processes have unfortunately lagged behind the planned schedule. The determination and registration of land retained in state ownership has consumed more time and resources than planned. The slow pace of privatization of agricultural land has certainly been caused by the extremely low profitability of the agricultural sector. The ability of farmers to buy land is anyhow difficult due to lack of credit resources. Mortgage banking is developing but is mostly limited to urban areas as the market price for agricultural land is rather slow (being about 200 EUR per hectare on average, in 1998-99[25]).

The area of Estonia's mainland (with inland waters) is 4,343,207 ha. As of 31 December 2001, the total area of land registered in the State Land Cadastre was of 2,861,979.6 ha, i.e. 66% of the whole territory of Estonia[26]. This figure includes 1,769,054.1 ha of private land. So the share

[25] Data from the Rural Development Plan (European Union SAPARD 2000-2006), http://www.agri.ee.
[26] Data of the Estonian Land Board: http://www.maaamet.ee.

of private land makes up to 41% of the mainland area of Estonia. During the Soviet period all land in Estonia was in state ownership, for everybody else the only right in land was the right of use.
In addition to that local governments have announced about the possibility to privatize approximately 28 000 land units with the total area of 305,000 ha.

Land reform by counties and by local governments has progressed unevenly. Such great differences have been caused both by subjective and objective circumstances. Main objective factors affecting the speed of land reform are the complexity of ownership issues in connection with restitution and the availability or lack of qualified staff.

As of 31 December 2001, 147 665 restituted units with the total area of 1,143,029.5 ha were registered in the cadastre, 189 597 units privatized with pre-emption the total area being 459,362.1, 5, 802 units with the area of 83,028.2 ha privatized by auction, 3 789 units of agricultural land privatized to agricultural producers, the area being 51,753.2 ha, 4 135 units of forestland privatized to agricultural producers, the area being 31,881.1 ha. 3 179 cadastral units with the area of 10,745.7 ha were registered as municipal land and 16 688 units with the area of 1,082,179.8 ha as units retained in state ownership[27]. It should be noted that: 1) the Cadastre covers both urban and rural areas; 2) restituted, pre-emption and auctioned lands included either forestland or agricultural land, but current statistics does not distinguish between them.

Table 1. ***Privatized lands as of December 2001***

Cadastral lands	**Unis**	***Hectares***	**% Of Total Lands**	**Predicted after Privatization, hectares**
Restituted	147,665	1,143,029	26%	1,240,000 (28%)
Land acquired by the right of pre-emption	189,597	459.362	11%	510,000 (12%)
Land privatized by auction	802	83,028	2%	NA
Privatized free agricultural land[28]	3,789	51,753	1%	NA
Privatized free forestland[5]	4,135	31,881	1%	NA
Total private land		1,769,063	41%	NA
Municipal land	3,179	10,745	0.2%	54,000 (1%)
State land	16,688	1,082,179	25%	NA
Total State Land Cadastre		2,861,980		NA

[27] Data of Estonian Land Board: http://www.maaamet.ee.
[28] Free agricultural or forest land is a land which is not returned or privatized with the right of pre-emption to buildings owners. The rural municipality government determines the area and boundaries of that land and organizes privatization. Vacant agricultural or forestry land can be privatized by the right of pre-emption to a sole proprietor entered in the commercial register who is engaged in agricultural production in the administrative territory of the local government of the location of the land or an Estonian legal person in private law entered in the commercial register whose main area of activity is agricultural production in the administrative territory of the local government of the location of the land. (Land Reform Act).

Total Lands		4,343,207		

While estimating the status of land reform on the basis of the units registered in the Land Cadastre, it has to be considered that at least 500 000 ha (mostly swamps and other land of low value which is not of interest for restitution or privatization), i.e. 10-12% of Estonia's territory is not subject to registration in the cadastre in the near future.
To date, 92% of the land to be restituted has been restituted, and 90% of the land attached to buildings has been privatized with pre-emption[29]. Based on the existing information, the amount of land still to be restituted should not exceed 100,000 ha and amount of land going to be privatized with pre-emption to the buildings owners should not exceed 50,000 ha. Considering the pace of restitution and privatization with pre-emption so far (i.e. during the past 5 years), it is quite realistic to complete restitution and privatization with pre-emption in main part by the end of 2002.

Even retaining land in state ownership has progressed quite successfully. As to the land to be retained in state ownership, the estimations on current status should consider that it is necessary to retain in state ownership relatively big land units of valuable residential land, other protected land as well as national defense land. Furthermore, land in which legal persons in private law are not interested, or which is granted to them for use is also retained in state ownership. Of land to be municipalized only about 20% of the expected final result has been registered in the cadastre.

Compared to other fields of land reform the privatization of agricultural and forestland is going to speed up still. In order to avoid possible non-productive interest in agricultural and forestland and to ensure real use of agricultural land in the future, it is planned to shift from the present form of privatization to granting long-term usufruct of agricultural land to agricultural producers. The usufructuries bear the obligation to use the land for the designated purpose and prudently. It is intended to later grant the producers who have fulfilled the conditions set for usufruct a right to redeem the land in their use. The above principles will be provided in the draft *Land Reform Act* by June 2002 at the latest.

The currently valid *Land Reform Act* provides the right of both legal and private persons dealing with agricultural and forestland to privatize a maximum of 10-15 ha of forestland. Such a parceling of forestland does not comply with one of the declared objectives of the *Land Reform Act* – establishing of prerequisites for more efficient land use. Modern efficient forest management requires the establishment of much bigger land units and replotting, if necessary. Deriving from the abovementioned and simultaneously with changing the principles of agricultural land ownership, it is planned to change also the principles of further use and transfer into ownership of forestland free from claims on restitution and privatization with pre-emption.

According to the financing possibilities the state continues to identify land units suitable for privatization in the municipalities where land reform has developed slowly up to now.
It is planned to establish terms for several privatization and restitution procedures in the *Land Reform Act* by June 2002. In case these terms are exceeded without a justified reason, the privatization or restitution procedures will be terminated. Such an amendment would show the state's orientation on finalizing the land reform and motivate those subjects of land restitution or privatization who until now and for different reasons have delayed the procedures on their behalf, to be more active.

[29] NPAA 2002-2003: http://www.eib.ee.

2. Overview of Environmental Impacts

There was only one previous study conducted concerning the issue of environmental impact of land privatization in Estonia.[30] The overview of environmental impacts of land privatization is based on interviews, conversation with state officials (Ministry of Environment, Environment Inspectorate, Land Board, and Ministry of Agriculture), personnel from NGO's, experts and scientists and materials obtained from Internet homepages of ministries, departments and NGO's.

The problems connected with land reform have a wider context in the process of urbanization and changing lifestyles and mode of production in general. There are two types of people who are interested in the privatization of land and forest. The first, conservative farmers, do not have enough skills and money to develop sustainable methods in agriculture and forestry. They privatize and log timber to make a living and they complain of strict rules of nature conservation. They cause the biggest damage to nature. Te second type of people are timber- and real estate businessmen, who have to make a profit on the forestlands and timber they bay from farmers and lands in countryside situated close to towns or shore or cost. They are often connected with illegal logging, tax evasion, bribing, and corrupted officials.

Environmental impacts of land privatization in Estonia could be summarized as following:

- Threats to biological and landscape diversity as a result of inadequate economic activities and the land reform;
- Low agricultural use leads to spreading of weeds and brushes and loss of biodiversity on semi natural biotopes;
- The land reform process is splitting parcels, that is often in conflict with technical requirements of drainage system;
- Inadequate forestry management, mainly reflected in the private forest sector: the cutting volumes of private forest holdings has remarkably increased, the volume of private reforestation has remained slow when compared to the state forest;
- Inadequate reforestation and afforestation: the rapid and unregulated establishment of forest plantation can result in the lost of valuable landscape, reduce biodiversity and damage existing landscape aesthetics;
- Timber cutting in private forest in done in an environmentally harmful way: poor quality and lack of local forest road network (demolished with heavy machinery) leads to non-proportional felling (good quality cut-aged stands remains in forest) and harm to environment.

3. Environmental Impacts by Sectors

3.1 Agricultural Sector

Agriculture has traditionally been one of the most important sectors in the Estonian economy. Table 2 presents some main indicators of trends in agriculture in Estonia in 1988-2000. During the transition from a central planning to a market economy share of agriculture in GDP decreased from 17% in 1988 to 3.6% in 2000 and share of employment in agriculture decreased from 12% to 5.2% over same period. In 2000 31,500 people were employed in agricultural sector, the same figure being 138,900 in 1988. Gross agricultural output fell by more than 50% between 1991 and 2000 (see Table 3).

[30] Ahas, R. Impact of Land Reform on nature conservation system in Estonia, Tartu, 1999. (http://www.roheline.ee)

Table 2. Decline of agriculture in Estonia 1988-2000

Indicators	1988	2000
Agricultural sector input into GPP (%)	17.0	3.6
Percentage of labor force employed in agricultural sector	12.0	5.2
Index of agricultural production (1989-1991=100)	103.2	46.4
Cattle ('000)	757.8*	252.8
Use of mineral fertilizers ('000 tons, by 100% active substance)	169.4**	32.4
Per ha of crops area (kg/ha)	204**	82
Use of manure ('000 tons)	7,175**	1,863.6
Per ha of crops area (tons/ha)	59**	28
Use of pesticides (tons)	NA	NA

Notes: * 1990; ** 1992

Sources: National Development Plan, Ministry of Economy (http://www.mineco.ee); Statistical Yearbook 1992, Statistical Office of Estonia; Agriculture 1994 and 2000, Statistical Office of Estonia; Statistical Yearbook of Estonia 2001, Statistical Office of Estonia.

In comparison with other CEECs, Estonia has suffered the worst fall in agricultural production. Estonia differs from the other CEECs, as it does not protect its internal market to a comparable extent (the customs tariffs for agricultural products from third countries excluded EU member states came in force on 1 January 2000) and the subsidies to agriculture are granted to a considerably smaller extent.

Table 3. Gross agricultural output 1991-2000 (at 1995 prices, million EEK)

Year	Total	Of which	
		Crop production	Livestock production
1991	9,651.3	3,710.8	5,940.5
1992	7,745.2	3,033.3	4,711.9
1993	6,837.5	3,113.4	3,724.1
1994	5,956.5	2,641.1	3,315.4
1995	5,967.7	2,847.3	3,120.4
1996	5,588.9	2,724.6	2,864.3
1997	5,505.5	2,669.3	2,836.2
1998	5,203.7	2,327.4	2,918.3
1999	4,801.1	2,104.0	2,697.1
2000	4,720.1	2.020.9	2,699.2

Sources: Agriculture 1995, 1996, 1997,1998,1999 and 2000. Statistical Office of Estonia

During 1989-2000 the number of dairy cows has decreased from 300,700 to 131,000, the number of pigs has dropped from 1,099,400 to 300,200. Such a sharp decline in livestock number has been the cause for the meat production decreasing 3.6: from 190,000 tons in 1989 to 52,726 tons in 2000. The total milk yield dropped from 1,277,000 tons to 629,613 tons over the same period. The decrease of livestock numbers also has a direct effect on total yields of crops: it dropped from 967,000 tons to 703,200 tons.

The area of Estonia is 4,522.7 thousand hectares, of which the area of 283 hectares is under inland water, 45% is covered by forest, 34% is agricultural land (of which 78% is arable land).

Towns and settlements occupy more than 1% of land and about 1% is under the roads. Table 4 presents changes in land use in 1990-2000.

Table 4. Land stock, 1 January 1990-2000 ('000 hectares)

Year	Agricultural land	Of which			Forest land	Inland water	Other land	Total
		Arable land	Natural grassland	Orchards				
1990	1,458.5	1,131.9	311.7	14.9	1,930.1	283.3	850.8	4,522.7
1991	1,458.2	1,131.9	311.5	14.8	2,015.6	283.3	765.5	4,522.7
1992	1,455.1	1,127.6	312.6	14.9	2,021.8	283.3	762.6	4,522.7
1993	1,454.0	1,128.9	310.3	14.8	2,016.6	283.3	768.8	4,522.7
1994	1,449.5	1,127.8	306.9	14.8	2,016.2	283.3	773.7	4,522.7
1995	1,449.5	1,127.8	306.9	14.8	2,016.2	283.3	773.7	4,522.7
1996	1,449.5	1,127,8	306.9	14.8	2,016.2	283.3	773.7	4,522.7
1997	1,433.1	1,119.8	298.7	14.6	2,015.5	283.3	790.8	4,522.7
1998	1,433.1	1,119,8	298.7	14.6	2,015.5	283.3	790.8	4,522.7
1999	1,433.1	1,119.8	298.7	14.6	2,015.5	283.3	790.8	4,522.7
2000	1,433.1	1,119.8	298.7	14.6	2,015.5	283.3	790.8	4,522.7

Source: Environment 2000, Statistical Office of Estonia.

A key issue in structural development of the farm sector has been privatization of land. Table 5 presents data of the land registration progress during 1996-2000.

Table 5 Land registered in the Land Cadastre (accumulated at the end of year)

	1996	1997	1998	1999	2000
Land registered in the cadastre (hectares)	530,040.2	1,152,683.8	1,799.242.7	2,304,653.2	2,583,771.8
• Restituted land	361,474.1	582,616.4	743,304.1	908,605.6	1,034,544.6
• Land privatized by Pre-emption	7,914.4	72,490.5	190,230.7	310,056.1	396,273.3
• Land privatized by auction	–	–	21,440.2	60,874.1	77,241.8
• Privatized free agricultural land	–	–	–	–	9,367.5
• Privatized free forestland	–	–	–	–	5,473.4
• Municipal land	638.8	1,427.6	4,495.4	6,520.4	8,508.7
• State land	118,135,4	496,149.3	839,770.3	1,018,549.0	1,052,362.5
Land registered in the cadastre (hectares)	530,040.2	1,152,683.8	1,799.242.7	2,304,653.2	2,583,771.8
• Arable land	152,799.3	246,265.2	367,063.3	494,468.8	584,163.3
• Natural grassland	32,419.7	55,462.3	85,331.3	118,716.7	143,927.5
• Forestland	295,500.7	685,926.2	1,091,945.7	1,335,847.0	1,447,219.8
• Land under inland water and other land	49,320.5	165,030.1	254,902.4	355,572.7	408,461.2

Source: Counties in Figures 1996-2000, Statistical Office of Estonia.

More detail information on share of agricultural land in restituted land or land acquired by the right of pre-emption or privatized by auction is not available, but it can be estimated on the basic

of data on status of agricultural land in land reform process provided by the Ministry of Agriculture in their Annual Report 2000 (see Annex 1). 51% of agricultural land has been restituted and privatized as of December 31, 2000, i.e. approximately 730, 000 hectares. The total area of arable land and natural grassland registered by the end of 2000 amounted to 728,090 hectares (see Table 5). Thus, all agricultural land registered is private land.

Although agriculture remains the predominant land use in Estonia, the area used for agricultural production has significantly decreased during the last 10 years due to the effects of agricultural restructuring and land reform.

The agricultural land area comprises 1.433 million hectares ie 32% of the total land area. Arable land accounts for 1.120 million hectares representing 78% of total agricultural land. Approximately 0.28 million hectares or 25% of the total arable land in 2000 was unused. When compared with the respective figures for 1990, a decrease in land use is revealed, as only 1% of field area was unused in 1992. The low use of agricultural lands is caused mostly by economic reasons – low profitability of plant production and difficult access for financial markets. The slow pace of Land Reform is considered as result of economic factors, being itself only indirectly reason for low land use.

According to the Estonian Statistical Office, in 2000 29% of total arable land was used by agricultural enterprises, 42% by private farms, 11.5% by household plots and 17.5% by holders of state land[31]. Trend of arable land use presented in Table 6.

Between 1990 and 2000, there has been a 28% decline in the sown area under crops (Table 7). This decline has varied by crop. For example, the largest reduction took place in the sown area under fodder crops (38%) and potatoes (over 30%) while the area under industrial crops (flax, sugar beet and rape) increased 9 times. The area of unused land has increased nearly 18 times to around 276,400 hectares.

Table 6 Trend in use of arable land, 1995-2000 (hectares)

Year	User	Arable land	Of which			
			Sown area of field crops	Area under flowers, greenhouses, green maturing crops	Fallow	Unused arable land
1995	Enterprises	428,596	411,207	393	7,568	9,428
	Private farms	279,173	245,812	1,399	13,811	18,151
	Household plots	193,782	193,645	137	–	–
	Holders of state land	226,371	–	–	–	226,371
1997	Enterprises	379,936	368,594	704	8,002	2,636
	Private farms	366,714	334,329	680	15,045	16,660

[31] Definition: agricultural enterprise – a legal person whose main activity according to the Estonian Commercial Register is agriculture; private farm – holding of a family living in the country or in town whose land use has been registered in land cadastre and who has in their ownership of up to one hectare of agricultural land or forestland; household plot – household of family living in the country or in town who has right of land use of up to one hectare of agricultural or forest land, or whose land use has not been registered in land cadastre, or who has livestock (Statistical Yearbook 2001, Statistical Office of Estonia).

	Household plots	161,408	161,268	140	–	–
	Holders of state land	211,776	–	–	–	211,776
1999	Enterprises	333,289	320,071	87	9,014	4,117
	Private farms	482,418	401,960	81	32,150	48,227
	Household plots	117,053	96,715	130	–	20,208
	Holders of state land	187,597	–	–	–	187,597
2000	Enterprises	323,201	314,152	168	6,405	2,476
	Private farms	469,636	401,979	220	26,858	40,579
	Household plots	130,534	93,678	130	–	36,726
	Holders of state land	196,631	–	–	–	196,631

Source: Agriculture 1995, 1997, 1999, and 2000, Statistical Office of Estonia.

Table 7 Sown area of field crops in Estonia, 1990-2000 ('000 ha)

Field crop	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Grains and legumes	397.1	418.2	423.5	375.5	320.2	308.0	294.6	335.2	360.5	324.0	333.2
Industrial crops	3.2	3.0	4.7	2.0	3.6	7.3	9.5	9.1	17.8	24.6	29.1
Vegetables and greens	5.2	5.7	5.1	4.6	4.4	4.6	4.2	3.9	4.2	3.9	3.8
Potatoes	45.5	52.2	46.3	42.6	39.9	36.9	35.3	35.2	32.6	31.1	30.9
Fodder crops	665.3	635.2	627.0	632.3	566.9	493.9	515.5	480.8	446.0	435.2	412.8
Total area under crops	1116.3	1114.3	1106.6	1057.0	935.0	850.7	859.1	864.2	861.1	818.8	809.8
Unused field lands	15.7	14.0	12.7	62.9	179.1	254.0	243.5	231.1	233.4	260.1	276.4

Sources: Agriculture1994, 1995, 1996, 1997, 1998, 1999,2000. Statistical Office of Estonia; Rural Development Plan. Ministry of Agriculture: http://www.agri.ee

According to Statistical Office of Estonia in January 2001 the Estonian agricultural sector accounted for 709 agricultural enterprises with an average size of 494 hectares, 60, 895 private family farms with an average size of 20.7 hectares, and 45,000 households plots with an average size of 4 hectares. Although private farms have increased rapidly in number and total area, their average size has been small (see Table 8).

Table 8 **Number of private farms by size of total area, 1 January, 1991–2000**

Total area (ha)	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Up to 5	164	576	659	818	1,634	3,490	2,901	4,941	6,269	8,798	10,790
5.1–10	244	894	1,040	1,298	1,827	2,898	3,644	5,865	7,147	8,980	11,078
10.1–20	581	1,881	2,269	2,823	3,750	5,272	8,364	9,545	11,446	13,744	16,181

20.1–30	539	1,499	1,804	2,191	2,721	3,574	4,299	6,216	7,247	8,474	9,707
30.1–50	581	1,511	1,811	2,090	2,488	3,175	3,800	5,519	6,380	7,573	8,891
50.1–100	213	631	784	879	1,027	1,273	1,574	2,347	2,677	3,152	3,742
Over 100	17	37	45	54	66	85	140	238	280	360	526
TOTAL	2,339	7,029	8,412	10,153	13,513	19,767	22,722	34,671	41,446	51,081	60,895
Average area (ha)	26.6	25.1	25.4	24.8	23.1	20.8	22.0	21.7	21.2	20.8	20.7

Sources: Agriculture 1994, 1995, 1996, 1997, 1998, 1999, and 2000, Statistical Office of Estonia.

The sizes in the Table 9 reflect the total area of farms, including associated forested land and pastureland: actual arable areas are considerably smaller. Fragmentation, shape and location of holdings, current very low agricultural prices, and lack of credit to purchase inputs and machinery, it all constraining production from these new private farms, notwithstanding higher production efficiency of private farms in crop farming.

Table 9 Agricultural production per 100 hectares of arable land, 1997 – 2000 (tons)

Year	User	Cereals and legumes	Potatoes	Meat	Milk	Eggs, 1000 pieces
1995	Enterprises	62	12	10	93	49
	Private farms	76	46	1	34	3
	Household plots	22	185	10	110	56
1997	Enterprises	84	10	9	105	48
	Private farms	91	43	1	35	4
	Household plots	8	151	8	119	62
1999	Enterprises	48	6	13	106	59
	Private farms	48	38	2	28	5
	Household plots	6	181	9	123	49
2000	Enterprises	85	9	11	110	55
	Private farms	88	53	2	31	6
	Household plots	10	150	6	98	38

Sources: Agriculture 1995, 1997, 1999, and 2000, Statistical Office of Estonia.

Estonia has a rich asset base of wildlife habitats, plant communities and landscape designations. There are 4 national parks and more than 300 other protected areas, which form about 12% of the entire territory; 7.8% of these comply with the IUCN classification. Special protection areas or nature reserves cover 1.7% of protected areas. There are also two special program areas: a biosphere protection area in the west Estonian islands, and the Pandivere water protection area in central part of Estonia.

The decline of agricultural output has reduced the influence of agriculture on biological diversity – quantities of pesticides and fertilizes have decreased, which has declined the pressure on biodiversity at species' level.

The agricultural sector has always been the main direct user and designer of Estonian landscapes. The landscape has inevitably been affected by intensive agricultural usage and by

amelioration works (1965-1985), including the re-parceling of land, which significantly increased the average field size. The current reform process is working against this and is splitting parcels, often in conflict with the technical requirements of drainage systems. Nearly two-thirds of the arable land was drained over the past 40 years but as collective farms were dismantled after 1991, the drainage system has not been well maintained. It is estimated that around 60% of Estonia's most fertile lands are excessively moist. As a consequence, drainage systems are an essential need. Moreover over 50% of the drainage systems were built more than 20 to 25 years ago and therefore need reconstruction. They have not been maintained during the last 10 years in respect of the cleaning of drainage outlets, wells and ditches. Assistance was provided from the World Bank Loan for the rehabilitation and maintenance of the drainage systems. However it is estimated that nearly 400,000 hectares of land still require drainage rehabilitation. A related problem in this context is the ability of the private sector to co-finance these works.

The reduced animal and plant production has largely altered the traditional land use, weeds and shrubbery are occupying large areas and this causes landscape of cultural heritage value to disappear in the long range. The patent of land use has changed – one quarter of arable land was not used in 2000; in time the ecosystems will appear again on those lands, but mainly on the account of the species with wide ecological amplitude. Extensively managed permanent pasture is being abandoned to bush and forest. This has unfortunate consequences for the relatively rich flora and fauna of the pasture and meadow ecosystems.

3.2 Forestry Sector

Out of the predicted 1.4 million ha of private forestland, 609,099 ha (44%) has been entered in the cadastral register as forestland by the end of 2001. In different counties, the pace of the reform varies considerably. For instance, in the County of Põlva, 78% of the possible privately owned forestland has been entered in the cadastral register, while in the County of Harju the corresponding percentage is 23. An average share of forestland in the private land is 41%.

The pace of the land reform is illustrated in Table 10, demonstrating the dynamics of private forests entered in the cadastral register based on the area and number of cadastral units. It also shows an average cadastral unit, i.e. changes in the area of forestland of a separate piece of land through the years.

Table 10 Registration of private forestland in Land Register in 1993-2000

	1993	1994	1995	1996	1997	1998	1999	2000
Number of cadastral units	1,880	3,268	8,034	11,089	13,986	16,754	19,000	13,370
Area (ha)	13,033	22,994	58,578	80,212	99,904	114,842	132,262	88,174
Accumulated Total	13,033	36,027	94,605	174,817	274,721	389,563	521,825	609,999
Average area (ha)	6.93	7.04	7.29	7.23	7.14	6.85	6.96	6.59

Source: Estonian Land Board

The reform has been gaining momentum through the years, achieving its peak in 1999, when over 130,000 ha of private forestland were entered in the cadastral register. During the first ten months of 2000, 88,000 ha were entered in the cadastral register. The size of a cadastral unit is also regarded as a characteristic of the reform process. A rise experienced until 1995 resulted in

the possibility to take back only part of the expropriated land, which implied a selective approach related to forestland as well as a rise in the proportion of forestland within the returned land property. The requirement established providing for the return of land in the former size reduced the proportion of forest land, since privatization based on the pre-emptive right (in the majority of cases up to 2 ha belonging to the buildings) has resulted in extremely low proportion of forest land belonging to separated plots of land.

One of the problems of private forestry is dispersion. Management of small forestland is always problematic because of low profitability. Cadastral units ranging from 5 to 50 ha cover the largest area, composing 76% of the total area of forestland. At the same time, units up to 5 ha, totaling at 49,278, make up only 19% of the forestland. An average private forest owner possesses up to 7 ha of forestland[32].

Forestry is recognized as a crucial part of Estonian economy given that it coves over 47% of total land area. In 1994, forestry accounted for 1.4% of GDP, which rose to 2.6% by 1999 (Statistical Yearbook of Estonia, 1997, 2001). Over the last ten years, human activity has had a profound impact on Estonia's forests. The economic decline after regaining independence, attitudes regarding forest, a single available and relatively easily accessible natural resource in the free market, as a commodity, emergence of private forest owners - it all served as a precondition for rapid multi-fold increase in forest cutting in the 1990s (see Table 11). Regeneration cutting (clean cutting and sheltered cutting) per year has increased from 4,458 hectares in 1993 to 25,582 hectares in 2000 (of which.17, 000 hectares in private forest). Increasing of felling, especially regeneration cutting and deforestation destroy forest ecosystems.

Table 11 Felling area by felling types, 1993-2000 (hectares)

	1993	1994	1995	1996	1997	1998	1999	2000
Regeneration cutting	4458	7450	7507	9836	14889	17134	22601	25582
• Clear cutting	Na	na	na	na	na	na	18796	19553
Selection cutting	Na	na	na	1457	2893	3703	4571	4064
Improvement cutting	81779	88608	88174	76947	81257	84933	79285	82828
• Cleaning	7205	7038	7963	7228	7228	8174	8906	9404
• Thinning	15592	19183	27070	30314	36319	40440	30340	34812
• Sanitary cutting	58982	62387	53141	43715	43715	40040	30340	34812
Other cutting	6643	6683	6634	3457	3457	3579	1732	918
• Deforestation	NA	NA	NA	NA	NA	NA	309	299
TOTAL	92880	102731	102315	92658	102496	109349	108189	113392
Felling intensity, solid cbm per hectare	1.2	1.8	1.8	2.0	2.8	3.2	3.3	3.1
Share of felling in total growing stock, %	0.9	1.2	1.3	1.4	1.9	2.1	1.9	1.8

Source: Environment 2000, Statistical Office of Estonia, Tallinn, 2001; Statistical Yearbook 2001, Statistical Office of Estonia.

[32] Forest Yearbook 2000, Center of forest Protection and Silviculture, 2001. (http://www.metsad.ee/english)

In 1999, reforestation work was carried out on 8,134.8 ha. The bulk (84%) of reforestation work was done in state forests. In the private sector, reforestation work lags behind a great deal in comparison with clear-cut conducted there. A "typical forest owner's" attitude proceeds from immediate profits. The approach is: "cut the trees fast, fill your pockets and leave the place quick." Table 12 shows the proportions of planting, seeding and natural reforestation in 1996-99.

Table 12 Reforestation work in 1996-1999 (hectares)

Reforestation method	1996			1997			1998			1999		
	State forest	Private forest	Other forest	State forest	Private forest	Other forest	State forest	Private forest	Other forest	State forest	Private forest	Other forest
CNR*	993.1	9.7	9.6	1036.3	80.6	12.4	1218.9	109.0	16.7	1557.8	428.9	12.5
Sowing	1369.2	18.0	5.1	1355.8	81.6	3.9	1365.9	301.5	13,9	1296.6	324.6	1.3
Planting	2927.5	26.5	49.2	3329.8	108.8	55.2	3373.0	379.1	62.2	3778.3	677.5	57.3
Total	5289.8	54.2	63.9	5721.9	271.0	71.5	5957.8	789.6	92.8	6632.7	1431.0	71.1

Note: * CNR – contributing to natural regeneration
Source: Statistical Office of Estonia

The problem lies in equivalent restoration of forests. The new-planted forest is usually a poor in species monoculture of the same age, without the characteristic structure of natural forest. The responsibility and the corresponding mechanism imposed for forest regeneration has been provided by law, which has been in force for years, however, the effect has been barely declarative. According to the criteria provided in the Forest Act, an equivalent regeneration of the forests has not been ensured.

According to the findings of the forestry scientists, only reasonable management of forests is effective against pests. Cooperation of forest owners is also important, since breaking the rules by one owner may have a devastating effect on neighboring forest owners' careful work. Any kind of deterioration of forest condition will contribute to spreading of pests and diseases - be it inappropriate improvement cutting (e.g. excessively sparse cutting or delayed cutting), roots injured by heavy machines, turning clearings into muddy sloughs.

In terms of the forest, improper handling is also a problem caused by lack of awareness or skill of the forest owner. With regard to environmental protection, today's problem lies in the falling number of animal and plant species and their vegetation places. For instance, the Estonian Ornithological Society has analyzed the impact of spring and summer forest cutting on forest avifauna, as a result, they have unanimously proved it to be harmful and their recommendation is to establish a three- month break in forest cutting in the protection and selection areas, which should provide for forest bird hatching time.

As a result of returning the nationalized land to private owners and privatization of forestland, nearly 55,000 land property plots, approximating almost 700,00 ha of forestland, have been acquired by the owners. The area of forests covering the former privately owned land, which is still in the state ownership, is approx. 600,000 ha. 55% of forest is still state owned and managed.
The majority of the former owners have not applied for return of their property, thus, in the next stage, that will be subject to privatization. The regulations of privatization established have led to dispersion, accompanied by low management efficiency. Cases of malpractice privatization regulations are frequent - through using dummy applicants, such profiteer land users have

emerged who are committed to making immediate profit and are used to breaking the regulations concerning forest legislation.

It should be noted that as a result of the demand, conifer cutting is prevalent, which creates a potential danger to certain forest types and to species related to those and to preservation of biological diversity in the present state. This tendency is intensified by the forest owners who earn their living from timber sales because of economic recession in rural areas. Inadequate knowledge and skills have led to offences against regulations concerning forestry; forest management fails to take into serious consideration the post-effects on the condition of the forests caused by the situation. Gaps existing in the Forest Act allow for exceeding the norms established in forest management, without breaking the law; the tax regulations, which do not support forest regeneration, hamper rather than encourage owners to create a new forest generation. Forest tending work, such as cleaning and maintenance of forest improvement systems, which do not yield immediate profit, is conducted inadequately.

Pursuant to the Forest Act, concerning privately owned forest, the forest owner is responsible for forest protection. According to estimates, approximately 60% of forest owners are not based on their forestland and would be unaware of forest cutting carried out without their approval. In the present situation, it has proved rather difficult to hamper theft and illegal forest cutting, since provisions made by law have proved insufficiently effective. The problem also lies in inadequate supervisory staffing and deficiency of other resources. One of the possibilities projected for private forest protection is to organize and develop the so-called neighbors' lookout based on the resources of the owners whose forest properties are located close to one another.

The Environmental Inspectorate (EI) has the right to impose fines to persons not fulfilling the requirements under environmental protection legislation or in case of more serious violations sue them to the court for applying more stringent penal rates. At the same time the EI acts as a civil plaintiff when claiming compensation for environmental damage from parties in fault and, in some cases, concerning state ownership, also claiming compensation for damage caused to the owner of a natural resource.

The following data gives an overview of violations and sanctions applied by the Environmental Inspectorate in 2000 in field of protection of forest[33]:

- Number of violations – 2267;
- Number of notifications – 63;
- Number of stopped activities – 191;
- Number of administrative cases – 883;
- Number of fined persons – 884;
- Sum of penalties – 831,436 EEK;
- Number of persons taken to criminal liability – 352;
- Number of illegal cuttings – 1681;
- Amount of illegally cut wood –172,331 solid cubic meters.

The volume of illegal forest cuts discovered in 1999 approximated 157, 500 solid cubic meters, in 1998 - 194,175 solid cubic meters.

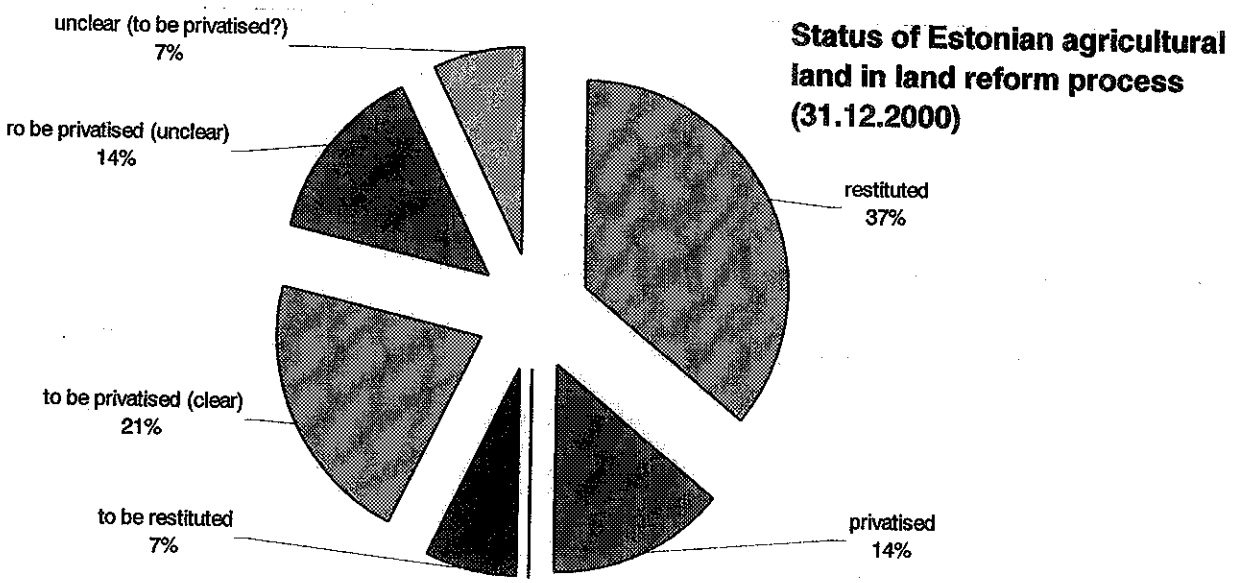
[33] Progress Report for Commission Review. Estonia 2001. State Chancellery, Office of European Integration, June 2001, http://www.eib.ee

Land reform creates many legal and practical problems in connection with nature conservation and protected areas. There are several processes going on in nature reserves connected with reforming national nature conservation policy, changing legislation, and ownership reform.

At present, there are 331 protected areas in Estonia. New Conservation Rules have been approved for 136 of these (by the Governmental Regulation) during the years 1994-2001 (i.e. after the *Protected Natural Objects Act* was passed). The territory of these protected areas makes up four fifths of the total area of protected areas in Estonia. The total area of protected areas in Estonia is approximately 520,000 hectares.

Still, the biological diversity of the managed forests is satisfactory. However, because of sharp increase in the volume of cuts, a danger exists that the present good condition may not prevail unless effective precautions are taken. Refined habitation places on the state land (i.e. over half of the refined habitation places) are well protected, however, in private forests, the implementation of protective mechanisms has entangled because of scarce resources. The legal regulations concerning environmental requirements imposed on forests are not in good agreement and the protection of biological diversity in forest management has been provided in rather general terms.

Estonia Annex 1



4.6 Georgia

Author: Ramaz Gokhelashvili

1. Overview of Land Privatization

Georgia, a mountainous country covering about 70,000 km^2 with a population of 5.5 million people, is situated in the South-East Europe, in the central and western part of the South Caucasus. Hypsometrical points on the territory of Georgia range from 0 up to 5,068 m above sea level. Forests cover about 40 percent of the country, largely in the Greater Caucasus Mountains (Georgia's northern border), the Lesser Caucasus (its southern border), and in intervening lowlands and foothills. The principal landscapes of Georgia include foothill and mountain forests and sub-alpine meadows of the Greater and Lesser Caucasus, treeless mountain upland plateaus of the Lesser Caucasus, humid lowland forests of western Georgia, and the arid steppe and semi-deserts of eastern Georgia.

According to Georgian legislation land is divided into two categories: agricultural and non-agricultural (equivalent to "urban" land) land. Consequently, the legal regime of each category is regulated differently. According to the Law of Georgia on Agricultural Land Ownership (1996), agricultural land parcel is the land registered in Local Estate Book (Public Registry) as agricultural land parcel, which is used for growing crops and raising live-stock, with or without agricultural and auxiliary structures located on it. Table 1 provides the break down of land resources in Georgia by regions and Type.

Land Table 1 Resources in Georgia (DLM, 2001 and Department of Statistics, 2001)

Region	Total Land	Agricultural lands						Non Agr. Lands
		Total	Arable	Perennial Plants	Meadows	Pastures	Dwellings, and yards	
Tbilisi	24.37							24.37
Abkhazia	865.8	217.3	44.8	44.1	2	12.4	-	648.5
Adjara	290	73.7	10.4	16.3	7.2	38.9	0.9	216.3
Samachablo	193.9	57.9	2.9	0.1	8	46.9	-	136
Guria	203.2	73.1	22.4	24.8	1.2	23.9	0.8	130.1
Samegrelo	743.8	282.5	69.7	38.9	2.4	165.7	5.8	461.3
Imereti	643.35	215.9	85.7	29.7	1.5	96.1	2.9	427.45
Racha-Lechkhumi	456.7	153.5	8.7	3.4	25.7	115.7	-	303.2
Samckhe-Javakheti	641.2	400.4	82.3	3	31.9	282.2	1	240.8
Shida Kartli	412.3	226.5	79.7	37.7	7.5	100.3	1.3	185.8
Kvemo Kartli	677	399.6	135.4	13.3	37.8	209.9	3.2	277.4
Mtskheta-Mtianeti	678.5	291.1	38.1	7.8	14.5	229.3	1.4	387.4
Kakheti	1130.9	628.2	212.8	50.2	2.6	360.5	2.1	502.7
Total	6949.4	3019.7	792.9	269.3	142.3	1795.8	19.4	3941.32

Beginning of Land Privatization

The process of land reform in Georgia began in 1992. The history of land privatization efforts since this time is described below in a separate chapter.

Current Status of Land Privatization

Privatization process of the agricultural land means distribution as private property and distribution on lease. Land distribution as private property is finished, leasing of the state owned land is in progress (except Abchazia and Samatshablo regions, which are not now under the Georgian jurisdiction) (DLM, 2001).

According to data from the Department of Statistics (2001) 942.3 thousand ha or 13.6 % of total land area is in private ownership in Georgia (Table 2 and 3). As about agricultural lands, about 762.1 thousand ha or 25.2 % of total agricultural lands are in private ownership. Besides, according to the data of the State Department of the Land Management (DLM, 2001), after enactment of the law on leasing the agricultural lands remaining in state ownership (1996) 939, 6 thousand ha of state-owned agriculture lands or 31.1% of the total agriculture lands were given on lease. Among them: 257, 5 thousand ha arable land (32.5%), 31, 6 thousand ha perennial plants (11.7%), 57.1 thousand ha meadowlands (40.1%), 593.4 thousand ha pasture lands (33.1%). As a result of the agricultural land reform, according to the data of April 2001, 56.4 % of the whole agricultural land has been privatized (private ownership + leased land) (DLM 2001).

Table 2 **Dynamics of land Privatization in Georgia in thousand ha (Department of Statistics, 2001)**

Total Land Area

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	7272.6	7272.3	7009.4	7009.0	7009.0	7009.0	6949.0	6949.4
Private	199.0	211.4	692.6	766.0	918.0	919.6	932.5	942.3
State Owned	7073.6	7060.9	6316.8	6243.0	6091.0	6089.4	6016.5	6007.1

Agricultural Lands

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	3267.1	3275.4	3048.0	3034.5	3037.0	3063.5	3018.4	3019.7
Private	183.6	195.3	654.0	726.7	789.7	750.1	762.1	762.1
State Owned	3083.5	3080.1	2394.0	2307.8	2247.3	2313.4	2256.3	2257.6

Arable

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	783.2	790.4	759.3	781.1	785.0	791.9	790.4	792.9
Private	96.4	95.9	360.7	406.9	431.9	431.7	433.9	434.1
State Owned	686.8	694.5	398.6	374.2	353.1	360.2	356.5	358.8

Perennial Plants

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	357.0	336.9	307.0	284.6	277.5	269.8	270.1	269.3
Private	84.7	97.6	184.9	187.9	185.7	181.8	182.3	182.5
State Owned	272.3	239.3	122.1	96.7	91.8	88.0	87.8	86.8

Meadows

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	176.3	158.4	147.9	148.6	141.2	142.7	142.5	142.3
Private	2.5	1.8	45.1	48.0	47.6	39.6	41.5	41.3
State Owned	173.8	156.6	102.8	100.6	93.6	103.1	101.0	101.0

Pastures

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	1947.7	1983.7	1822.1	1820.2	1833.3	1839.7	1796.0	1795.8
Private	0	0	62.4	83.9	124.5	77.6	85.0	84.8
State Owned	1947.7	1983.7	1759.7	1736.3	1708.8	1762.1	1711.0	1711.0

Table 3 Dynamics of land Privatization in Georgia in % (Department of Statistics, 2001) Total Land Area

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	100	100	100	100	100	100	100	100
Private	2.7	2.9	9.9	10.9	13.1	13.1	13.4	13.6
State Owned	97.3	97.1	90.1	89.1	86.9	86.9	86.6	86.4

Agricultural Lands

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	100	100	100	100	100	100	100	100
Private	5.6	6.0	21.5	23.9	26.0	24.5	25.2	25.2
State Owned	94.4	94.0	78.5	76.1	74.0	75.5	74.8	74.8

Arable

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	100	100	100	100	100	100	100	100
Private	12.3	12.1	47.5	52.1	55.0	54.5	54.9	54.7
State Owned	87.7	87.9	52.5	47.9	45.0	45.5	45.1	45.3

Perennial Plants

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	100	100	100	100	100	100	100	100
Private	23.7	29.0	60.2	66.0	66.9	67.4	67.5	67.8
State Owned	76.3	71.0	39.8	34.0	33.1	32.6	32.5	32.2

Meadows

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	100	100	100	100	100	100	100	100
Private	1.4	1.1	30.5	32.3	33.7	27.7	29.1	29.0
State Owned	98.2	98.9	69.5	67.7	66.3	72.3	70.9	71.0

Pastures

Category	1986	1991	1996	1997	1998	1999	2000	2001
All categories	100	100	100	100	100	100	100	100
Private	0	0	3.4	4.6	6.8	4.2	4.7	4.7
State Owned	100	100	96.6	95.4	93.2	95.8	95.3	95.3

The whole territory of Georgia is 6949.09 thousand ha. Among them: Agricultural land - 3018.4 thousand ha, and Non-Agricultural land - 3941.32 thousand ha. So, 43.4 percent of the territory of Georgia are the agricultural land, of which 790.4 thousand ha are arable land; 270.1 thousand ha - perennial plants; 142.5 0.8 thousand ha-meadow-lands; 1796.0 thousand ha - the pasture lands; 19, 4 thousand ha – buildings and yards (Table 1, Department of Statistics, 2000)

Table 4 and 5 provides information on private land distribution in Georgia by regions and by type (DLM, 2001). According to these tables, there are 1701.7 thousand ha private agricultural lands (private property and leased) in Georgia. Among them: 905.7 thousand ha (85.3%) of the intensive agricultural land (arable, perennial plants), 98.4 thousand ha (69.1%) of meadows and

678.2 thousand ha (37.8%) of pastures (DLM, 2001). 1318.0 Thousand ha (43.6%) of agricultural land remained undistributed, of which 100.6 thousand ha arable land (12.7%); 55.9 thousand ha perennial plants (20, 8%), 43.9 thousand ha meadows (30.9%), and 1117.6 thousand ha pasture lands (62.2%). The main reasons that these lands remained undistributed are: hard relief and inconvenient conditions, barren soil, inactive irrigation and drainage systems, bogging and salination, development of the erosion process (Department of Statistics 2000).

Table 4 Land Privatization in Georgia by regions (DLM, 2001)

Region	Total	Agricultural lands				Non-Agricultural Lands		
		Private	Leased	State owned	Total	Private	State owned	Total
Abkhazia	865.8	18.4	0	198.9	217.3	-	-	648.5
Adjara	290	22	37.2	14.5	73.7	0.4	215.9	216.3
Guria	203.2	42.4	10.5	20.2	73.1	0.55	129.55	130.1
Samegrelo	743.8	106.8	46.3	129.4	282.5	1.92	459.38	461.3
Racha-Lechkhumi	456.7	34.9	0	118.6	153.5	0.07	303.13	303.2
Imereti	643.5	109.3	23.2	83.4	215.9	1.11	426.49	427.6
Samtskhe-Javakheti	641.2	71.1	228.4	100.9	400.4	0.53	240.27	240.8
Samachablo	193.9	0.9	0	57	57.9	-	-	136
Shida Kartli	412.3	80.2	55	91.3	226.5	0.86	184.94	185.8
Kvemo Kartli	677	67.5	210.1	122	399.6	1.2	274.2	277.4
Mtskheta-Mtianeti	678.5	54.7	32.3	204.1	291.1	0.43	386.97	387.4
Kakheti	1130.9	153.9	296.6	177.7	628.2	1.94	500.76	502.7
Tbilisi	24.37	0	0	0	0	-	-	24.37
TOTAL	6961.17	762.1	939.6	1318	3019.7	9.01	3121.59	3941.47

Table 5 Land Privatization in Georgia by type of land (Department of Land Management, 2001)

Land Type	Agricultural lands				Non-Agricultural Lands			TOTAL
	Private	Leased	State Owned	Total	Private	State Owned	Total	
Arable	434.8	257.5	100.6	792.9	-	-	-	-
Perennial Plants	181.8	31.6	55.9	269.3	-	-	-	-
Meadows	41.3	57.1	43.9	142.3	-	-	-	-
Pastures	84.8	593.4	1117.6	1796	-	-	-	-
Dwellings, yards	19.2	0	0	19.2	-	-	-	-
Total	**762.1**	**939.6**	**1318**	**3019.7**	**180.2**	**3749.5**	**3929.7**	**6949.4**

Land Privatization Efforts in Georgia

The privatization of agricultural land in Georgia has started in 1992. The first Normative Act in the privatization process was Administrative Decision # 48 of the Government of Georgia on January 18, 1992. As a result of its enactment the citizens of Georgia received land area of 0,75 ha in private possession. In the same year, the Government of Georgia adopted the Administrative Decisions # 123 and # 290, as a result of which it became possible to allocate maximum land area of 1,25 ha to the residents of flatland and 5 ha of land area to the residents of high mountainous regions. Currently, around 3 million land parcels have been transferred to approximately 1 million citizens of Georgia.

On March 22 of 1996, the parliament of Georgia adopted the Law on Agricultural Land Ownership. According of this Law and administrative decisions of the Georgian Government the allocation of land parcels in private ownership was recognized legitimate. At that time, due to the non-existence of registration system landowners were unable to fully exercise their rights such as: sales, lease, mortgage and other related rights.

In 1996 the Parliament of Georgia adopted the Law on Land Registration. This law provides for the establishment of a system of immovable property registers throughout the country where land ownership certificates, land leases, mortgages of immovable property, and other legal documents which affect rights to immovable property will be recorded on the basis of specific documents to be presented, including cadastral surveys. A new State Department of Land Management has been established to develop and administer the registry system, which will also encompass all urban land. A change in the Law of the Republic of Georgia on Mortgages to allow the utilization of land as loan collateral is under development. An effective law with reliable implementation will be critical for the development of agricultural credit and land markets. Later, in 1997 the new Civil Code was adopted, based on which, various kinds of transactions in land were allowed.

In 1996 a law on leasing the agricultural lands remaining in state ownership was adopted (in 1997 the Law was canceled by new Civil Code.) Appropriate commissions were formed in the regional administration; The Ministry of Agriculture had elaborated the regulations and the

commissions commenced their work. The agricultural land had to be given on basis of contest. It included the following principles:

- Payment - initial 30 GEL, that would gradually increase through bidding;
- An obligatory condition - strict observance of agro technical rules and recommendations;
- Areas above 5 ha had to be taken on lease so that to avoid further fragmentation of the land.

The lease period varies between 1 and 49 years, according to the request. Under this Law all agricultural leases previously made must be transformed into compliance with the new law or they will be considered invalid. There are seemingly no restrictions on sales or leases of privately owned lands as long as they will continue to be used for agricultural purposes. As mentioned above, after enactment of this law 939, 6 thousand ha of state-owned agriculture lands or 31.1% of the total agriculture lands were given on lease.

By the first stage of initial registration of non-agricultural land, in accordance with the new Civil Code, the land parcels existing on city territory and on which multi-storey apartment buildings and individual houses are located, were declared into private ownership of residents. The second stage of privatization of non-agricultural land concerned industrial land. In October 28, 1998, Georgian parliament passed the Law on Declaration of Private Ownership of Non-agricultural Land in Use of Physical and Private Legal Persons. In accordance with this Law, as result of payment of a quite symbolic one-time fee which equals the amount of the land annual tax, it became possible to privatize non-agricultural land. With enactment of this Law, the land privatization process was significantly simplified. The Law avoids sales agreements, new surveys, notarization, and other technical or bureaucratic steps that have been known to block land reforms on other FSU countries. To obtain ownership of its associated land, an enterprise must pay at a local bank a sum equal to twice the annual land tax as of October 1, 1998. The enterprise need not produce any documents or proof to the banker; however it is in the enterprise's best interests to pay the correct amount because, for purposes of registration, it shall submit to the registrar a copy of the bank receipt evidencing the correct amount of payment. The Law concerns both private and privatized enterprises. The Law on Declaration calls for the privatization of all land that has been allocated to a particular enterprise, as described in existing official sketches, not just that land the enterprise is using. "Land parcels in use" are defined in Article 1 as those parcels officially allocated to an enterprise. Although the Law utilizes the word "use" it actually refers to that land possessed by the enterprise. Foreign entities are prohibited from acquiring land. Legal persons are permitted to own land, so long as the legal entity is properly registered in Georgia.

The cases of using the agricultural land in non-agricultural purposes are regulated by the Law on Reimbursement for Non-agricultural Use of the Agricultural Lands and Compensation of Damage.

After these legislative changes conduction of transactions on agricultural and non-agricultural land was encouraged. According to the information of the State Department of Land Management, since October 1998 in the Public Registry have been registered 12,939 cases of land sales: 5,437 of these have occurred on non-agricultural land, and 7,502 - on agricultural land parcels. Apart from bequeathal and giving of land as a gift, the total of 11,660 cases of mortgages has been registered in the Public Registry: 10,755 of these are non-agricultural land parcels. Mortgage of agricultural land is limited to 905 transactions (DLM, 2001a).

There are three categories of landowners in rural areas:

- I category: a farmer, who cultivates his land systematically; this category received

approximately 1.25 ha of land during allocation;
- II category: rural resident employees; they received around 0.70 ha;
- III category: rural residents who have migrated to cities and who received approximately 0.25 ha of land during land reform.

According to observations potential sellers of land parcels are mainly II and III category owners. There are frequent cases of a landowner purchasing several adjacent parcels. Tendency to consolidate parcels is especially observable in East and South of Georgia.

There are many cases of leasing land parcels in rural areas, where oral agreements are made and the transaction is not registered in the Public Registry. According to the data of local offices for land management approximately 40% land transferred into ownership is under lease. According to observations of an independent expert there is a tendency in increasing price on agricultural land. According to the data of last two years land price per hectare has increased by 15-45%. (Shatirishvili 2001).

In the privatization process an important problem was land registration. Existed registration system was not enough to fully exercise ownership rights on land and conduct transactions. This system was also inconsistent with new laws adopted in 1996-1999. The situation was worsened by the fact, that complete registration of agricultural land parcels on the whole territory of Georgia with this registration system and principles would take at least ten years. It is natural, that during this period conducting transactions and exercising ownership rights would became impossible and it would have impeded the establishment and development of land market in Georgia.

Due the above-mentioned reasons it was necessary to conduct rapid and complete registration of land through simple, effective and inexpensive methods. In order to speed up land registration prices, on May 16 of 1999 the President of Georgia issued Order No.327 On Urgent Measures for initial Registration of Agricultural Land Ownership Rights and Issuance of Registration Certificates to Citizens of Georgia.

As a result of enactment of this Order, the following became possible:
- Considerable acceleration of initial registration process of agricultural land parcels and carrying out registration on the whole territory of Georgia.
- Increasing interest of landowners towards the registration of private ownership on land, due to free-of-charge registration of land parcels for the citizen of Georgia.
- Conducting legitimate transactions on agricultural land parcels (sales, lease, mortgage and etc)

Since 1999 to present, initial registration of over 1 million agricultural land parcels and thousands of transactions on already registered land parcels have been completed. Increase of the number of initial registrations and transactions was also contributed to by the Law on Land Parcel and Related Immovable Property State Registration Fees, of April 30, 1999.

For today, land distribution as private property is finished, leasing of the state owned land is in progress (except Abchazia and Samatshablo regions, which are not now under the Georgian jurisdiction).

Table 6 Georgian Laws and Legislative Acts Affecting Land Privatization

#	Name	Date
1.	Administrative Decision # 48 of the Government of Georgia	January 18, 1992
2.	Administrative Decisions # 128 of the Government of Georgia	February 6, 1992
3.	Administrative Decision # 290 of the Government of Georgia	March, 1992
4.	Law on leasing the agricultural lands remaining in state ownership (In 1997 the Law was canceled by new Civil Code.)	1996
5.	The Law on Agricultural Land Ownership	1996
6.	The Law on Land Registration	November 1996
7.	The Civil Code	November 1997
8.	The Law on Administration and deposition of State Owned Land	1997
9.	Law on Privatization of State Property	May 1997
10.	Tax Code	1997
11.	Law on Reimbursement for Non-agricultural Use of the Agricultural Lands and Compensation of Damage	1997
12.	The Law on Declaration of Private Ownership of non-agricultural land in use of individuals and legal entities	1999
13.	Law On Land Parcel and Related Immovable Property State Registration Fees	April 30, 1999
14.	President Order # 327 On Urgent Measures for initial Registration of Agricultural Land Ownership Rights and Issuance of Registration Certificates to Citizens of Georgia	May, 16 1999
15.	Law on Land Parcel and Related Immovable Property State Registration Fees	April 30, 1999

International Assistance Projects related to Land Privatization in Georgia

WB (IDA) & IFAD – Agriculture development project, Land Registration Unit (1997-2002) Cadastral work, implementing activities to create whole process of land registration in pilot areas.

UNDP project: Land Management (1999-2002) - Computerization of the land registration process, creation tax payer database, development or the land information system. Provide facilities for the local land registration offices.

USAID project: Land Market Development (2001-2003) - Improvements of the legislative base, creation of the land registration system, public awareness campaign, development of the land market in Georgia.

EU TACIS project: Land Reform Assistance (1997-2000) - Financial support to the State Department of Land Management.

KFW project: Cadastre and Land Registration (2000-2006) - Creation of the system of cadastre and land registration, implementing cadastral work in the fields, create database, provide with equipments and program software, do trainings, institutional strengthening support, public awareness.

GTZ project: Land Management in Georgia. (2000-2002) – Development of Legislative base in the field of Cadastre and land assessment, preparation of the Land management specialists.

SIDA project: Support of the land database and cadastre in Georgia (2000-2003) - Creation of the Land Management Education Centre in Tbilisi.

2. Overview of Environmental Impacts

Although forests and wetlands are excluded from the land privatization process in Georgia, the chapter 3 provides brief description of current management status of these lands. This chapter mainly focuses on overview of environmental impacts of agricultural land privatization.

It is notable, that the special working group "Agriculture and Rural Land Use" was created during the preparation of the National Environmental Action Plan (NEAP) of Georgia in 1996-1999. This group has produced the report in 1997, which is attached as an Annex 1 to this report.

According to this document, the main environmental problems associated with current agricultural land management in Georgia are identified as:

- Land Degradation, overgrazing and upland Farming;
- N- and P-loads from agriculture to groundwater and surface waters;
- Contamination by pesticides;
- Irrational use of water resources in irrigated agriculture.

This document also provides the comparative analysis of positive and negative aspects of land privatization in Georgia, which is shown in the Table 7.

Table 7 Positive and negative aspects of Land Privatization in Georgia (NEAP, 1997)

Positive aspects	Negative aspects
Private sector is a basis of traditional life cycle; Efficient use of land, its high return; A closed cycle, less production waste; Satisfactory level of preserving and taking care of land; High capacity of market requirement response; Sound environmental behavior	Low labor productivity; Limited possibilities of mechanization; Limited possibilities of crop rotation; Impossibility to deliver standardized goods to market; Complicated quality control; Lack of knowledge of new agricultural technologies;

According to Khutsaidze (2001) there are several issues of soil degradation during last 10 years identified by the selective research in Georgia carried out by the Ministry of Agriculture:

1. In a number of regions in Georgia the soils, where the content of sodium is above 20%, shifted to very saline ones, where the content of the toxic element – sodium is elevated by 15-20 milli-equivalent; the areas of very saline lands were also increased;
2. The area of acidic soils increased up to 37 thousand ha in West Georgia, where pH is equal to 2.8-3. It's difficult for agriculture crops to grow on such soils and they give low yields;
3. Due to inability to carry out the measures required for the saline and acidic soils in the last 10 years, 24.5 thousand ha of land regressed to lower category agricultural land;

4. The processes of erosion had a very negative impact on agricultural land. The energetic crisis lead to cutting of the windbreak forest lines, and estimated wind erosion exhausted 102 thousand ha and ruined the fertile[art of the soil;
5. As a result of wind erosion, 54 thousand ha arable land regressed to lower category agricultural land;
6. The nutrient elements' content in the soil has decreased. About 80% of agricultural lands are poor in such important element as phosphorus. Furthermore, 65-70% of lands are poor in potassium;
7. The balance of the main soil fertility indicator – Humus – is negative in all regions of the country. The research of the last two years showed that the composition of humus in a number of regions decreased by 0.8-1.25 %.
8. Old dated and damaged irrigation system does not support the requirements, particularly in East Georgia, which is resulted in degradation of agricultural lands.

According to different sources, several problems are identified that private land owners facing currently (Shatirishvili, 2001, Khutsaidze, 2001, 2001a, Iakobidze, 2001):

- Inaccessibility of necessary machinery (high prices);
- Low level of co-operation;
- Inexistence of inputs market, lack of sales and information;
- Lack of transportation development;
- Absence and/or unsatisfactory crediting system;
- Inadequate taxation;
- Some confusions in land legislation;
- Disorder in agricultural education system;
- The percentage of agricultural land distributed in different districts is highly irregular.

The following is a list of state property, which is not subject to privatization (From the Law on Privatization of the State Property, May, 1997, Table 6):

1. Deposits, water resources, territorial waters, continental shelf, special economic zones and State border zones, forest fund (*this includes all forest land and wetlands, R.G.*), air space, protected territories or natural territories requiring special protection;
2. Historical, cultural and art valuables, state archives of historical and cultural importance, the State Fund of film-photo and audio documents, state museums, theatres, the scientific-research archives and the funds of Georgian Ministries;
3. Units under the system of State reserves, extreme-purpose reserves, precious metal reserves;
4. Transition-controlling services of the electric energy sector, not including part of the 35-110 KW voltage transmission network, the main purpose of which is to conduct outer supply for electricity distribution network and which is not aimed at system or/and intersystem transiting of electricity;
5. State universities and subordinate scientific-research institutions, all types of educational and preschool institutions functioning at present, which are financed by the Government;
6. Docks, hydro-technical structures, lighthouses; light signals and water areas of ports of special public importance;
7. Rail-track of state importance and related signaling, telecommunications controlling energy-supplying systems, gas mains, motor roads (in case of the absence of parallel state roads), flight control systems and air-fields;
8. Frequency specter, mail connections, technical means for the tele-radio transmission for the First Channel, technical equipment for Governmental communication system and the location of Georgia on the geo-stationary orbit;

9. Enterprises producing radioactive materials for military purposes, property of experimental-construction and scientific institutions;
10. Main building of the water supply system, water pumping stations, main water pipes and regional filtering stations;
11. Hospitals of special importance that are included and approved of in the stated rules;

The next chapter describes in detail the environmental impact of land privatization by sectors, particularly in agriculture, forest lands, wetlands and current public lands.*3.*

3. Environmental Impacts by Sectors

3.1 Agricultural Land

Agricultural production

Agriculture is considered as one of the main economical sector in Georgia. Table 8 illustrates the dynamics agriculture share of GDP during the period of 1990-2000. It was highest in 1995, due to the significant decrease of industry share by that time, but it still remains the highest among all other major sectors.

Table 8 Economical Branches as Share of GDP in % (Department of Statistics, 2001)

Branches	1990	1995	1996	1997	1998	1999	2000
Agriculture	29.7	41.7	33.2	29.0	26.7	24.7	20.0
Industry	22.9	9.5	14.6	13.3	12.3	13.0	13.9
Construction	8.7	2.2	2.5	3.5	4.6	3.7	3.8
Trade	5.6	26.0	12.3	10.9	10.4	11.5	12.7
Transport and Communications	7.1	8.5	5.6	7.6	10.9	11.9	14.4
Other	26.0	12.1	31.8	35.7	35.1	35.2	35.2

According to the Table 9, private farms share in agricultural output has increased significantly during the period of 1985-200. But it does not indicates the trends in agricultural production on privatized land, because it is not clear whether such data are the result of increased production, or simply is the result of increased land area in private ownership.

Table 9 Structure of Agricultural output by categories of farms in % (Department of Statistics, 2001)

	1985	1990	1995	1996	1997	1998	1999	2000
By all categories	100	100	100	100	100	100	100	100
Agricultural enterprises	49.9	52.0	24.0	20.0	19.0	7.0	6.0	6.0
Households	50.1	48.0	76.0	80.0	81.0	93.0	94.0	94.0

Table 10 gives more detail breakdown of agricultural output, there is a decrease in agricultural production both in agricultural enterprises (mainly this is the leased land by state) and in private farms. It is notable that plant growing output has decreased in private lands along with significant increase of the privatization of arable and perennial plant lands (Tables 2 and 3).

Table 10 Agricultural output by types of farms (at current prices: million Georgian Lari) (DLM , 2001) Farms of all types

	1990	1995	1996	1997	1998	1999
Total output	5198,6	1851,0	2062,0	2299,0	2266,0	2650,0
Plant growing	3571,4	1081,0	1027,0	1363,0	1278,0	1505,5
Animal husbandry	1627,2	770,0	1035,0	936,0	988,0	1144,5

Agricultural enterprises

	1990	1995	1996	1997	1998	1999
Total output	2703,6	444,0	412,0	436,0	150,0	160,0
Plant growing	1857,3	265,0	201,0	233,0	115,0	120,5
Animal husbandry	846,3	179,0	211,0	203,0	35,0	40,5

Private farms

	1990	1995	1996	1997	1998	1999
Total output	2495,0	1407,0	1650,0	1863,0	2116,0	2490,0
Plant growing	1714,1	816,0	805,0	1150,0	1163,0	1385,5
Animal husbandry	780,9	591,0	845,0	713,0	953,0	1104,5

There are no documented and clear reasons of a decrease in agriculture output. Several possible explanations include:

- Changes in land tenure – private farmers have less opportunities to get more output;
- General economical situation in the country – although the demand on agricultural products in local market is high, the prices are lower than 10 years ago due to general economical decrease;
- Limited export opportunities – the export of agricultural products has decreased significantly.

Pesticide use

Tables 11 and 12 provide data on pesticides and mineral fertilizers use in Georgia during the period of 1986-1994. No latest data are available currently, but according to experts' opinion, this trend continues up today. It is assumed, that use of agricultural chemicals is currently low due to economical circumstances in the country, but as the economy recovers the problem is likely to reappear. Fertilizers and pesticides are now imported without proper control. In relation with this the most alarming is the illegal import of low quality pesticides and fertilizers from Russia. There is a possibility that wide use of imported herbicides will start in the near future.

Table 11 Dynamics of Pesticides use in Georgia (in tons)
http://www.parliament.ge/SOEGEO/english/toxcont/agrchem.htm
http://www.grida.no/enrin/biodiv/index_en.htm

Pesticides	1986	1988	1990	1992	1994
Herbicides	1,661	1,398	1,177	0,140	0,140
Insecticides	8,003	8,462	3,523	1,142	0,119
Fungicides	24,593	14,150	17,856	6,882	0,884
Total	34,257	24,010	22,556	8,164	1,008

Table 12 Use of Mineral fertilizers, (in 1000 tons)
http://www.parliament.ge/SOEGEO/english/toxcont/agrchem.htm
http://www.grida.no/enrin/biodiv/index_en.htm

Fertilizers	1986	1988	1990	1992	1994
Nitrogen	123	112	64	31	12
Phosphorus	81	75	26	8	0
Potassium	44	40	4	0	0
Total	255	226	95	39	12

Irrigation Practices

The changes in irrigation practices are occurring in Georgia due to the land privatization process. In many regions the Water User Associations are created by farmers and secondary irrigation channels are transferred in ownership of these associations.

Due to urgent needs in assistance, the Government of Georgia (GoG) has requested support from the World Bank (WB) towards the implementation of an Irrigation and Drainage Community Development Project. The project will help the GoG to increase agricultural production and farm income though improved operation of irrigation and drainage infrastructure, while ensuring long-term sustainability of water resources, irrigation and drainage schemes, and their operation and maintenance.

Based on the current design and present agreements with the GoG, the proposed Irrigation and Drainage Community Development Project is expected to include the following components:

- Fostering development of the improved water user organizations that could take over operation and maintenance of the irrigation and drainage schemes;
- Repair/rehabilitation of the on-farm irrigation and drainage infrastructure;
- Repair/rehabilitation of selected associated main public infrastructure;
- Technical assistance for enhanced institutional capacity;
- Project management.

Grazing lands

Most pasturelands in Georgia are degraded due to overexploitation and have shown major changes in vegetation cover and species composition. High mountain pastures are particularly suffering. Overgrazing (early spring grazing is particularly devastating) has caused erosion and also impacted plant diversity. In many areas rich vegetation has been replaced by weed communities which are less productive and contain a limited range of species.

Since 1985 serious changes in Georgian stock-breeding have taken place (Table 13). Most livestock became private property. Georgian shepherds can no longer use winter pastures in Northern Caucasus and the pressure on winter pastures within the country has increased. There are no documented data on changes in graze management, but it seems that the traditional practices (land rotation system, limitation of livestock number by different methods, etc.) will revive in parallel with privatization processes.

Table 13 Number of livestock by categories of farms, thousand heads (Department of Statistics, 2001) By Agricultural Enterprises

Livestock	1986	1991	1996	1997	1998	1999	2000	2001
Cattle	672.2	468.9	56.7	41.9	24.8	15.3	11.0	6.8
Pigs	537.3	357.0	24.3	9.1	4.4	3.0	1.5	0.8

Sheep and goats	1099.3	912.7	148.7	98.1	63.5	44.5	38.4	27.8
Horses	6.5	4.9	1.3	0.9	0.8	0.6	0.5	0.4

By households

Livestock	**1986**	**1991**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Cattle	969.3	829.4	916.9	966.9	1002.4	1035.6	111.1	1170.6
Pigs	636.1	523.2	328.4	323.4	325.9	362.9	409.6	442.6
Sheep and goats	880.3	705.4	576.1	553.9	520.0	542.2	595.0	599.8
Horses	18.5	14.7	22.5	25.4	27.0	29.7	33.6	34.5

Forest Land

(The main source of this chapter is NEAP, 2000)

As mentioned above, forests are excluded from privatization process. This chapter describes current status of state owned forest management in Georgia.

The forests in Georgia are administrated predominantly by the State Forestry Department. During the FSU period, Georgia imported most of its wood from Russia, leaving its own abundant forest resources largely untouched. Most of Georgia's forests are still classified as protected, as they were under the Soviet system, and most harvesting is therefore illegal. Nevertheless there is substantial harvesting, mainly for local consumption as firewood, for local wood processing, or as logs for export. Such harvesting is now largely out of the control of the Forestry Department.

Because most harvesting of wood was illegal under the Soviet regime there is a lack of training on sustainable forestry management in Georgia. Pricing systems do not account for the full costs of harvesting, omitting for example the costs of environmental damage and reforestation. The forest sector must learn to operate within a market system while ensuring long-term sustainability of managed forests. Georgian foresters are practiced in supervising protected forests, in which all harvest is prohibited, but have little experience and will require training to enable sustainable use of managed forest lands.

Almost 40% of Georgia is forested (2750 thousand ha). Total standing volume amounts to 430 million m^3 sob and average annual forest growth comes to approximately 4.0 million m^3 sob.

Forests in Georgia are distributed unevenly and with the regions rich in forests there are numerous scarcely forested regions where the covering of the territory by forest doesn't exceed 10 percents.

Georgia's forests are formed basically by the following species: Eastern beech - 1164 000 ha (42 %); hornbeam - 298 000 ha (11.8%); oak - 281 000 ha (11.2%); alder - 200 000 ha (7.2%); chestnut - 105 000 ha (3.8 %); coniferous species - (Caucasian Silver fir, Eastern fir, pine etc.) - 455 000 ha (17.4%).

22,3% of Georgia's forests are altitudes from 0-500 m above sea level (asl), 23,5% from 501-1000 m asl, 16,6% from 1001-1500 masl, 17,4% from 1501-2000 m asl and 19,8% above 2001 m asl.

More valuable species like chestnut, beech and oaks hardly exist above 1500 m asl or at least grow very poorly at such altitudes.

3,8% of the forest area are on slopes from 0-10^0, 16,4% on slopes 11-20^0, 17,0% on slopes 21-25^0, 18,6% on slopes 26-30^0, 20,1% on slopes 31-35^0 and 24,1% on slopes steeper the 35^0.

In fact, the present classification allocates all forests with management plans (2,17 million hectares) to groups 1 (forests with protective functions - "mountain forests") and 2 (forests with protective and commercial functions - "valley forests"), which means that their primary functions are protective or recreational. No forests are designated as commercial forests (group 3). Harvesting is however permitted under severe restrictions in some (590,000 hectares) of the protection forests. In other forests harvest is only possible in case of damages to the trees. Such harvest is called sanitary cuts. The Ministry of Environment is also planning to create some seven National Parks, at present no area has such status, which would cover about 50% of the forested area in the country.

The forests with management plans are the once which have been managed by the Forestry Department. The forested area presently not covered by management plans (~600,000 hectares), consists of the forests which belonged to Kolkhozes, Sovkhozes and others. These areas have now been passed to the Forestry Department but there is no corresponding information about these forests at present.

Improper, highly intensive exploitation of the forests caused their reduction in thickness, deterioration of their general condition and productivity. Distribution density figures point to the fact. Groves of 0.5 and lower stand density class constitute more than a half (54.25 %) of the entire forests, major part of which requires forest rehabilitation and reproduction measures.

In recent years forests' recreational and rehabilitation works have decreased considerably. It should be pointed out that besides financial problems and lack of materials, such downfall was caused by the transfer of works from forest species' cultivation to forest reconstruction.

Sustainable use of timber and non-timber resources in Georgian forests is one of the major problems. According to existing legislation Georgia's main woodlands are determined as forests of protective functions.

In recent years critical situations have arisen quite often in timber exploitation business, the reason for which, in the first place was the fact that timber-wood import from Russian Federation has stopped completely (whereas 2.0 - 2.5 million m^3 sob timber logs used to have been imported from Russia annually) since 1990.

The most important common problems/aspects which are characteristic of present situation in terms of existing forest practices are:

- Intensive illegal logging practices, environmental pollution, spread of new pest spices and diseases affect the condition and health of temperate forests of Georgia.
- Georgian forestry does not correspond to ecosystem-based forest management practices. It is mainly oriented on commercial use of timber which in turn causes degradation and loss of biodiversity.
- Forest changes in recent years occurred through the degradation of closed forest to open and fragmented forest. Also, it should be mentioned that rural population pressure through subsistence farming, grazing and primarily illegal wood extraction (for fuel wood and building materials) is one of the primary agents behind forest change.
- For the moment in Georgia, there is no a special attachment to old growth forests for their aesthetic and ecological values. Representative landscapes may be maintained

through designation as protected areas, while in other cases management on longer rotations could help to retain their features.

- Despite a fact that there was developed Georgian forest type classification system which was mainly based on *biogeocoenosis* approach, forest management practices did not take into due consideration a need of comprehensive inventory and analyses for forest types. This has been resulted in insufficient (statistically formalized) information on forest type changes and dynamics.
- There is a lack and in most instances even total absence of comprehensive methods (including forest inventory, planning, and cutting methods) and indicators of forest biodiversity and sustainable forestry and adequate legislative instruments.

In conclusion, the natural forests of Georgia are in serious decline due to over exploitation and unplanned use, particularly in areas close to human settlements. Tree felling to meet local energy needs and to provide logs for export is conducted without adequate controls, and without regard to forest sustainability. Existing regulations are not based on a comprehensive concept of forest management. There is no proper pricing system for the exploitation of forest products. Forest survey data are incomplete. Control of pests, diseases and fires is inadequate, due to lack of resources. There is no coherent strategy for reforestation. Uncontrolled exploitation of forest land is leading to loss of wildlife habitat, and poses a threat to a number of rare and endangered species. Uncontrolled felling and the arbitrary sitting and use of access roads within forests is leading to substantial land degradation and soil erosion.

3.3 Wetlands

Wetlands are excluded from the privatization process in Georgia. This chapter describes the current status of wetlands in Georgia.

Rivers. There are a total of 25,075 rivers and streams in Georgia, with a total length of 2,768 km. Almost all rivers in East Georgia belong to the Kura River basin system, and flows into the Caspian Sea. The majority of West Georgia's rivers fall directly into the Black Sea. The density of the river system in the Black Sea coastal zone of Georgia reaches 3.0 - 3.5 km/km^2 and 0.79 km/km^{2}in east Georgia. The river system is subdivided into the following rivers types: glacial, snow, pluvial, underground and of the mixed feeding. The rivers are mainly mountainous and abundant in water with the comparatively short courses. The overwhelming majority of the rivers are yet unpolluted by industrial and household wastes. For the past years pollution of the rivers by various fertilizers, formerly used in agriculture, has sharply decreased.

Lakes. There are more than 850 lakes in Georgia, however their total area does not exceed 170 km^2. The largest are Paravani Lake (37 km^2), Kartsakhi Lake (26.6 km^2) and Paliastomi Lake (17.3 km^2). The deepest lakes are Ritsa (116m) and Amtkeli (72-122m). Among the inland water bodies, lakes are of the major commercial fishery importance. The following lakes are listed in the fisheries fund of Georgia: Paravani - 2,800 ha, Paleostomi - 1,750 ha, Tabatskuri - 1,300 ha, Djandari - 1,200 ha, Ritsa - 500 ha, Bebesiri - 400 ha, Imnati - 260 ha, Bazaleti - 200 ha, Sagamo - 150 ha.

Reservoirs. Majority of the reservoirs have been created on the rivers in order to regulate their streams to be used for the power generating stations and for irrigation needs.

Coastline. The 312 km. coastline, from the Psou rivermouth in the north to the village Sarpi in the south, is characterized by weak indentation. There is a number of small capes: Pitsunda,

Sukhumi, Kodori, Poti, Mtsvane and others and some small bays of commercial fishery importance.

Wetlands. The description of Javakheti high plateau and Kolkheti lowland wetlands is given in the Annex 3.

3.4 Current Public lands

Table 14 provides information on current public lands in Georgia. According to this source, about 3123 thousand ha is remained under the public lands. Among this, agricultural organizations hold about 2884 thousand ha and non-agricultural organizations (like Settlements, Protected Areas, Forest fund, Water fund, different Infrastructure, and Religious organizations) – 3123 thousand ha.

The land management aspects of forests and wetlands are described above. The Urban Land Use information is provided in the Annex 2. And brief description of protected areas is provided below.

As to the public agricultural sector, only the small part of it continues functioning, as an integral unit. Most of them use such a limited form of privatization as leasing of property and landing. This sector still possesses the most part of land and capital. It gives a good potential for future developments:

- Possibilities of creating medium and large peasant commercial farms;
- Wise privatization policy of this sector in medium term may promote high quality land use, that would solve food supply problem. Moreover, we would be able to use a great export potential of Georgian agriculture and secure self-sufficiency with major foodstuffs

Protected Areas

In 1990, the government of Georgia, with support from the WWF-International, began a process of planning for a major reorganization of the protected areas system in anticipation of a broad-based privatization of state lands. The traditional protectionist model of strict nature reserves ("zapovedniks") was considered inflexible and inadequate and the development of alternative models became a pressing need. As a result, 20 nature reserves are currently being transformed into 9 broad protected area landscapes. These landscapes will contain a variety of types of protected area, with different management regimes, in accordance with the 1996 Law on Protected Areas. This law recognizes internationally applied categories of protected areas ranging from strict protection to multiple-use areas. This consolidation is considered to offer a more viable option for long-term conservation of critical habitats and species.

In 1997, President Shevardnadze declared a goal of 20 percent of Georgian territory under some form of protected area. It is anticipated that "traditional" protected areas (nature reserves, national parks, natural monuments, managed nature reserves) will cover 10 percent of the territory of Georgia, with protection and sustainable development areas (protected landscapes, multiple use protected areas) extending coverage to 20 percent of the country's territory. The process initiated by the Georgian Government and WWF found much-needed support from other international organizations (e.g., the World Bank and UNDP, and others), which helped to produce management plans for the majority of the nine areas. In particular, the World Bank/GEF Protected Areas Development Project aimed at the conservation of forest ecosystems in Georgia is of special importance in supporting and reinforcing the new protected area system. A

key component of the project is to help the Government implement some of the previously mentioned protected area management plans.

Under Soviet legislation, 14 nature reserves and 5 state forest hunting reserves were established in Georgia (Table 15). Strictly protected areas covered 2.4 percent of the country's territory and protected areas with multiple use regimes covered 0.8 percent. Nature reserves and forest hunting reserves are managed by local administrations and controlled at the national level by the Department of Protected Areas, Nature Reserves & Hunting (DPA).

The first national park for Georgia, Borjomi-Kharagauli National Park, was designated and established in 1995 by a decision of the Cabinet of Ministers. An interdisciplinary team of experts, in cooperation with the Ministry of Environment, the Department of Protected Areas (DPA) and the Department of Foresty, elaborated the management plan for Borjomi-Kharagauli National Park. This has been supported by WWF and assisted by local populations. The plan integrates six-year programs aimed at the development of the Borjomi State Nature Reserve, establishment of a national park (50,400 ha), and stimulation of sustainable development of the region (support zone). It includes protection, research and monitoring, administration, integrated development, and support zone programs. The implementation of these programs will be supported with the aid of donor organizations, particularly KFW and other German partners.

Similar comprehensive management plans were elaborated for the Eastern Caucasus and Iori Plateau regions. With the participation of the World Bank and GEF, management guidelines for Kolkheti Wetlands, considered wetlands of international importance, have been developed under the ICZM project, which has a primary focus on sustainable management of the region. The project includes the designation and establishment of Kolkheti National Park.

Table 14 Protected Areas of Georgia (NEAP, 2000)

	Protected Areas	Year of designation	Existing area (ha.)	Planned area (ha.)	Planned Category
1	Algeti NR	1965	6,822	-	-
2	Tusheti NR	1980	32,186	42,200	NR
3	Ajameti NR	1946	4,845	-	-
4	Pitsunda-Miusera NR	1966	3,645	-	-
5	Borjomi NR	1929	17,948	-	-
6	Pskhu-Gumista NR	1976	40,819	-	-
7	Vashlovani NR	1935	8,034	-	-
8	Kintrishi NR	1959	13,893	-	-
9	Lagodekhi NR	1912	17,932	25,400	NR
10	Liakhvi NR	1977	6,388	-	-
11	Ritsa NR	1957	16,289	-	-
12	Saguramo NR	1948	5,359	-	-
13	Sataplia-Kolkheti NR	1935	854	-	-
14	Kazbegi NR	1966	8,707	-	-
15	Marimjvari NR	1939	1,040		-
	Total Nature Reserves (ha.)		**168,872**	**185,478**	
1	Gardabani State Hunting Reserve	1957	3,315	-	MNR
2	Korugi SFHR	1958	2,068	2,600	MNR
3	Iori SFHR	1965	1,336	4,000	MNR
4	Chachuni SFHR	1965	5,200	18,805	MNR
5	Katsoburi SFHR	1964	295	-	-
	Total Managed Nature Reserves (ha.)		**12,214**	**29,015**	
1	Borjomi-Kharagauli Protected Area -Borjomi National Park (NP) - Ktsia-Tabatstkuri MNR - Nedzvi MNR - Tetrobi MNR - Multiple Use Protected Area	1995	 50,400 22,000 11,200 3,100 156,000	-	-
2	Kolkheti Protected Areas Region - Kolkheti NP - Kobuleti NR - Multiple Use Protected Area			 54,700 777 74,700	 NP NR MUPA
3	Eastern Caucasus Protected Areas Region - Tusheti NP - Kakheti NP - Pirikiti NP - Khevi Protected Landscape - Alazani MNR - Alaverdi MNR - MUPA			 115,800 76,850 168,400 78,200 11,165 262 228,299	 NP NP NP PL MNR MNR MUPA
4	Iori Protected Areas Region				

	Protected Areas	Year of designation	Existing area (ha.)	Planned area (ha.)	Planned Category
	- Vashlovani NP - David-Gareji PL - MUPA			44,796 37,000 192,200	NP PL MUPA
5	Adjara-Guria-Imereti Protected Area Region			173,000	
6	Central Caucasus PAR			743,000	
7	Erusheti PAR			18,600	
8	Abkhazeti PAR			530,000	

NR - Strict Nature Reserve; MNR - Managed Nature Reserve; PL - Protected Landscape; NP – National Park; MUPA – Multiple Use Protected Area

References

Department of Statistics, 2001. Georgian Agriculture – Statistical Abstract. 137 p

Department of Statistics, 2000. Statistical Yearbook of Georgia. 308 p

Department of Land Management (DLM), 2001. Report to the President on land cadastral and registration system establishment. 65 p.

DLM, 2001a. Agricultural Land Privatization and Leasing processes development in Georgia. 13 pp.

Iakobidze S., 2001. Results of Land Privatization and Newly Created Problems in Georgia. Macro-Micro Economics, #6 (43), 52-54

Khutsaidze K., 2001. Land Reforms in Georgia. Conference materials – "Access to Land", March 19-23, Bonn, Germany, pp 1-5

Khutsaidze K., 2001a. Agrarian Reforms in Georgia and their Implementation in Reality. The seminar materials: "Agrarian Reforms in Georgia – Reality and Perspectives", March 8-9, Tbilisi, Georgia, pp 86-89

National Environmental Action Plan (NEAP), 2000. Ministry of Environment. 67 p

NEAP, 1997. Working Group #6, draft report, Agriculture and Rural Land Use, 25 p.

Shatirishvili L., 2001. The realities of the land market development in Georgia. The seminar materials: "Agrarian Reforms in Georgia – Reality and Perspectives", March 8-9, Tbilisi, Georgia, pp 95-99

USAID, 2002. USAID in Georgia. Newsletter – March, 2002.

Internet Sources

http://www.bisnis.doc.gov/bisnis/country/000628GGAgric.htm
http://www.bisnis.doc.gov/bisnis/country/9901land.htm

http://www.parliament.ge/SOEGEO/english/soils/landuse.htm
http://www.parliament.ge/SOEGEO/english/toxcont/agrchem.htm
http://www.grida.no/enrin/biodiv/index_en.htm`
http://www.tbcbank.com.ge/investors_guide/gic/6.html
http://web.sanet.ge/mospm/Invest-guide/privat-land-ig-mspm.html

4.7 Hungary

Author: Judit Zalatnay

1. Overview Of Privatization

Introduction

The reform process in Hungary is usually traced back to 1968, when the government began moving towards a market orientation. At the beginning, this process focused especially on the liberalization of foreign trade. The Law on Joint Ventures in 1972, a Law on State Enterprises in 1977 and a Law on State and Self Administered Enterprises in 1984 were all milestones on the reform path.

In 1990 the privatization process was started with the objective of reducing the State sector from 90% to less than 50% of the GDP by 1994. (The share of private sector in GDP increased from 29% in 1989 to 63% in 1995 and 85% in 1999.) In 1990, 955,000 people were employed in agriculture, which was 17.5% of the total labor force, while in 2000 it employed nearly 252,000 persons, 6.5% of all employees, so employment in agriculture decreased significantly. The reason for the decreases were the conversion of the holding and ownership structure, and the fall in production following the reshuffle of the external market and economic conditions.

The Hungarian State held app. 2,200 enterprises in 1990, of which 1,858 were transferred to the State Property Agency (AVU). Companies deemed as strategic by the government were subordinated to the State Holding Company (AV Rt.), established in 1992. The AVU set up a program selecting appropriate firms for privatization according to an open tendering approach. Enterprises with large financial and restructuring needs were placed into a restructuring program, and in some cases were liquidated under the Law of Bankruptcy.

In general, the process was market based and avoided the free distribution of property. Compensation for confiscation was handled through a program of compensation notes, (vouchers).

At the beginning the Hungarian privatization activities encountered numerous obstacles such as:

- The government did not have clear privatization strategy;
- There were no specific sector strategies,
- Lack of adequate legal framework,
- The legal status of assets often remained unclear,
- It was not clarified whether certain public assets would remain state property or when they would be privatized,
- Proper information on privatization schemes was lacking,
- A lack of experience among institutions working on privatization,
- The government was reluctant to sell companies to foreign investors.

In 1995, a new privatization act was implemented, merging the AVU and the AV Rt under the name of State Privatization and Holding Company (APV Rt.). This law envisaged the divestiture of 80% of state owned enterprises (SOE) and also defined new criteria and tasks to be covered by the privatization. These rules affected aspects such as: reduction of the number of companies targeted for permanent state-ownership, introduction of a simplified procedure for

privatization of small firms, creation of a higher transparency in the decision making process involving various parties from the government. These laws and regulation are still in force.

Based on information from APV Rt. the following table shows the results of the privatization policy from 1990 to 2001:

Change to corporate entity*	*Number of firms*
Fully privatized	1,242
Transferred to other State Asset Managing Organization	95
Affected by Liquidation	73
Final Settlement	11
Closed down	174
Managed by APV Rt. (under privatization)	89
Managed by APV Rt. (permanent state control)	73
Total	**1 757**

* In 1990 the number of state-owned companies was 1861, from which transformed into corporate entities 1,287, transferred to other state institution 85, still working 3, affected by liquidation 116, final settlement 15, closed down 354 state owned company. From 1990, 427 entities were established by the privatization companies (AVU, AV Rt, APV Rt.) or by separation; and 43 companies were transferred from another property agency.

The following privatization techniques had been employed in Hungary:
- Sale by tender (42% of the companies privatized),
- Share offer (15%),
- Property vouchers and compensation vouchers (18%),
- Commercial sale without tender (10%)
- Management or employee buyout (5%)
- Others (10%).

Hungary is now in a position, which no longer calls for substantial external inputs to consolidate the development of the private sector. The privatization process is to be finalized in one or two years.

Agricultural Land privatization

The agrarian structure of Hungary, similar to the other countries in the region (CEECs), was formed by the collectivization process of the postwar period. Land generally was not nationalized after the World War II., although later it was collectivized. In addition to state property, corporate ownership of land also arose and in various forms private landed property also existed. Over the years, proprietary rights became a formality. With abolition of a land market, land lost its character of valuable mean.

Collectivization in Hungary reflected independence of cooperatives, and private agricultural production existed within household farming plots. Furthermore, the households and the complimentary agricultural farms were continually tolerated and often supported by the system. The private growers dealt with animal husbandry and gardening, with grain production and plant cultivation almost exclusively concentrated in big farms. The rate of private production was –

after Poland –the highest in Hungary, namely one-third of agricultural production came from the private sector.

The initial attempt in 1990 to return agricultural land to prior owners was blocked by the Constitutional Court, with the ruling that land ownership must be treated similarly to that of other assets. In 1991, landowners and dispossessed owners of other property were granted vouchers redeemable for agricultural land and other assets, providing essentially monetary compensation for prior owners of land and other assets. Landowners who continued to hold title to land managed by cooperatives are granted the return to their management rights unconditionally.

In Hungary in May 1989, at the beginning of transformation, 31.7% of the arable land was owned by the state, 61% was in the use or possession of co-operatives and 7.3% was in the form of individual or auxiliary holdings. During the first years of the system changes, no radical transformation occurred in the ownership and farm structure of the Hungarian agriculture. In 1991, 27% of the arable lands was still owned by the state, 42% by co-operative members collectively, 27% by co-operative members individually and only 7% by private farmers.

The transformation of ownership in the agrarian sector was based on three pillars: on the realization of the four Compensation Acts (XXV. Act in 1991; XXIV. Act in 1992; XXXII. Act in 1992 and IL Act in 1992), on the transformation of the agricultural cooperatives, and on the privatization of the state farms and food industry. 88% of total agricultural land area is owned by natural persons, 10% by the state and 2% by cooperatives now.

According to the Compensation Acts, the previous owners or their heirs have the right to obtain access to land via auctioning their compensation vouchers.

The originally 1386 Hungarian agricultural cooperatives, (by the end of 1992, 1207 cooperatives) with a total territory of 5.6 million hectares, had been transformed formally into a holding company, a public or private limited company, based on private ownership of land and the joint activity of the members. Meanwhile 179 cooperatives failed to be transformed due to time constraints and bankruptcy.

Following the process of property designation, around 90% of the members have opted for remaining within the framework of the transformed cooperatives. Individual and group secession, splitting and cessation have affected only 15-20% of the cooperatives total property. Around 25-40,000 people have left the cooperatives and 6-10% of the previous members has opted to become private farmers on a total of 105,000 hectares of privately owned land.

Out of the 124 agricultural state farms with a total arable land of 902,000 hectares, 25 state farms with a territory of 154,000 hectares are envisaged to remain in majority state ownership. 83 state farms with a territory of 550,000 hectares remained under the umbrella of the State Privatization Agency and State Property Management Co. These state farms were transformed into business societies and joint stock companies in the course of privatization (decentralized privatization, self-privatization, stock or business share privatization).

The low speed of the privatization of state farms is due to lack of market for cropland, the low technical level and the high indebtedness of the state farms, let alone the decreasing demand for agricultural production.

The total land property distribution in January 2001:

Owner	Area (hectare)	Proportion (%)
State owned land	1,829,000	19,66
Cooperatives' owned land	620,000	6,67
Private ownership	6,853,000	73,67
Total	**9,302,000**	**100**

The land area by land-use categories in 1974, 1986, 1991, 1995 and 2000:

Denomination	**1974**	**1986**	**1991**	**1995**	**2000**
	1000 hectares				
Arable land	4978	4704.9	4714.2	4715.9	4499.8
Garden	152	338.6	341.9	90.2	101.6
Orchard	163	246.5	94.1	93.9	95.4
Vineyard	210		136.4	131.3	105.9
Grassland	1280	1233.7	1173.0	1148.0	1051.2
Agricultural area	***6783***	***6523.6***	***6459.7***	***6179.3***	***5853.9***
Forest	1536	1659.2	1701.2	1762.9	1769.6
Reed	33	40.1	40.2	41.3	60.0
Fish-pond	23,8	26.3	26.4	27	32.0
Productive land area	***8352***	***8249.2***	***8227.5***	***8010.5***	***7715.5***
Uncultivated land area	951	1054	1075.7	1292.5	1587.5
Total:	**9303.2**	**9303.2**	**9303.2**	**9303.2**	**933.2**

The distribution by utilization of land areas permanently withdrawn form agricultural cultivation in 1990, 1995, 1997 and 2000:

Denomination	**1990**		**1995**		**1997**		**2000**	
	hectare	%	*hectare*	%	*hectare*	%	*hectare*	%
Industry, mining	596.7	16.6	687.5	23.4	1 168.0	21.6	1 730.0	24.8
Attached to inner land	961.9	26.8	767.8	26.2	2 592.9	47.9	2 697.6	38.7
Forestation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water management constructive works	393.6	10.9	229.9	7.8	137.2	2.5	333.3	4.8
Road, railway	219.1	6.1	319.7	10.9	180.8	3.3	481.8	6.9
Village and town improvement	316.4	8.8	194.7	6.6	132.1	2.4	482.4	6.9
Armed forces, fire guard	4.8	0.1	0.0	0.0	3.0	0.1	1.1	0.0
Other	1 103.2	30.7	733.8	25	1 195.2	22.1	1 249.5	17.9
Total	**3 595.5**	**100**	**2 933.4**	**100**	**5 409.1**	**100**	**6 975.7**	**100**

The distribution by land-use categories of land areas permanently withdrawn form agricultural cultivation in 1990, 1995, 1997 and 2000:

Denomination	1990		1995		1997		2000	
	hectare	%	*hectare*	%	*hectare*	%	*hectare*	%
Arable land	2 626.8	73.1	2 167.2	73.9	3 040.5	56.2	4 630.1	66.4
Garden	47.9	1.3	49.0	1.7	98.6	1.8	395.0	5.7
Orchard	69.6	1.9	45.7	1.6	147.9	2.7	233.2	3.3
Vineyard	58.2	1.6	17.9	0.6	163.2	3.0	113.2	1.6
Grassland	692.2	19.3	608.7	20.8	1 519.8	28.1	1 367.9	19.6
Forest	0.0	0.0	0.6	0.0	4.6	0.1	10.6	0.2
Reed	22.0	0.6	9.0	0.3	50.3	0.9	15.0	0.2
Fish-pond	0.0	0.0	6.3	0.2	24.2	0.4	18.0	0.3
Uncultivated land area	78.8	2.2	28.9	1.0	360.1	6.7	192.7	2.8
Total	**3 595.5**	**100**	**2 933.4**	**100**	**5 409.1**	**100**	**6 975.7**	**100**

Each of the 19 counties / plus the capital city / have one-one County Land Office servicing and controlling of the 4-6 District Land Offices engaged in the actual registration of titles. The registration of land ownership suffered delays after the changes, the holding structure developed slowly, and this is the reason why the set-up of the institutional structure is also slow. The Land Registration institutions of Hungary changed their information management system from manual to electronic (50% financed by PHARE financial resources), and the legal documents of titles in the 116 District Land Offices of Hungary have been handled electronically since 1997.

The development that has taken place during the past several years at the District Land Offices decreased the registration time for new owners of a property and made it possible to provide information on status of ownership of each of the registered properties. From 2000 the Land Offices keep records of the leasing contracts as well.

2. Overview of Environmental Impacts

Privatization and the environment

The privatization process has brought out several problems in the society and industry, even in the field of environment. The main problems are:

- Obsolete (energy and raw material spender) technologies, industrial structure and mechanism,
- Increased use of fertilizers and pesticides in agriculture, the biological farming was not supported,
- New owners' ability to solve the inherited contamination, waste dumps,
- Pauperization caused social insensitiveness for environmental problems,
- Fear that strict environmental regulations impede industrial development,
- Insufficient legal rules, unclear liability situation,
- Debt crises and decreased spare state budget for environmental remediation programs,
- Obsolete infrastructure in sewage and waste management system.

Clean-up of contaminated sites

Clean-up of contaminated sites is of particular importance, as over 90% of the water consumed by the public originated as groundwater. This was recognized in 1991 as one of the government's priority concerns.

The 1991 Short and Medium Term Environmental Action Plan identified the task of remediating sites with accumulated environmental pollution. Two types of sites were distinguished: abandoned Soviet Army facilities, and other contaminated sites.

Some 175 former Soviet military facilities were registered during a control program carried out by the Ministry of Environment between 1990 and 1995. Financial resources were provided by the State Privatization and Holding Company.

Government financed remediation of other "inherited" contaminated sites (caused by mainly chemical industry, energy production, large-scale agricultural companies, communal and hazardous waste landfills, pesticide stores, etc.) did not begin until 1996, due to lack of resources. The Hungarian Environmental Clean-up Program was launched to make up for this delay. During the preparation of the Program, information on the most serious pollution and other environmental damage was collected.

As a result of its first investigating phase some 200 sites were registered as needing urgent remediation measures. The associated cost was estimated at about 40 million HUF. The annual budget law in the first two years of program has allocated annually HUF 1 billion to the Central Environmental Protection Fund for implementation. Fund had been provided from privatization revenue. The resource allocated so far suggest that improvement will be very slow, considering that the total number of potentially contaminated sites whose clean-up is the government responsibility has been estimated at 1,500 to 3,000, with a cost of over HUF 100 billion.

According to present legislation, it is the responsibility of the government to address the consequences of significant environmental damage if no other party can be held responsible (legal or financial).

Environmental guarantees in privatization

In financial respects the process of privatization was a favorable occasion, because at one time sources of large amounts arose, which could be (could have been) used for the settlement of accumulated environmental problems, for which the owner (the state) is responsible by law.

The settlement could happen before or after the sale. In the first scenario the object is privatized after its "improvement" by the seller, at an increased selling price. The second scenario has two subtypes: transactions where buyers are offered reduced prices or concession in exchange for undertaking responsibilities for in arranging the remediation. In this case the state or its representative (the privatization organization) finances a promised event with its unrealized income. The second subtype contains those sales when the expenses are covered partly or entirely by the state =the seller) from its privatization income, through the development has to be carried out by the new owner. This kind of financial responsibility, called environmental guarantee of the proprietary organization, could be utilized by the buyer for covering the costs of elimination of environmental damage arisen before the sale.

Providing environmental guarantee means taking general or specific environmental responsibilities when concluding a contract, in connection with the environmental damage which was caused by the previous owner, which was know or unknown by the seller and the buyer, and which was revealed subsequently. This in practice could be completed in several ways:

- An independent specialist company assessed the damage or gave other information before the sales contract was done irrespective of the fact that specific or general guarantee was taken. In this case "guarantee" means the elimination of pollution beyond the examined part, which had been caused earlier but revealed subsequently.
- There was no environmental examination before the sale whether or not a special or general guarantee was taken, so the damage is unknown. In this case "guarantee" means covering for elimination costs of pollution caused earlier and revealed later.

In most cases the seller (privatization organization) set limits, or by determining the deadline, the buyer can use the guarantee or determining who bears the costs, and to what extent and if the costs are calculated in proportion to the income or as a fixed amount. Along with these limits, guarantees made it possible to clean-up accumulated environmental damage with the mutual burden of the former and the new owners.

In the beginning of privatization neither Parliament, nor government nor the proprietary organizations dealt with environmental problems. Moreover, the privatization organization was not interested revealing the environmental problems, because the costs would have reduced its income. There was political and financial pressure on the privatization organization to maximize its income. In this situation short-term selling interests dominated and in many cases buying were affected by the upheaval of the economy.

On the contrary, long-term environmental interests could succeed just gradually, rarely and occasionally both in the legislation and in extending the authority of institutions, as a result of experience of the studying process.

By the time of 1995 the sections of the privatization act reflections on environmental problems appeared. The 1995 act on environmental protection also contains a section on environmental concerns regarding privatization process. However it was quite late: the main privatization and liquidation transactions were overdue, the changes in ownership had been effected. The questions of environmental responsibilities, therefore, formed part of the privatization negotiations individually, depending on the contracting partner's power, actual will and knowledge.

Environmental legislation

The Constitution of Hungary explicitly refers to the right for a healthy environment. Hungary's first environmental legislation, the Forestry Act, dates to 1971. In 1935, nature conservation was given greater prominence and the Parliament passed the Forest and Nature Conservation Act. The first protected area dates to 1939 (Woods of Debrecen). Additional nature areas were given some degree of protection in the 1960s, and environmental legislation was expanded to address soil and water management in the Act on the Protection of Agricultural Land (1961) and the Water Management Act (1964).

In the 1970s, Hungarians began to be concerned about increasing municipal and industrial pollution. After the Conference on Environmental Protection in 1973, a process of codification began, resulting in the first comprehensive environmental law, the 1976 Act on the Protection of

Human Environment. The Council of Ministers ordered, that that all existing rules be revised and harmonized with the provisions of the 1976 Act.

Not all areas of environmental protection were covered by a responsible agency, this why rules relating to discharge of hazardous waste, for instance, were not enacted until 1981.

From the early 1990s, the Parliament has approved a number of pieces of legislation relating to the environment. Most environmental rules has followed the 1995 Act on General Regulation concerning Environmental Protection, which provides a comprehensive legal framework covering all aspects of environmental protection. It introduced the basic principle that preventing environmental damage should have priority over pollution control. Many new legislation are in force now, such as Act on Waste management, Government decree on the Prevention of Underground Water (2000), Gov. decree on Waste management (2001), etc.

Changes in agricultural, forest, natural resource management techniques

Tradition

The traditional agriculture and forest cultivation was sustainable, the biological diversity (both at genetic, species, habitat and at landscape levels) was relatively high, and this level did not change. Many areas, that are of importance on a nature conservationist's point of view, appeared as a result of human impact. (Like for example the "original Hungarian Puszta" vegetation is also such a secondary succession that appeared as a result of the early drainage works and changes of the water table.)

Effects of the intensive agriculture

The balance between humans and nature ended when intensive agriculture and severe environmental damage appeared in 70's. Before transition the intensification of agriculture and forestry lead to some dangerous trends. The most of endangered and extinct species became endangered because of habitat damage. As a result of clearing the forests, plugging the meadows and use of pesticides and insecticides, the amount of natural habitats decreases. Population of animal and plant species are more and more fragmented and isolated from each other. The extent of these processes are not as high as in some West European countries and the biodiversity in Hungary's ecosystem is relatively high. However, in Hungary there are also more and more endangered species.

Aside from this, in Hungary, for many years there was the attitude that "collective property is nobody's property". As a result of this there was a lack of environmental awareness and nature protection become a topic of secondary importance. Moreover, antagonism of interests also causes problems. Apart from the basic antagonism between short-term economic interests and nature protection, in Hungary, nature protection is of interest on a national level but not always on a local or regional level.

The soil protection in Hungary is defined and regulated by the 1995 Act (LIII.) on the General Rules of Environmental Protection and the 1994 Act (LV.) on Arable Land. According to Act LIII of 1995 the soil protection is defined as a part of land conservation in according to principium of the uniform protection of environmental components. *"Land conservation shall include the conservation of the productivity, the structure, the water and air balance, and biota (biosphere) of the soil.*

Hungary is different from other European countries since more than 90 % of its land area is suitable for agricultural use on the base of soil fertility. Arable land *"is that plot of land which is registered in the outskirts of a settlement in the land register in the branch of cultivation of plough-land, vineyard, orchard, meadow, reeds and forest or as fish-pond"* by the definition of law. This act contains the rules both of the protection of quantity of arable land (land protection), and the protection of soil quality (soil protection) too. Soil decreases harmful effects on the environment because of its capacity for regeneration, buffering, and storage. In this way the soil protects ground water, surface water, biosphere and assimilates the deposits of air pollution.

The main cause of soil contamination is the careless handling of raw materials and waste products. In the past, it was common practice to dispose of waste products by simply dumping them. It occurred in the period of early industrial development, when dangerous substances would seep into the soil, for example, when storing raw materials, transportation, and production.

Lands with bad condition in Hungary (million hectare):

Sloping lands endangered by water erosion	2,3
Lands endangered by deflation	1,4
Acid soils	2,3
Alkaline soils	0,6
Lands endangered by salinization	0,4
Compact soils with bad habitats	1,2
Shallow soil	0,4

Source: Soil protection in Hungary, Ministry for Agriculture

Lands excluded from privatization

The basic forms of ownership defined by the socialist Hungarian Constitution created after 1945 were social and state property. Productive tools and companies were social property. The other distinct public form of ownership was state property, which was the property of the whole nation. The following belonged to this later category:

- Treasures of the Earth,
- Natural resources,
- Mines,
- Factories,
- Railways,
- Public roads,
- Water-routes and air-routes,
- Banks,
- Postal service
- Telegraphs and telephones
- Radio and television

Government organizations exercised de facto property rights over assets in state and social property, the scope of which was gradually narrowing, however a great variety of things still belonged to this group at the end of 1980's.

Productive powers were exclusively social property, however, by the end of the 80's it became evident, this kind of economy, could not function.

Due to the economic transition and privatization process (it was almost complete by 1999), in 2001, a group of about 162 companies was formed in which the state has shares. From this group only in 73 cases are businesses remaining permanently in state ownership in some form.

The Hungarian Republic acknowledges and supports private enterprises and freedom of competition, based on principle of competition under equal rights and obligations. The property of the Hungarian State is national property.

Local government is the independent, democratic management of local public matters concerning the local community of citizens with electoral rights. The scope of material assets transferred to local property from state property is the following:

- Types of real estates, forests and waters defined by law, situated on the municipal area of local government,
- State business organization serving public interests, founded and supervised by town councils,
- Buildings, lines facilities, equipment, within the boundaries of the settlements, of public utilities serving public needs, with exception to exclusively state-owned facilities,
- Assets of educational, cultural, health, social, sport and other institutions managed or controlled as an owner by councils,
- State-owned rented-flats,
- Public buildings and plots belonging to them, excluding buildings serving government functions
- All assets of councils.

- According to the Act on Civil Code (1959) the followings are the subjects of State ownership in Hungary:
- Treasures of the earth,
- Subterranean waters,
- Naturally formed reservoirs of subsurface waters,
- Running waters and natural lakes and the beds of thereof,
- Dried beds of running waters
- National public roads, railways,
- International trade airport and the air-space above hungary,
- Frequencies usable for telecommunication,
- Codes (identification numbers) for operating communication network, communication services and the coordination of those.

According to the 1996 Act on Nature Protection the followings are exclusively belongs to State property:

- All caves (this intangible property),
- Protected plants and animals, and
- Protected mineral formulation.

3. Environmental impacts by sector

3.1 Agriculture

The role of agriculture in the national economy has been gradually decreasing over the recent decades, in 1990 it constituted 14,5% of the GDP (at 1998 prices), which had reduced to 5% by

1998. In the agricultural sector profitability is permanently and extremely low. There are many factors having an adverse effect on Hungarian agriculture. Some of them:

- Due to land privatization process, land ownership and land utilization are separate, there are too many small holders having very small plots, the location of plots is scattered.
- The assets cannot be renewed due to lack of capital and developments over the past years, so the building, the facilities and technologies are largely worn out already.
- The price index of the industrial products used for agricultural production increased by 426% between 1990 and 1998, while the procurement prices of agricultural products increased by 306% and the gap widened in each year of the decade.
- The restructuring process of the market positions caused losses for the Hungarian agricultural sector in the export markets, and in domestic consumption.
- The plantations are also aged, their species and variety do not match the demands of the market.

The Hungarian agriculture until late 60's and early 70's was traditional in the sense that mainly animal-powered machines were in use, and mainly farm-manure and vexillar green crop were applied to develop the soil fertility. Balance between humans and nature terminated, when intensive agriculture and severe environmental damage appeared from the early 70's by the industrialization (intensification) of the agriculture. Mostly due to intensive fertilizer, manure and pesticide use and lack of adequate soil management and also lack of appropriate manure (animal excrement, carcass) disposal facilities the agricultural production structure caused soil erosion, groundwater-nitrification, bacterial pollution and infection.

In the 80's agriculture was dominated by collective farming, which produced half of agricultural output (mostly cereals). The other half was produced on private farms and privately farmed plots (over one-third of output, mostly devoted to pigs, poultry, horticulture and wine) and by a few large State farms (one-sixth of output, mostly livestock). From the late 80's the capital-withdrawal, property uncertainties, and parallel decreasing competitiveness featured the economic situation in agriculture.

In the early 1990s, land prices fell drastically. By the official deadline for transformation at the end of 1992, over 90% of collective farms had been re-established as new co-operatives, with few farmers opting to farm independently. State farm privatization has been slow, in particular due to the compensation process. Today, the number of private landowners amounts to 2.2 million persons, the average holder has an area of 3.65 hectares of agricultural land and 2.14 hectares of arable land. 57% of the total own plots of less than 0.2 hectare and only 0.3% own more than 50 hectares

Land structure had become very subdivided, especially in arable cultivation. After the transformation (compensation) cooperatives became leasers of their land. On the average, one cooperative has leasing contracts with 662 landowners, and the average size of land per owner is app. 2.6 hectares. The majority of land owners are outsiders (~61%) or retired (26.8%). Because these people are not strongly tied to agriculture and they only have small strips of land, individual farming is not an alternative choice for them; so they plan to lease out their land in the long run too. This justifies the concentration of land for safe and long-term run land use. However, the ratio of those, who are interested in short-term utilization of the assets, i.e. outsiders and retired members is dominant. During the years after the change of the economic and political system, it has become obvious that the distorted structure of shareholders triggered irreconcilable differences between interests. There is contradiction between short-term and

long-term interest; investments (development) or dividends (income supplement), profit-orientation or social care, which cannot be reconciled under present conditions.

As a result of the developing market economy, the strengthening competition and the rather controversial ownership and interest connections, cooperative farms are more and more characterized by the endeavors to survive; to preserve operability and workplaces; and to balance interests in order to keep the assets in one hand; and to diversify the activity.

Animal farming

In the last three years the number of animal farms and size of livestock has been further decreased. The regression on sheep and poultry breeding is especially apparent, because between 1993 and 1998 the number of these farms reduced by half. The number of cattle farms reduced by 6-7%, while the number of pig farms, which make up 40% of animal farms, did not changed significantly. Sheep and poultry stock reduced by 70%, cattle stock by 10-12% and pig stock by 4%.

(Detailed data on tendencies in plant and animal production is shown on a separate table.)

Main environmental impacts of agriculture (trends) in Hungary

Fertilizer, manure use

Since the removal of fertilizer subsidies in 1990, fertilizer use has sharply decreased. The national nutrient balance (at soil surface) decreased from 60 kg N/hectare of farmland in 1985 to 9 kg N/hectare in 1995. Impacts associated with manure disposal have generally also been reduced with the privatization and fragmentation of large pig farms. In the mid 1990s intensity of pesticide use was about 1.5 kg active ingredients per hectare of cropland.

Manuring	**1980**	**1990**	**1998**	**1999**	**2000**
Fertilizer supply in active ingredients, (thousand tons)	1 399	671	328	347	355
Of which					
Nitrogenous	537	358	248	263	258
Phosphate	390	127	39	39	45
Potassium	472	186	41	42	52
Per hectare of agricultural area, (kg)	211	104	53	56	61
Per hectare of arable area, gardens, orchard, vineyard, (kg)	264	127	65	69	74
Use of manure (thousand tons)	12 476	12 054	3 260	3 920	3 863
Quantity per hectare of manured area, (tons)	42	41	35	36	37

Source: KSH, Statistical Yearbook of Hungary, 2000.

In Hungary maximum limits for toxic materials contained in fertilizers were introduced. Sewage sludge can be disposed on agricultural land subject to laboratory testing and authorization from soil conservation authorities. The 1998 Plant Protection Act regulates the distribution and use of pesticides on the basis of their toxicity to the environment.

Pollution of subsurface waters, caused by agriculture can mainly be characterized with high concentration of nitrates, which is due to large animal farms and improper fertilizer and manure use. There are many clean-up projects undergoing in Hungary, aiming the elimination of environmental problems, caused by (liquid) manure.

Water quality problems also caused by improper waste treatment and disposal on agricultural sites (mainly because the waste with high toxic content).

There are two clean-up projects, listed in the National Environmental Remediation Program, which aimed to eliminate environmental damages, caused by pesticide annihilation. In one of the cases pesticide reminder was dumped into a well during the liquidation of the agricultural company, in the other case the packaging of pesticide was burnt in some excavations.

Irrigation

Following a three-fold increase in the period 1970 to 1992, total annual water withdrawal fell from 8 billion to less than 7 billion cubic meters in 1996, due to –among others – a decrease in total irrigated area following domestic and irrigation water price increases. App. 18% of water withdrawals are used in agriculture (fish ponds and to a lesser extent, irrigation). In the early 1990s, the total irrigated area increased to more than 200,000 hectares, later the irrigated area fell to 82,000 hectares by 1997 (means only 2% of cropland).

(Between the Danube and Tisza, agricultural activity and droughts (particularly in the early 90's have led to a lowering of the shallow groundwater table, threatening some natural wetlands.)

Before the ownership transformation, the irrigation infrastructure (except of the wells) was owned and operated by cooperative or State-owned agricultural firms, After the changes the system was divided out between the new owners, in many cases between hundreds of new owners. The operation and maintenance of the irrigation system became the task of the new owners. However, in most of the cases the usability of the irrigation system become dependent on the other owners' activity, since if one of them stopped with irrigation, the others were affected through smaller or even insufficient water pressure. The small farms are unable to finance the operational and maintenance costs of the irrigation system regularly, therefore in many areas the system is obsolete and not in use. Only few of the State-owned companies can allow the establishment of new irrigation infrastructure (for example: Mezohegyes Co., the irrigation investment costs was: 2.3 MUSD), most of them - instead of investment stopped with irrigation.

Waste management

Waste produced by agriculture and forestry amounts to about 25 to 28 million tons per a year. The food industry generates an additional 5 to 6 million tons.

Traditional spreading of sewage sludge on lands (previously carried out through arrangements with collective farms) is decreasing in response to resistance by farm owners, based on its toxic metal content. .

Ecological farming

The Hungarian ecological farming has improved dynamically in the 1990s. Between 1991 and 1998 the number of companies, dealing with ecological farming has become six times higher,

and the area, which they use for ecological production (eco-farm) become almost eight times larger.

In 1999 the 0.5% of total agricultural area of Hungary was used for eco-farming. The most important eco-products are cereals. Besides cereals they produce oil cucurbit, sunflower, maize, vegetables, fruits, herbs, spices, etc. With regards to the animal production most important eco-products are chicken (laying hens) and cattle.

3.2 Forest Land

There are very few (if any) natural habitats left in Hungary. All the forests, meadows are utilized and cultivated for centuries.

The forest cover has increased by 600,000 hectares over the past 50 years and is expected to increase by another 150,000 hectares over the next ten years. Forest management is based on sustainable yields, as can be seen from the intensity of use of forest resources (harvest/growth), which is around 0.5. The number of protected areas, essentially located in forest ecosystem has increased significantly over the last 25 years.

Ownership transformation is the most significant change, affected the forest management in the recent decade. App. 55-60% of the total forest area is stayed in state-ownership. During the compensation process the value of forest resources was not updated, so people could gain areas at very small prices.

This change caused problems in general in forest management practices. The current state and management of privately owned forests is mainly unorganized. App. 1 million hectares of total forest area is still state-owned, on which the management continuous, and structured under the forestry corporations, founded by the Government.

Size of forests by owners (thousand hectare)

	1991	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*
Total land area	9303	9303	9303	9303	9303	9303	9303	9303
Total forest area	1689	1695	1705	1712	1720	1736	1756	1758
Of which:								
State owned	1129	1131	1129	1018	1136	1127	1143	1033
Cooperatives owned	522	526	524	-	8	10	11	10
Privately owned	-	-	-	-	703	732	734	715
Other	38	38	52	-	-	-	-	-
Forestation (%)	18.0	18.2	18.3	18.4	18.5	18.7	18.9	18.9

Current uncertainties in ownership resulting from the privatization process have slowed down the process of designating protected areas. Most of the protected areas and areas proposed for protection are State-owned, and there are often conflicts with farmers and hunters interests. Some protected areas have been leased to State farms and State forestry companies.

3.3 Natural Areas and Wetlands

The goal of nature conservation in Hungary is the preservation of habitats in nature areas of "mild farming" and the maintenance of habitats barely affected by human interference.

Breakdown of nationally significant conservation areas according to cultivation in 1997 (hectare):

	National Parks	Landscape Protection Regions	Nature conservation area	Total
Ploughland	31 268	54 585	1 736	87 589
Lawns	106 781	66 379	6 950	180 110
Vineyard	534	3 192	86	3 812
Garden	10	1 329	209	1 548
Orchard	146	2 007	20	2 179
Reeds	10 185	2 334	1303	13 822
Forest	103 985	232 825	10 603	347 413
Fishpond	3 600	2 674	2050	8 324
Withdrawn	40 326	28 014	2 623	70 963
Total	296 851	394 498	25 584	716 933

Source: ME Nature Conservation Office

The following types of areas qualified as natural areas:

- Arable land used as forest, grassland or reed bed;
- Land withdrawn from cultivation, except if facilities are to be sited on it or if it is exploited as a mine when this act comes into force on the basis of a validly approved technical mining working plan;
- Land unsuitable for agricultural or forest use.

In natural areas - with the exception of the populated interior area of settlements - it is prohibited to locate new buildings or any artificial facilities within 50 meters of the shoreline of natural or near-natural watercourses and wetlands; within 100 meters of the shoreline of lakes and ponds and in the flood-plain of watercourses. Any construction in water, the construction of facilities, which serve shipping and the construction of fishing facilities at fish farms shall take place in such manner and in such cases as specified by another provision of law.

It is prohibited to release or deposit - with the exception of chemicals used to prevent damages caused by flood - chemicals and plant protecting agents dangerous to water and aquatic organisms and specified in another provision of law within 1000 meters of the shoreline of natural and near-natural watercourses and wetlands.

Wetlands cover approximately 2% of the territory of the country, which is incomparably less, to those of before large river regulations. The rate of wetland loss is unknown.

There are many different laws in the Republic of Hungary relating to wetlands that set out the utilization and regulate all kind of activities being carried out on this type of habitat. In general, most of the acts and decrees state at the very beginning that they were created by the Hungarian Republic recognizing the fact that living creatures are essential parts of the World's renewable natural resources and of the whole ecosystem. Moreover, the Parliament is aware that species, special habitats, landscape and natural movements of water, and the ecosystem in general also bear intrinsic, aesthetic, cultural, scientific, genetic, and economic values and people of Hungary are to save them for the next generations. A total of 4 acts deal with issues that may have impact on wetland as follows:

- Act on Environmental Protection (No LIII of 1995)
- Act on Water Management (No LVII of 1995)

- Act on Game Management, Game Protection and Hunting (No LV of 1996)
- Act on Fishing and Angling (No XLI of 1997)

Among the 19 Hungarian Ramsar Sites, in total 6 have thoroughly elaborated nature conservation management plan that are based on EUROSITE guidelines on management planning.

Some example of managing private ownership at wetlands:

Rétszilas Fishponds

Although the fishpond system is privately owned the wise use concept is being implemented on the Ramsar Site. An exhibition and visitor centre are under construction that will not only exhibit the traditional fishery activities but also the fauna and flora of the nature reserve as well as the Ramsar Site. NP directorate offers advice for the fishery company continuously.

Hortobágy

Around the Ramsar Site management measures are carried out with the involvement of farmers and landowners. Farmers are far interested in nature conservation measures due to the benefits of spring flooding to the meadows.

Lake Fertö

Although almost the total territory is state-owned, farmers and fishermen play role in management of the wetland.

Conservation areas (1000 ha) and natural values:

Conservation areas and values	**1980**	**1992**	**1997**
Nationally significant areas	411.1	628	768.1
National parks	121.4	159.1	422.8
Hortobágy	52	52.2	74.8
Kiskunság	30.6	35.9	56.8
Bükk	38.8	38.8	43.1
Aggtelek		19.7	19.9
Fertö-Hanság		12.5	19.8
Duna- Dráva			49.5
Körös- Maros			41.7
Balaton-felvidék			57.0
Duna- Ipoly			60.3
Landscape protection regions	263.3	431.5	319.8
Nature conservation areas	26.4	37.4	25.4
Significant local areas	18.9	34.7	35.8
TOTAL CONSERVATION AREAS	**430**	**662.7**	**803.9**
Number of protected plants	9	500	515
Number of protected animals	585	1053	855
Number of caves	1348	2687	3263

4.8 Kazakhstan

Author: **Alma Raissova**

1. Overview of Privatization

At the initial stage of development, Kazakhstan regulated land relations mainly through the Land Code enacted 01.01.91. The Code stated that land was exclusive property of the state, but allowed the lease of land plots. In 1990-1991, Kazakhstan adopted laws "On the Farm", "On Land Reform", and "On the Land Tax", which created a legal framework to form new types of land business, to reform and privatize agricultural enterprises, and transit to market-based agriculture. During the same period, Kazakhstan launched the National Program of Denationalization and Privatization. Lands of agricultural enterprises subject to privatization were divided into arbitrary land shares between workers of these enterprises and other categories of rural people, who, in compliance with the legislation, had the right for an arbitrary land share. About 2.3 million of people in the Republic became owners of arbitrary land shares. However, due to the lack of an effective mechanism for exercising the right, the owners could in fact obtain land plots only for organizing farms. In addition, due to article 79 of the Decree "On Land" owners could use their right: sell, grant, lease into secondary land use, exchange, pledge, legate, use as a contribution in charter funds of associations or a share in cooperatives, and commit other deals not prohibited by civil and land legislation.

Consequently, an uncertain situation occurred in organization of non-governmental legal entities, in particular in land use. De jure land was allocated among owners of arbitrary land shares, but de facto it remained in use of newly formed non-governmental legal entities.
With introduction of market relations in all areas of economy and development of private enterprises, the exclusive state ownership of land and the ban on any deal with land became a deterrent of these processes.

In these conditions, in 1994 the country enacted a series of Presidential Decrees concerning regulation and perfection of land relations. These Decrees allowed various market operations with the right on a land plot. In the same year, the Cabinet of Ministers adopted several regulations concerning the right on a land plot. In accordance with these documents, the right on a land plot can be sold, purchased, granted, pledged, and leased.

The President's The Decree of 22.12.95 "On Land" having the force of law for the first time in the history of the Republic set limits, conditions, and procedure of transferring land plots into private property and regulated norms of exercising the private property right.

The Decree "On Land" defined categories and legal subjects for land use, specific features of legal status of land users, forms of payment for land, conditions and procedure of allotting land plots, and also their withdrawal and a series of other fundamental provisions in the issues land regulation. The Decree committed into market relations not only rights for the land plot, but land plots themselves.

It is worth noting that the land law of Kazakhstan does not use the term "privatization of land". Instead, terms "transfer of land from public into private property" or "provision of land plots (lands) from public into private property".

The Decree "On Land" states that citizens of the Republic are entitled to have in private property land plots provided for personal part-time farm, horticulture, and summer cottage construction. The Decree defined categories of the lands, which cannot be transferred into private property. These lands include:

- Agricultural lands
- Defense areas
- Specially guarded areas
- Lands of forestry and water funds
- Land of common use in populated localities.

Use of agricultural lands were given to state and non-governmental organizations such as Peasant Farms, Collective Farms, Business Associations and Stock Companies, Agricultural Production Cooperatives. Non-governmental land users having the right of permanent land use were entitled to use their right (without any permission of government agencies): sell, grant, lease into secondary land use, exchange, pledge, legate, use as a contribution in charter funds of associations or a share in cooperatives, and commit other deals not prohibited by civil and land legislation. Thus the nature of the "denationalization" is the replacement of Governmental Land Management (state farms) for non-governmental Land Management (business associations and stock companies, agricultural production cooperatives). These land users could sell the "right" to use the land, but not the land itself, because that is still state-owned.

The law "On Land" of the Republic of Kazakhstan adopted on 24.01.01 retained main conceptual provisions of earlier legislation regarding the conditions, limitations, and procedure of transferring lands into private ownership. A discussion of the possibility to introduce private ownership of agricultural land preceded the adoption of the law.

However, in that period a considerable part of different strata of population perceived the proposal negatively. Consequently, the Law "On Land" retained the public ownership of agricultural lands.[34] The basic form of using this land category is lease for the period of 49 years for non-governmental land users and 10 years for foreign land users. At present, non-governmental land users account for about 97% of agricultural lands.

The law states that the transfer of land plots from public into private ownership shall be paid, except for cases of free transfer of land within the appropriate regulations. The free transfer into private ownership can be applied to land plots, which have already been given earlier and being given to citizens of the Republic for personal part-time farms, horticulture, dacha and personal housing construction. As of 01.11.01 (this is the date of the annual report on land condition and use), citizens of Kazakhstan have been transferred into private ownership 815.7 plots totaling 87.6 thousand ha for horticulture and dacha construction, 1674.4 plots for personal part-time farming (224.3 thousand ha), and 355 thousand plots for personal housing construction. (40.5 thousand ha).[35]

Additionally, citizens and non-governmental legal entities privately own lands needed for technological activities of enterprises. These are lands provided to construct production and nonproduction buildings and facilities including land plots for their servicing. The total amount of lands sold into private property for these purposes is 58 thousand land plots totaling 62

[34] Kemel Myrzageldy, Peculiarities of the Law "On Land" Compared with the Presidential Decree "On Land" 1995, Sustainable Development, No. 1, 2001.
[35] State Research Production Center of Land Resources and Land Utilization, GosNPTSzem.

thousand ha. Thus, at present the Republic has about three million of landowners, who own over 400 thousand ha.[36]

Recently the Republic again raises the issue of private ownership of agricultural land. The message of President N.A. Nazarbayev to the people of Kazakhstan of 29.04.02 "On Major Directions of Domestic and Foreign Policies in 2003" specifies the necessity to solve this problem; the government is assigned to prepare a draft law "On Private Ownership of Land".

At present, the main area of lands used in agriculture is possessed by non-governmental land users, though owned by the state. The law states that landowners and land users are entitled to run business on the land using it in accordance with the purpose of the land plot. The law defines other rights and duties of landowners and land users related to land utilization.

The Russian Federation has been leasing the area of 4.8 million ha for the Baikonur Cosmodrome. Over the last years, launch vehicles and space aircraft fell on the territory of Kazakhstan as a result of accidents: 14.05.96 – the launch vehicle "Soyuz", », 20.05.97 -- the launch vehicle "Zenith", 27.10.99 -- the launch vehicle "Proton". Separating elements of launch vehicles may retain about 1.5 – 2.0 tons of unused fuel.[37]

In accordance with Russian data, the fall of launch vehicles is accompanied by the spillover of fuel components, which are able to accumulate in soil. Soil self-cleaning from these substances may take up to 34 years. In the Karsakpai area, the study of 70 samples showed that the standards are exceeded 5 thousand times.[38]

2. Overview of Environmental Impacts

For the purpose of timely identification of changes in the Republic, the land development service keeps land monitoring. Monitoring aims at all lands of the Republic regardless of ownership patterns, purpose, and type of land use.

The Republic has 184.2 thousand ha of disturbed lands represented by dumps of overburden and rocks, tailing and ash dumps, and open cuts of coal and other mines.[39]

In the areas of oil production, the land area of 1.5 million ha is contaminated by oil and petroleum products because of breaks of oil pipelines, construction of storage facilities and operation of test and production oil wells.[40]

In the Atyrau oblast, artificial sulfur heaps has been growing near oil and gas wells year by year. The production of 100 million tons of oil (Tengiz, Kashagan) is accompanied by 6.9

[36] Idem.
[37] Yerubai Saparov, Nature Protection: Problems and Challenges, Sustainable Development", No. 8, 2001.
[38] B. Ospanov, Chairperson of the Agency of Land Management, Parliament Hearing, "The Influence of Launches from the Baikonur Cosmodrome on the Health of Population and Environment", Sustainable Development, No. 2, 2002.
[39] Andar Shukputov, Minister of Natural Resources and Nature Protection, Contamination: types, problems, and measures, magazine "Sustainable Development, No. 8, 2001.
[40] Idem.

million tons of sulfur.[41] Thus, there are ideal conditions, especially in summer, for oxidation of sulfur. Moreover, sulfur heaps are located in the sanitary-protected zone of the Tengiz gas-processing plant, the gas-laden area influenced by flare gases.

In the course of exploration and operation of hydrocarbon deposits, vegetation is destroyed by 70 – 80 % within a radius of 500 – 800 meters around each drilling rig. In the Atyrau oblast, over 1.3 million ha of lands are contaminated with fuel oil, the width of which reaches 10 meters on some oil fields. Moreover, in the course of oil production, a huge amount of oil well waters is discharged (in the Atyrau oblast this amount totals 1 billion cu m).[42]

The practice of burning associated gas in flares also causes significant environmental and economic damage. Higher temperature and acidification have detrimental impact upon soil, vegetation, and wildlife in the areas adjacent to oil facilities. The total associated gas burned amounts to 800 million cu m per year. Since 1985, the gas burned has accumulated to 37938 million cu m.[43]

The largest area of environmental disaster is the former Semipalatinsk testing ground, on which nuclear weapons were tested during 40 years (1949 – 1989). The total area of environmental disaster is 7 million ha, including 1.8 million ha of the ground itself and 5.2 million ha of extreme and maximum rational risk. The area of the ground's impact includes 27.4 million ha of agricultural lands.

The development of mining, oil, gas, and other industries to a considerable extent changes the quality of lands by contaminating them. Significant part of lands in the Republic is contaminated by toxic chemical substances and industrial wastes. Despite recent reduction in use of fertilizers and pesticides, the problem of agricultural lands and produce contaminated by toxic and carcinogenic substances persists. The cause of soil contamination in agricultural production is violated technology of use and storage of fertilizers and means of chemical plant protection. The Republic has 176.3 thousand ha of lands disturbed in the course of constructing industrial, linear, and other facilities, mining mineral resources and carrying out geological operations. Of this number, 55 thousand ha are exhausted and require reclamation.[44]

3. Environmental Impacts by Sector

3.1 Agricultural Land

Agricultural lands used for agricultural commodity production (save for lands provided for personal domestic farming, horticulture and dacha construction) belong to the state and, in compliance with valid legislation, shall not be transferred into private ownership.
For the last decade, the area of agricultural lands in the Republic has declined substantially.
As a result of privatizing and reforming agricultural enterprises, large areas remain undistributed among new economic entities. These areas are therefore not counted in total agricultural land, and constitute agricultural reserve land. These areas include mostly distant pastures and other low-productive lands, which were transferred to the reserve lands. In addition, 16.4 million of

[41] M. Diarov, Ph.D. in Geology and Mineralogy, Corresponding Member of the National Academy of Sciences, Republic of Kazakhstan, *The Influence of Activities of the Oil and Gas Complex on the Environment in Northern Caspian*, Sustainable Development, No. 1, 2002).
[42] Yerubai Saparov, Nature Protection: Problems and Challenges, Sustainable Development, No. 8, 2001.
[43] Idem.
[44] State Research Production Center of Land Resources and Land Utilization, GosNPTSzem.

agricultural lands were transferred to aul (rural) executive authorities. This is still considered state-owned land.

Dynamics of Agricultural Land Area in Kazakhstan (million ha):

Year	Land Area in Million Hectares
1991	218.4
1995	194.8
2001	90.9

Thus, for 10 years 127.5 million ha of farmland were withdrawn from agricultural use. For the same period the area of ploughland dropped from 35.4 to 22.3 million ha, mainly its most unproductive part.[45] Agricultural lands are in permanent tenure by governmental land users and in temporary long-term use, basically on lease terms, by non-governmental land users. Table 1 shows categories of agricultural entities and allocation of land among them.

It is worth noting that the reform of large specialized agricultural enterprises and the creation of smaller forms resulted in significant difficulties with introduction of new advanced technologies because the lack of necessary machinery and equipment, especially in peasant farms.

As the Agency on Statistics, Republic of Kazakhstan, reports the amount of mineral fertilizers used decreased from 672.1 thousand tons in 1990 to 11.5 thousand tons in 2000. Mineral fertilizers were applied on the area of 9.3 million ha in 1990 and 86 thousand ha in 2000. Organic fertilizers applied and the fertilized area have decreased many times. The use of chemical means and the area treated by pesticides has dropped significantly. The major reason of the situation is high prices of fertilizers and pesticides, hard economic situation of new economic entities – non-governmental land users, many of whom are infant, the lack of needed equipment, no financial support by the government, which subsidized collective and state farms.

The Republic has on records 2.2 million irrigated lands, of which 1.6 million ha (74 %) belongs to agricultural lands. Compared with 1991, the area of irrigated lands dropped by 125.5 thousand ha.[46]

Before 1991, irrigation and reclamation construction as well as maintenance and reconstruction of reclamation facilities were carried out at the expense of governmental target investments. At present, investment policy of the government has changed. Budget funding of maintenance and reconstruction of reclamation facilities has been stopped; no new construction is undertaken.

[45] State Research Production Center of Land Resources and Land Utilization, GosNPTSzem.
[46] Idem.

Table 1 Agrarian Entities

Categories	1991		1995		2001	
	Number Thousand	Area Million ha	Number Thousand	Area Million ha	Number Thousand	Area Million ha
1. Peasant Farms	**2.5**	**1.6**	**31.1**	**13.3**	**122.4**	**30.6**
2. Non-governmental Legal Entities						
Total	**0.5**	**15.6**	**3.5**	**147.4**	**7.0**	**57.2**
- collective farms	0.4	15.3	0.4	14.7		
- business associations and stock companies						
- agricultural production cooperatives	0.1	0.3	0.3	5.6	1.7	15.5
- other non-governmental organizations			2.8	127.1	2.1	4.1
3. State Agricultural Organizations						
Total	**3.7**	**201.2**	**2.3**	**34.0**	**2.0**	**3.1**
- state farms	2.1	195.3	0.3	25.0		
- research and educational institutions	0.3	2.3	0.3	2.4	0.9	1.5
- ancillary agricultural enterprises	1.0	1.9	1.4	2.0	0.8	0.5
- other state organizations	0.3	1.7	0.3	4.6	0.3	1.1

The transfer of lands into land use by various non-governmental economic entities virtually destroyed the former system of water use and operation of irrigation facilities. For this very reason, the technical condition of water facilities and the reclamation condition of lands worsen.

In accordance with the Land Quality Report, about 30 % of irrigated ploughland are salinized. **Land salinization mostly happened before 1990, however.**

The existing methods and techniques of crop irrigation in many cases do not meet technological requirements. The widespread surface method of irrigation based on an unsatisfactory drainage network and the absence of annual field planning results in a rise of groundwater and the growing process of secondary soil salinization and desertification. The Irrigation System has to be improved/up-dated. However, the cost of such type of land usually calculated with discount coefficient (for example, in the leasing contracts and etc). Considerable part of irrigated ploughland is overhumidified and saturated (over 4 %) and has other negative signs (8 %).[47]

The main type of lands in the Republic is pastures, the area of which totals 185.9 million ha or 84.4 % of agricultural lands.

[47] State Research Production Center of Land Resources and Land Utilization, GosNPTSzem.

Agricultural commodity producers have 60 million ha of pastures, reserve lands include 96.3 million ha of pastures, populated localities have 17.5 million, the forest fund includes 6.9 million ha, and lands of other categories include over 5 million ha.[48]

Due to the introduction of the institution of pay land use and reduced cattle stock, economic entities in agriculture refuse from using not only low-productive, unwatered, distant pastures, but also other pastures remote from populated localities. **This has led to over-grazing nearer to population centers.**

From 1990 to 2000, cattle stock dropped in all categories of agricultural entities from 9.7 million to 4.1 million; sheep and goats dropped from 35.7 million to 10 million. The main reduction of stock took place in agricultural formations, whereas in individual (small) farms the stock has increased.[49]

	Cattle		**Sheep and Goats**	
	1990	2000	1990	2000
Agricultural Formations	6.7	0.3	29.2	1.0
Peasant Farms	0.0	0.2	0.05	0.8
Entities of People	3.0	3.6	6.4	8.2

Statistical Book «Agriculture, Forestry and Fishery of Kazakhstan», Almaty, 2001.

Despite a considerable reduction of cattle in recent years, the area of pastures has grown from 14.8 million ha to 26.6 million ha, compared with 1990.[50] The main reasons are the systemless use of forage lands and the concentration and higher load of cattle on pastures adjacent to populated localities and water sources.

Extensive farming resulted in degraded lands and poor landscape, which in turn caused reduced soil fertility and consequently lower productivity in crop production and animal husbandry. For 40 years of exploitation of virgin and fallow lands, wind and water erosion destroyed 1.2 billion tons of humus. To protect agricultural lands from wind and water erosion, droughts, and hot winds, the Republic needs 3.0 million ha of protective plantations, including 1.2 million ha of forest shelterbelts. Currently, the Republic has only 1.2 million ha of protective plantations, including 0.2 million ha of forest shelterbelts.[51]

3.2 Forest Land

As the Agency of Land Management, Republic of Kazakhstan, reported in 2001, forests occupy 13.0 million ha, including 8.6 million ha covered by forests, 4.2 million ha not covered by forests ("Not covered land" include unauthorized lumbering, slash fires, felling, pasture. These types of land are the reserve for forest growing) , and 146.2 thousand ha of separate forest trees and forest nurseries.

[48] Idem.
[49] Idem.
[50] Idem.
[51] Yerubai Saparov, Nature Protection: Problems and Challenges, Sustainable Development, No. 8, 2001.

Of the total forest area, 12.2 million ha (94.4 %) belong to the state forest fund and 0.5 million ha (4.2 %) belong to agricultural lands. In its turn, agricultural lands are allocated among governmental legal entities including: agricultural cooperatives (438.2 thousand ha), business associations and stock companies (77.7 thousand ha). These lands are used on the lease terms.[52]

Apart from forest areas, the Republic has on records 1.4 million ha of shelterbelts, including 210.6 thousand ha of protective shelterbelts. Categorization of shelterbelts: 53.9 % of land reserve, 32.2 % of agricultural lands, 6.4 % of populated localities, and 4.9 % of nonagricultural lands.[53]

Table 2 Dynamics of Forest Areas and Shelterbelts[54] Thousand ha

Indicators	**1991**	**1995**	**2001**	**Change**
1. Forest Areas	12791.5	12765.0	12952.0	+160.5
Covered by Forests	8453.3	8647.6	8582.0	+128.7
Not Covered by Forests	4008.0	3917.2	4223.8	+215.8
Separate Forest Trees and Forest Nurseries	330.2	200.2	146.2	-184.0
2. Shelterbelts	1498.8	1467.4	1370.4	-128.4
Protective Shelterbelts	295.5	234.2	210.6	-84.9

Lands of the forestry fund are owned by the state.

Table 3 **Forestry**

Indicators	**1991**	**2000**
Forest Replenishment, thousand ha	82.6	18.5
Creation of Shelterbelts, thousand ha	11.9	0.84
Forest Area Ravaged by Fires, ha	1277	27995
Forest Area Damaged by Diseases, ha	9.9	166.9
Hours of Air Flying to Guard Forests from Fires, Pests, and Diseases	7426	842

In the last years, the structure of forest fund has been worsening because of uncontrolled lumbering including shelterbelts, reduced forest replenishment, burning out of most valuable coniferous trees. In recent years forests of the Pavlodar and Eastern-Kazakhstan oblasts has considerably suffered from fires. Protective forest activities have been stopped.

The total amount of dead forest is over 8 million cu m or 150 thousand ha, i.e. one third of all forests in the region. For the last 100 – 150 years, the boundary of spruce belt in the mountains of Zailiiskiy Alatau has risen by 200 meters.[55]

For the period of 1999 – 2000, over 2 million cu m of wood were cut down. In addition, forests have suffered large-scale stealage. Only in the Zhanasemei forestry,

[52] State Research Production Center of Land Resources and Land Utilization, GosNPTSzem.
[53] Idem.
[54] Idem.
[55] Roldugin I., Forests of Kazakhstan: conditions and problems, Sustainable Development No. 5, 2001.

unauthorized lumbering in summer of 2000 amounted to 30 thousand cu m of forests. During 8 months of 2001, 178 cases of unauthorized lumbering were registered in the Semipalatinsk region.[56]

In recent years, artificial forest recovery is not practically carried out. The reason is sharp reduction in budget funding of forest recovery and forest protection in the last decade.

From 1988 to 1993, there were created 89.4 thousand ha of artificial forests, but from 1993 to 1998 there were created only 23.2 thousand ha. At the same time, the area of pine forests decreased by 95.7 thousand ha (9.9 %). The area of slash fires and felling increased by 94.5 thousand ha and 101.0 thousand ha respectively, especially due to large fires in 1995 and 1997 – 2000.[57]

Protection of forests from insect pests and diseases is inefficient; the damaged area increased 2.5 times to 163.4 ha from 1997 to 1999. The most worrisome are areas of pine moth in forests of the Semipalatinsk region and in forests of Irtysh-adjacent areas.[58]

Unit costs of fire protection of forests are 15 times less minimum requirements. Besides, the funding of air patrolling makes up only 13 % of the needed. The area of one fire has increased to 41 ha. From 1975 to 1995, fires ravaged 42 thousand ha of the forest area, i.e. 2 thousand ha on average per year. For the last five years, fires ravaged 340 thousand ha of the forest area. On average, Kazakhstan loses about 57 thousand ha of forests annually.[59]

Forests in forest-steppe and steppe zones were adversely influenced by the ploughing of steppe around forests during the Virgin Lands campaign. The ploughing influenced the natural hydrological regime of the territory. Bottomland oak forests in the northwest have been shrinking. As a result of flow regulation, violated hydrological regime of rivers and agricultural development of waterside areas, tugai forests suffered considerable degradation. Steppe forests are exhausted by lumbering in previous years and forest fires.

Mountain forests suffered from overgrazing before reforms. Now own agricultural entities usually graze near settlements. Under these conditions, lumbering resulted in reduced plantations, undesirable change of wood types, and erosion in certain locations. On such areas, forest recovery is practically impossible. One of the reasons of this situation is the reform of forestry by the government. Structural divisions of forestry became fractionary; some of them were liquidated and replaced by new ones resulting in the loss of experienced employees. One of the major reasons of negative processes taking place in forestry is the reduced budget funding, which resulted in weakened logistics for forestry. Means of transportation are not updated. Special equipment for fire fighting is not provided. Forest protection service has no adequate equipment for fighting large-scale forest fires.

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[56] Almira Yelyubayeva, Ecocide of Forests in Semipalatinsk Irtysh Area, Sustainable Development, No. 1, 2002.
[57] Syzdykov T., Chairperson of the Committee on Ecology and Nature Use, Save a Unique Forest, Majilis of the Parliament of the Republic of Kazakhstan, Sustainable Development, No. 10, 2001.
[58] Syzdykov T., Chairperson of the Committee on Ecology and Nature Use, Save a Unique Forest, Majilis of the Parliament of the Republic of Kazakhstan, Sustainable Development, No. 10, 2001.
[59] Alexander Amanbayev, Chairperson of the Committee on Forestry, Fishery, and Hunting Grounds, Fire Safety in Forests, Measures to Prevent and Liquidate Forest Fires, Sustainable Development, No. 6, 2001.

3.3. Wetlands

In accordance with the data of the Agency of Land Management for 2001, swamplands occupy 1.1 million ha. The main part of them, 707.2 thousand ha, belongs to reserve lands. Agricultural lands include 263.0 thousand ha of swamplands, of which 225.6 thousand ha are in non-governmental agricultural organizations and 31.6 thousand ha in farms.

Generally, swamplands are located in bottomlands of rivers and streams, as small areas in depressions. Practically all swamplands in the Republic have an important water-regulating and environmental role. **For this reason, swampland draining is not carried out under conditions of Kazakhstan.**

3.4. Current Public Lands

Rights of the state as a landowner are exercised by governmental agencies in accordance with their competence (Article 16, Law "On Land").

The central authorized agency governing land resources is the Agency on Land Management of the Republic of Kazakhstan. The Agency has oblast, rayon (city) branches.

The central authorized agency and its local branches are responsible for:

- Carrying out a single governmental policy in land management and land relations regulation;
- Governmental control over the use and protection of lands;
- Protection of state interests in land relations;
- Identification of idle lands and the lands used with violation of law, taking measures to correct violations;
- Issuing obligatory prescriptions aimed at correcting identified violations of the land law.

All lands of populated localities are used in accordance with their master plans and plans of development and construction.

Land plots out of common lands can be given to citizens and legal entities for temporary placement of lightweight facilities (trade stalls, kiosks, advertising facilities and other service facilities) without damage for common use (Law "On Land", Article 87).

Furnishing lands of populated localities to individuals and legal entities requires obligatory consultation with agencies of architecture and city planning.

Furnishing lands of forestry or water funds for temporary land use shall be coordinated with authorized agencies of forestry or water management. Land utilization is carried out in compliance with forestry or water legislation.

Target use and the regime of use of a land plot, easement, and other conditions of use based on laws and regulations shall not be altered by the owner of a land plot or the land user (Law "On Land", Article 48).
Disputes arising in land relations are settled in court (Law "On Land", Article 121).

Conclusions

As to the general environmental situation in the country, it is possible to note that major adverse events, which caused the deterioration of the situation, had happened in the pre-perestroika period, regardless of changes in the form of land use and ownership.

Transfer of lands into private property has been implemented during the last six years. For such a short period, it is difficult to trace the impact of this process on the environmental situation in the country. It is worth bearing in mind that at present about 400 thousand hectares of 272.5 million hectares of the Republic's land fund are privately owned. Additionally, 30.6 million ha of land is land for leasing by Peasant Farms for 49 years.

At present, environmental protection is connected with radical transformation of the system of vested rights due to large-scale privatization. If in the long run, privatization opens up new vistas for conservation of resources and environmental defense, now it has become a source of uncertainty.

In addition, in order to improve land use it is necessary:

- Develop laws and regulations defining environmental, sanitary, hygienical, and other requirements to economic and other activities influencing the condition of lands due to land contamination.
- Use economic instruments stimulating rational nature use.
- Develop standards of land quality under the condition of their economic, domestic, radioactive and some types of biological contamination.

References

Alexander Amanbayev, Chairperson of the Committee of Forestry, Fishery, and Hunting Grounds, Fire Safety in Forests. Measures to Prevent and Liquidate Forest Fires, *Sustainable Development, No. 6,* 2001.

Almira Yelyubayeva, Ecocide of Forests in Semipalatinsk Irtysh Area, *Sustainable Development, No. 1,* 2002.

Andar Shukputov, Minister of Natural Resources and Nature Protection, Contamination: types, problems, and measures. *Sustainable Development, No. 8*, 2001.

Andar Shukputov, Minister of Natural Resources and Nature Protection, Environment and Our Future. *Sustainable Development, No. 8,* 2001.

B. Ospanov, Chairperson of the Agency of Land Management, Parliament Hearing, "The Influence of Launches from the Baikonur Cosmodrome on the Health of Population and Environment", *Sustainable Development, No. 2*, 2002.

Statistical Book *«Agriculture, Forestry and Fishery of Kazakhstan»,* Almaty, 2001.

Roldugin, Forests of Kazakhstan: conditions and problems. *Sustainable Development No. 5*, 2001.

Kemel Myrzageldy, Peculiarities of the Law "On Land" Compared with the Presidential Decree "On Land" 1995. *Sustainable Development, No. 1*, 2001.

Law "On Land", Republic of Kazakhstan.

M. Diarov, Ph.D. in Geology and Mineralogy, Corresponding Member of the National Academy of Sciences, Republic of Kazakhstan, *The Influence of Activities of the Oil and Gas Complex on the Environment in Northern Caspian*, *Sustainable Development,* No. 1, 2002).

State Research Production Center of Land Resources and Land Utilization, GosNPTSzem.

Syzdykov T., Chairperson of the Committee on Ecology and Nature Use, Save a Unique Forest, Majilis of the Parliament of the Republic of Kazakhstan, *Sustainable Development, No. 10*, 2001.

Yerubai Saparov, Nature Protection: Problems and Challenges, *Sustainable Development, No. 8*, 2001.

4.9 Lithuania

Author: Daiva Semeniene

1. Overview of privatization process

In year 1940 Lithuania was occupied by former Soviet Union and all private land was illegally nationalized. The right of private land ownership was abolished. Landowners and farmers, if not deported, were forced to transfer their land and other property to newly established collective farms and work there – the so-called collectivization process. During all Soviet occupation period there was virtually no private land ownership in Lithuania. It should be mentioned that under Soviet laws collective farmer's family had the possibility to hold no more than 0.6 ha of individual farmland, though they could not freely dispose of their holdings (sell, lease, inherit, mortgage). Also mainly urban citizens could hold land plots in suburban areas, usually, not exceeding 1200 sq meters by joining communities of horticulturists.

In 1989, just before regaining independence (1990 March 11), Law on Peasant Holding was adopted that marked the beginning of divestiture process. Lithuanian citizens seeking to establish the farm had the right to receive land for free out of State Reserve or collective farms. The size of peasant holding varied by 10 to 50 ha. A citizen had the right to use the land, however, one was not allowed to sell it, lease or mortgage. Up to the autumn of 1991, more than 5000 peasant holdings were established which occupied territory of around 85 thousands ha. Also employees of agricultural enterprises and families consisting of retired persons were eligible for a 3 ha plot of agricultural land as a form of social support, other rural inhabitants received 2 ha of land. Till the end of 1991 the preliminary land reform works were implemented: detailed soil grading plans were elaborated, plans indicating where farming activities are restricted and where the areas are not to be privatized were prepared.

Land privatization process began in 1991 when laws on restitution and land reform were adopted. Two ways of acquiring land were provided: restitution of property rights and land purchase. Initially, purchasing could privatize only agricultural land. The eligibility to acquire agricultural land was restricted only to the citizens of Lithuanian Republic, who resided on a permanent basis in rural areas and was engaged in agricultural activities. Concerning restitution, citizens were eligible for restitution of ownership rights to an area up to 80 ha, agricultural land of which could constitute up to 50 ha. In year 1992 privatization of collective farms and other state agricultural enterprises took place. In 1997 substantial amendments of restitution and land reform laws were introduced. A provision of special importance was that the ownership rights were restored on the basis of the land management projects. Land parcels allotted for returning or transferring by granting equivalent land plots elsewhere were designed, exact borders of plots, type of land utilization, types of land servitudes as well as preconditions for land use were determined. Also size limitations on restituted land were broadened (maximum 150 ha).

Up to present foreign legal and natural persons had no right to purchase agricultural land. To change this situation the amendment of Constitution is needed and multi-step procedure has already started in the Parliament. Major tasks for implementation restitution, privatization and administration of state land were assigned to County Administrations. The main institution coordinating land reform at state level is National Land Service under the Ministry of Agriculture.

Territories where state holds exclusive rights of ownership and which are excluded from the privatization are described in Annex 1.

To conclude, land reform in Lithuania is finishing its first stage, which in its essence is only restitution of ownership rights to land. Till years 1997-1998 land titling mainly could be determined as sporadic, while later more systematical approach based on land reform's land management projects has started to be used. Next stage of land reform – land consolidation and development of land market – began to be implemented recently. According to previous plans of Ministry of Agriculture, land restitution works had to be finalized by July 2002, though currently this deadline is to be extended till year 2004.

All private and state-owned land within the territory of the Republic of Lithuania constitutes the **Land Fund of the Republic of Lithuania** (further Land Fund). Land Fund is used in compliance with state laws, Special Conditions of Land and Forest use, established by the Government, land servitudes and territorial management requirements established in the land-use planning schemes. The documents of territorial planning define Main Purpose of Land Use (MPLU). According to MPLU the Land Fund consists of land designated for:

- Agricultural purposes;
- Forestry purposes;
- Conservation purposes;
- Miscellaneous purposes;
- Unoccupied state land - state land which has not been allotted for use or leased;
- States Water Fund - land under not privatized water bodies.

Definitions of Land Fund categories according to the MPLU are laid down in annex 2. In table 1 data on land use distribution according to MPLU are presented.

Table 1 **Land Use Distribution According To MPLU**

Land Fund category	**Area (thou ha)**	**Of total area %**
Agricultural	3956.2	60.6
Forestry	1963.6	30.1
Conservation	39.7	0.6
Miscellaneous	376.1	5.8
Unoccupied State Land	10.4	0.2
State Water Fund	184.0	2.8
Total:	**6530.0**	**100**

Source: Land Fund of Lithuanian Republic, 2002 January 1

Land attribution to agricultural purpose of land use does not necessarily mean that all this land is suitable or is used for farming activities. Other types of lands (forests, roads, urban, water, bogs) make up a share in each Land Fund category. (See Table 2).

Table 2 **Land Fund Categories And Their Composition By Land Types**

Land Fund category/ land types	Farming lands [1]		Forests		Roads		Developed area		Water		Other	
	thou ha	%[2]	thou ha	%[2]	thou ha	%[2]	thou ha	%[2]	thou ha	%[2]	thou ha	%[2]
Agricultural	3370.0	85.2	148.1	3.7	28.7	0.7	56.3	1.4	55.0	1.4	298.1	7.5
Forestry	42.1	2.1	1805.2	91.9	24.6	1.3	4.2	0.2	13.1	0.7	74.4	3.8
Conservation	0.8	2.0	20.0	50.4	0.1	0.3	0.3	0.8	3.1	7.8	15.4	38.8
Miscellaneous	72.1	19.2	23.3	6.2	78.2	20.8	126.9	33.7	6.7	1.8	68.9	18.3
Unoccupied State Land	2.2	21.2	0.4	3.8	-	0.0	0.2	1.9	0.1	1.0	7.5	72.1
State Water Fund	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	184	100	0.0	0.0
Total:	3487	-	1997	-	132	-	188	-	262	-	464	-

Source: Land Fund of the Republic of Lithuania 2002 January 1

1. Farming lands are lands (arable land, orchards, meadows, pastures) used for or suitable for growing agricultural products without applying Additional land-improvement measures;
2. Percentage of land type in each Land Fund category according to MPLU.

Additionally, drained land makes up 3007 thou ha out of which 86 % is agricultural land. Irrigated lands amount to less than 5 thou ha. Bogs, wetlands occupy area of 147.2 thou ha. Protected areas occupy 11.85 % (or 762 thou ha) of Lithuanian territory. It includes 4 national parks (152 thou ha or 20 % of total area of protected areas), 30 regional parks (436 thou ha or 55 %), 357 state and municipal reserves (161 thou ha or 22 %), 5 strict state reserves (24 thou ha or 3 %) and 662 protected objects of natural landscape.

Scale of land privatization

Lithuanian citizens submitted 720 thou applications (as of 2002 January) to restore ownership rights to the land area of 4.152 million ha what constitutes 63.8 % of Lithuanian territory. 81 % percent of claimed area consisted of land recoverable in kind (or land which could be recovered in the equivalent in kind), 19 % - other alternative ways of compensation (money, securities).

Up to January 1, 2002, ownership rights were restored to 80 % of total area, indicated in the applications provided that submitted documents to prove ownership were sufficient. The total area of land where ownership rights were restored amounts to 2.553 million ha. For the land area of 0.667 million ha compensations were paid out. There are 0.931 million ha of land still to be restored though for 15 % of this area claimants are not able to provide sufficient documents for restoring ownership rights. If to refer to the percentage of restitution applications considered, progress of land restitution is around 75 %. It is foreseen that after the conclusion of restitution process, there will be around 0.5 million hectares (or 7-8 % of total territory) of free land.

By January 2002 private land made up 38.8 % (2537 thou ha) of all land. Distribution of private ownership by Land Fund categories and land types is presented in Table 3 and 4, respectively.

Table 3 Private Land According To Land Fund Categories: January 2002 (Thou Ha)

Land Fund category	Total area	Private land	Share of private land %
Agricultural	3956.2	2090.5	52.8
Forestry	1963.6	403.3	20.5
Conservation	39.7	0.0	0.0
Miscellaneous	376.1	43.4	11.5
Unoccupied State Land	10.4	0.0	0.0
State Water Fund	184.0	0.0	0.0
Total:	**6530.0**	**2537.2**	**38.8**

Source: Land Fund of the Republic of Lithuanian, January 1, 2002

Table 4 Private Land-By-Land Types January 2002 (Thou Ha)

Land types	Total area	Private land	Share of private land %
Farming lands	3487.2	1851.7	53.1
Forests	1997.0	518.2	25.9
Roads	131.6	5.2	4.0
Built area	187.9	41.2	21.9
Water	262.2	28.1	10.7
Other	464.3	92.8	20.0
Total:	**6530.0**	**2537.2**	**38.8**

Source: Land Fund of the Republic of Lithuania, January 1, 2002

Agricultural enterprises and partnerships lease around 200 thou ha from private landholders in 2002. According to Lithuanian legislation, agricultural enterprises and partnerships cannot own agricultural land. They are only allowed to lease land from state or private landholders. Household farmers cultivate about 300-400 thou ha of agricultural land. Household farms – mainly small farms (not exceeding 3-5 ha), are usually used by rural citizens near their residence location mainly to satisfy their own needs (not for sale of agricultural production).

Restitution of forests is going rather slowly. Only 50 % of forests, reserved for restitution, have been transferred to claimants' private property so far. As of 2002, 25.9% of forests are private; it is foreseen that after land reform 40-45 % of forestland will be private.

The share of private land in municipalities ranges from 0.0[60] to 15 % in town municipalities (mainly, urban territories) and 20-59 % in district municipalities. Approximately, 730 thou hectares of land is reserved for restitution and currently is out of use. The annual activity of land market in Lithuania is about 4 % or it means that 4 % of land parcels change their owners annually. Annual activity of agricultural land accounts for 5 %, forestland – 6 %. Lease of private land is not widely spread yet. At present, the rent of private land makes up about 6 %.

[60] All area of Neringa municipality is within boundaries of protected area – Curonian National Park – where state possess exclusive land ownership rights;

2. Overview of environmental impacts

It must be emphasized that there were no previous targeted studies conducted concerning the issue of environmental impacts of land privatization. Therefore, data on this topic is scattered among various stakeholders. The overview of environmental impacts is based on interviews, conversations with state, regional and local authorities (Ministry of Environment, Ministry of Agriculture, Regional departments of environmental protection, municipal environmental inspectors), representatives of landowners' associations (Forest Owners Association of Lithuania), NGOs (Lithuanian Nature Fund), scientific institutes (Institute of Agriculture, Institute of Forestry). Also materials from several articles, publications were used. Please, see Annex 3 for references.

Generally, privatization of land is not perceived as a threat to environment and, at first glance, many stakeholders could not identify many impacts on environment – beneficial or adverse. Though some negative impacts (e.g. tree cutting in private forests, urbanization of lakes' shores, access control) are broadly comprehended.

3. Environmental Impacts by sector

3.1 Agricultural land

Generally, impacts on environment from agricultural sector decreased significantly as it happened in many post-Soviet countries. Change to market economy resulted in the decline of all agricultural activities and related services. Table 5 presents some major indicators of the agriculture decline in Lithuania in 1990-2000.

Table 5 ***Decline Of Agriculture In Lithuania 1990-2000***

Indicator	1990	2000
Agricultural sector input into GDP%	23.0	5.5
Percentage of labor force employed in agricultural sector	20.2	16.6
Total crop area (thou ha)	2919	2301
Cattle (thou)	2422	748*
Use of mineral fertilizers (in thou tons, by 100 % active substance) Per ha of crop area (kg/ha)	660 198	245 ** 106 **
Use of pesticides (in tones)	5200	1600

* - In 2001; Statistical yearbook of Lithuania 2001

** - Estimates Lithuanian Agricultural Institute

Since 1990 agricultural production has been growing in farmers and household farms and that in agricultural enterprises and partnerships have been decreasing. In year 2000 agricultural production from farmers and household farms accounted for 82 % of total production. There were 70 thou farmer's farms[61] registered in year 2000. Average farmer's had to reapply for

[61] Farmer's farm is an agricultural activity unit, provided that farm have no less than 1 ha of agricultural land, farm's income from agricultural activities makes up no less 50 % of total business income and no less than 40 minimum standards of living in total.

registration and this procedure is not finished yet. Therefore there are only 32 thou farmer's farms (January 2002) registered, which occupy 534 thou ha (average size 16 ha). Tendency for increase of average farm size is not observed of late years. In total, as to January 1, 2002 there were 455 thou private land plots (361 thou land owners) used for agricultural activities that occupied an area of 2077 thou ha.

Fragmentation of agricultural land raises many problems of economical, administrative nature, hampers the implementation of the state agricultural policy. Though impact of fragmentation for the state of the environment is twofold. On one side, it lessens overall level of agricultural activity and its intensity. Abandonment or scattering of agricultural land positively affects biodiversity to a certain extent. Due to small size of farms, it is not economically feasible for farmers to intensify production by using more mineral fertilizers, machinery and land improvement measures. On the other side, it is harder to implement sustainable agricultural practices (e.g. crop rotation), carry out effective supervision and control of environmental state, inform and educate farmers.

Virtually all-mineral fertilizers are used by agricultural enterprises and large farmers, which have a sufficient knowledge of proper fertilization practice. Small farmers (up to 5 ha) and household farmers mostly use organic fertilizers. Despite of a very radical decrease in the application of mineral fertilizers and manure since 1991 there was no evidence that it has influenced the river water loads by nutrients. Scientific research shows that 50-60 % of nitrogen and 10-20 % phosphorus in Lithuanian rivers is of agricultural origin. It is known that nitrogen load depend more on the farming culture than on the fertilization level. Surveys showed that generally farmers know more or less about the proper handling of manure, but not all are taking necessary steps towards achieving better practices. The manure from stables and feedlots from quite a big part of farms is generally stored in pits or otherwise outside. Roughly 40 % of all biggest agricultural enterprises already have proper manure storages and approximately 15 % of farmers could have such kind of facilities.

Animal breeding is more or less evenly distributed throughout the country. Density of livestock (unit per hectare of arable land) in regions fluctuates only between 0,1-0,6. The livestock numbers has decline to around 40 % of 1990 level. At the national level Lithuania does not face problems of excessive consumption of nitrogen and high livestock density, though there is a possibility that some point pollution "hot spots" exists on local level.

Ecological farming is expanding in Lithuania quite rapidly. The number and area of ecological farms has nearly doubled since 1998. Ecological farming is especially expanding in the karst region in the North of Lithuania (190 thou ha) where special regime of agricultural activities is imposed (e.g. for use of fertilizers). Currently, ecological farming makes up only 0.22 % from total crop area. It is planned to increase this proportion up to 15% of all crop area by 2010.

3.3 million ha of Lithuanian territory (51 %) is characterized as being of high humidity. The main land-reclamation works were carried out in 1950-1970 when 75-80 % of wetlands have been drained for agricultural purposes. Land-reclamation underwent remarkable decline since 1991. There are 3 million ha of drained land in Lithuania where, virtually, all agricultural activities take place. Currently, only 70 % (or 2.1 million ha by area) of land-reclamation systems are maintained and work properly. Intensive renaturalization processes (afforestation, bogging up) are going on and, in majority of cases, positively affect the biodiversity. There are no new land-reclamation projects under implementation. All financing is earmarked for maintaining existing infrastructure.

The area of irrigated land decreased almost 10 times since 1991. Virtually, all irrigated land remained under state tenure.

Urbanization of lakes' banks is expanding and access to water control is a growing problem. Generally, private landowners comply with the requirement not to fence their holdings in a protection zone of the lake (20 m from the bank of water body). Though, in some cases, private holdings surround all the lake and landowners restrict access by fencing all holdings by external perimeter. Once again, such shortcomings mostly stem from oversights in land management plans – access paths to water bodies among private land plots are not fixed in land servitudes, too few land plots in bank areas were assigned too public needs. Farmers, generally, keep up with restrictions on agricultural activities in protective zones of water bodies.

Around 80 % of Lithuanian population has access to centralized water supply systems though there are around 300 thousands of private dug wells, mainly in rural areas. Up to 1 million people use water from those wells. Sample water quality analysis showed that the concentration of nitrates exceeded drinking water standards in almost 20 % of dug wells. It is hypothesized that in majority of cases contamination is caused by local pollution, mainly poor manure handling practices. In year 2001 2 cases of infant mortality caused by nitrate-polluted drinking water were registered.

Quite specific environmental problem in Lithuania is the deliberate burning of last year's grass, stubble on agricultural lands and pastures. In majority of cases, fire is set up in uncultivated private land plots in rural areas. Some land owners, especially small or household farmers, has a strong belief that burning of last year's grass fertilize soil, facilitate ploughing, exterminate weeds, stimulate growth of new grass for grazing. In 2002 (January-April) total area of burned agricultural land already accounted for 25 000 ha, out of which at least 80 % was caused by deliberate actions.

For the last 10 years there has been a pending problem concerning utilization of pesticides from former state agricultural enterprises. After privatization of collective farms in 1992-1994, soon quite many of them became insolvent or run into bankruptcy. It appeared that many of these former state agricultural enterprises accumulated large amounts of obsolete pesticides and chemical fertilizers, which were no more suitable for use. In many cases pesticides were stored in unfit, abandoned facilities with no safety precautions (firefighting, isolation from precipitation) assured. Total amount of these pesticides reaches 2000 tones. Just recently the program for utilization of pesticides was elaborated but the problem is still quite far from be solved. There were several cases when new owners got rid of pesticides by burying them into the ground not to defray expenses of their utilization or transportation to other storage site. In some cases this has caused contamination of soil and groundwater, and inhabitants of surrounding areas were affected. It is probable that some part of pesticides dumped into the ground is not discovered yet.

3.2 Forests

Generally, in the majority of aspects private forestry practices are considered to be much poorer if compared with ones on state held land. The profound reason for all negative impacts of private forestry stems from unfavorable environment for formation of forestry market. More research is necessary to fully evaluate the impacts of privatization; some initial observations are provide below.

As a result of land restitution small-scale private forestry is forming in Lithuania. The average private forest holding is 3.4 ha. 81.2 % of forest owners possess forest plots smaller than 5 ha. These holdings make up 42 % of territory of private forests. Around 58 % of forest owners are elderly people, more than 61 years old. More than a half of owners permanently reside in cities and cannot ensure direct supervision of their property. A number of new forest owners have no interest in forestland consolidation, long-term sustainable forest management, but seek for any opportunity to perform extensive forest felling for timber sale. Especially, this is a case when mature exploitable forest is restituted. The main shortcomings of forestland restitution are the following:

- Before year 1997 fragmentation of forestland was allowed, so that inheritors could divide forestland parcel into the small plots. Since 1997 the limitation that restituted forest land plot could not be less than 5 ha was imposed;
- Before year 1997-forest land served as a means of compensation. If former owner or his heirs could not restore ownership in original site (agricultural land as well) because their land was built up or used for needs of state and needed to be purchased out by state, those citizens could get forest land instead. As result, many people who never owned forest before became forest owners, mostly, of small plots;
- There are plenty of cases then forestland ownership was restored fragmentally within forest areas managed by state enterprises or national parks. Such a diffusion of state and private forest holdings also burdens sustainable management, administration and control of these areas;

The increase of average forestland holding as a result of further restitution process is not foreseen. Constitution of Lithuanian Republic does not allow private ownership of forestland (as well as agricultural) for national legal entities and foreign entities (legal or natural). This restriction blocks off investing opportunities, slows down the process of consolidation of private holdings and introduction of more sustainable forestry practices. As mentioned before, the alteration of Constitution concerning this limitation is already on its way in Parliament.

Economic incentives for forest land reform are not yet in place. One of them is absence of tax on forestland, which would foster forestland consolidation, change of owners profile and more sustainable forestry practices. Other factors affecting private forests are:

- only a small number of forest owners possess proper knowledge about forest management;
- approximately 45 % of forest owners do not permanently reside in a vicinity of their property; about 60 % of forest owners are elderly people more than 61 years old; all this makes proper management of private forest plots more difficult;
- 75 % of illegal forest fellings by volume come from private forests;
- quality of afforestation works in private felling areas is worse than in the state forests: majority of private owners try to avoid expenses as much as possible and fulfill requirements only partly. Latest statistics shows that while area of bare fellings in private forest increases, the area afforested in these areas decreases;
- associations of private forest owners are still very weak and do not play significant role in private forest management yet;

Generally, Lithuanian forests do not suffer because of over-exploitation. Only slightly more than a half of timber production potential is utilized. Forest felling in private forest holdings is of similar intensity if compared with state held land. Forests cover 30.6 % (data provided by Land Fund of Lithuania 2002) of Lithuanian territory and this proportion slightly increases annually for the last 3 years. The share of mature forest (especially, foliate) is not decreasing as well mainly

because of extensive afforestation measures taken in 50-60-ies. Also natural afforestation of abandoned agricultural land adds from 5 to 10 thou ha of forest annually.

As the share of private forests increases, the magnitude of forest felling growths as well. In year 2000 felling volume in private forests accounted for 25 % of total felling. For the year 2001 this proportion is estimated to be around 30 %. In 2000, annual increase of felling volume (5,3 million m^3) was 8 %. Comparing to 1999 felling volume in state forests remained stable though in private forests it increased by 40 % to 1.4 million m^3. The area of bare forest cutting increased by 34 % in 1999 – 2000 in private lands. Forest on lands reserved for restitution is supervised by the state forest enterprises or national parks. Felling works in these forests are not performed except sanitary felling.

Illegal forest felling in private holdings is of special concern. In 2000 the number of illegal felling cases increased by 9 % though this growth was lower in national parks and forest enterprises, while in private forests it has more than doubled comparing to 1999. Currently, almost half of cases of illegal felling are registered in private forests and it accounted for 75 % of illegally felled forest by volume in Lithuania. Volume of illegally felled timber in private forests has more than doubled during 1999-2000. In 90 % of cases, owners themselves perform illegal forest cutting.

The forests in protected areas and other forests with restricted regime (multipurpose protective forests, urban and recreational forests, soil and field protective forests) total to 674 thou ha or 30.3 % of the whole Lithuania's forests cover. General trend is such that area of these forests is constantly growing – 4.5 % growth since 1998.

Infertile agricultural land, which is suitable for afforestation constitutes around 360-500 thou ha or 9.1-12.6 % of total agricultural land. Private forest owners are not very active in afforestation of these areas. Their input accounted to less than 8 % of total afforested areas in 2000. Afforestation of felling areas is generally better performed in state forests. Private owners often are not willing to invest sufficient funds and do not ensure proper further care of afforested areas.

3.3 Wetlands

Wetlands, bogs constitute 2.3 % of Lithuanian territory (147 thou ha), though due to the abandonment of agricultural land and decline of land-reclamation works this figure is underestimated. Around 20 % of this area is under private tenure. Generally, there are no negative impacts of land privatization on state of wetlands identified. Main hazards for wetlands were made during soviet times, when intensive land improvement works and peat extraction took place. Wetlands, especially, raised bogs are quite well protected from anthropogenic impacts by existing legislation. Around half of wetlands hold statuses of protected areas, 5 wetlands are protected by international conventions. Total area of restored wetlands exceeds 300 ha. There was 3-wetland restoration projects carried out so far, financed by international donors.

Former Soviet military zones

By withdrawal of Soviet army from Lithuania in 1993, there were 275 military zones and objects registered which occupied territory of 68 thou ha. Actually, the area of former Soviet military zones is larger, because some territories used in1940-1990 were demilitarized. About 90 % of

military zones and objects were located in woodlands. Major environmental hazards were found in 86 % of military zones (2750 cases in total). These hazards mainly consisted of mechanical surface damages, spillages of oil products and rocket fuel, waste dumping. 9 cases of radioactive pollution were found. Forestland of former military zones was mainly transferred to Forest Department (currently under Ministry of Environment) and is used by state forest enterprises. Infrastructure entities were mainly transferred to ministries (Defense, Transport), municipalities, privatized by public tenders, leased out for business. Only a small share of military zones was privatized under restitution process. In general, intensive use of former military zones (except those taken over by the Ministry of Defense) is going on only in towns. Other military sites are abandoned and renaturalization process is going on. Site remediation actions were taken in a number of places (mainly, in infrastructure sites).

Prospective impacts of EU accession on environment in private lands

Lithuania strives for accession into the European Union (EU) in 2004. It is foreseen that the approximation process will bring benefits to the environment, including environmental benefits on privatized lands.

SAPARD is the EU program for pre-accession countries, which supports agriculture and rural development. SAPARD provides 50 % non-returnable grant for investment projects. Eligible entities are farmers, agricultural enterprises, processing companies, and rural communities. Besides investments into agricultural holdings, rural infrastructure, processing, SAPARD funds are directed to support environmentally friendly agricultural methods, afforestation of infertile agricultural lands, improvement of forest infrastructure, businesses other than agriculture in rural communities (e.g. rural tourism). The obligatory condition for each project is concordance with environmental requirements and standards of Code of good agricultural practice.

Implementation of EU nature protection directives will extend the network of protected areas in Lithuania by 38 %. It is estimated that after full implementation of EU directives in 2005-2006 protected areas will occupy approximately 1 million ha or 16 % of all territory. Establishment of new protection areas – Natural 2000 sites – will embrace territories were important birds sites, fauna habitats are located, and will impose special protection and economic regime on current land users of those locations. It is estimated that 30-35 % of new protected areas will be in private holdings. Around 70 % of new protected areas will be in woodlands.

References

National legislation

Law on Land (26 April 1994 No. I-446);

Law on Land Reform (25 July 1991 No. I-1607);

Forestry Law (22 November 1994 No. I-671);

Law on Water (October 21, 1999, No. VIII-474);

Governmental order "On special conditions for land and forest use" (12 May 1992 No. 343);

Governmental order "On establishment of main purpose of land use" (September 29, 1999 No. 1073);

Governmental order "On order for establishment, registration and abolishment of land servitudes" (September 27, 1995 No. 1278);

Authored books

Statistical Yearbook of Lithuania 2001 (1998; 2000)", Statistical Department of the Republic of Lithuania, 2001;

Lithuanian statistical yearbook of Forestry 2001 (2000)", Department of Forests and Protected Areas under Ministry of Environment & Center for Forest economics, 2001;

Land Fund of Republic of Lithuania as for January 1, 2002", National Land Service under the Ministry of Agricultuture & State Land Cadastre and Register, 2002.

Land management in Lithuania 2000", National Land Service under the Ministry of Agriculture, 2000.

"Environment'2000", Ministry of Environment, Annual Report, 2000.

Private forests of Lithuania and their management 2001", Department of Forests and Protected Areas under Ministry of Environment, 2001.

Code of good agricultural practice", Ministry of Environment & Ministry of Agriculture, 2000.

Agriculture and the environment in the transition to a market economy", OECD Center for co-operation with the economies in transition, 1994.

IMCG European mires book: Lithuania", Lithuanian Fund for Nature, draft working paper, 2002.

Internet resources:

www.zum.lt/nzt/ - National Land Service under the Ministry of Agriculture.
www.am.lt - Ministry of Environment of the Republic of Lithuania;
http://miskai.gamta.lt/st/ - Lithuanian protected areas;
www.std.lt - Statistical Department of the Republic of Lithuania
www.kada.lt - State Land Cadastre and Register;
www.forest.lt - Forest owners association of Lithuania;
www.mec.lt - Center for Forest economics;
www3.lrs.lt/n/eng/DPaieska.html - Parliament of the Republic of Lithuania, legal acts .

Lithuania Annex 1

Territories excluded from privatization
The Republic of Lithuania owns by the right of exclusive ownership the land under:

- State roads and general-use railways;
- Curonian Spit National Park;
- Forests of State Significance;
- Historical, archaeological and cultural objects of State Significance.
- Internal water bodies of State Significance
- Continental shelf of the territorial sea

The land owned by the Republic of Lithuania by the right of exclusive ownership may not be acquired in private ownership. Laws and subordinate legislation establish the conditions of its use.

Forests of State Significance belong by the exclusive right of ownership to the Republic of Lithuania if the forests are assigned to:

1) State reserves, reserves within national and regional parks;
2) The Curonian Spit national park;
3) Protective forests which are situated in up to 7-kilometre-width belt at the shores of the Baltic Sea and the Curonian lagoon;
4) Town forests;
5) Establishments of scientific research of forests and establishments of selected seed growing;
6) Genetic reserves within forests, forest nurseries and seed orchards.
7) Other forests, which are not subject to privatization according to the Law on Land Reform and other laws of the Republic of Lithuania, except for the forests, which are being returned to private ownership in the procedure established by laws, shall be assigned to the forests of State Significance.

List of **Internal water bodies of State Significance** (rivers of State Significance and lakes of State Significance) is approved according to criteria established by the Ministry of Environment. Main criteria are as following:

- Lakes and ponds which area exceed 50 ha;
- Rivers the basin of which is no less than 50 sq. km;
- Ponds which are established on rivers of State Significance and lakes which are linked with rivers of State Significance;
- Water bodies (despite of their area) located in protected areas;
- Water bodies which are significant under Conventions (Bern, Ramsar) and nature protection directives of European Union ("Birds" directive 79/409/EEC and "Habitat" directive 92/43 EEC);

The list of **Internal water bodies of State Significance, which can be leased out,** is approved by Government of Lithuania.

Lithuania Annex 2

The main purpose of land use – definitions

The main purpose of land use (MPLU) is established by the documents of territorial planning: plans of local government territorial management, master plans and detailed plans of towns and settlements, special-purpose territorial plans, land-use and forest management plans.

According to the MPLU, the Land Fund consists of:

- Land designated for Agricultural purposes;
- Land designated for Forestry purposes;
- Land designated for Conservation purposes;
- Land designated for Miscellaneous purposes;
- Unoccupied State Land - state land which has not been allotted for use or leased;
- State Water Fund - land under unprivatized water bodies.

The land designated for Agricultural purposes comprise the plots of land used or allotted for the functioning of agricultural enterprises and farms and for other agricultural activities, including agricultural land, the land occupied by dwelling houses and farm buildings, yards, roads, the land suitable to be transformed into agricultural land and other lands lying within the boundaries of these plots. Special procedure for assigning forests lying within the boundaries of lands designated for agricultural purposes to the land designated for forestry purposes is established. During land reform (restitution) majority of land, which had been used by agricultural enterprises, associations of horticulturists were designated for agricultural purposes.

Land designated for Forestry comprises:

- Land covered with forest with the exception of forests of the reserves;
- Other forest land: cutting areas, burned areas, thinning, glades, waste plots of land, marking off and safety strips, etc.
- Land occupied by forest roads, timber storage points, and
- Other facilities and equipment used for forestry needs;
- Land meant for afforestation purposes.

Land designated for Conservation purposes comprises:

- Strict nature state reserves;
- Territories of the monuments of nature, history, archaeology and culture;
- Conservation zones of national and regional parks;

The Land designated for Miscellaneous purposes comprises:

- Owner-occupied housing;
- The construction and operation of dwelling, social and industrial establishments used for various purposes;
- Transport and other communications;
- The exploitation of mineral resources, peat-bogs and underground water;
- National defense purposes;
- Recreation:
- Common (public) use by towns and settlements and for other needs of local governments;

- Any activities other than agriculture and forestry.

The Land of the State Water Fund comprises areas of land occupied by:

- Territorial sea (not included in statistics, provided in this country survey);
- the Curonian lagoon;
- Rivers with constant water flow, the basin of which is not less than 25 sq km., or connecting the lakes assigned to the State Water Fund;
- Lakes with an area exceeding 5 ha, which have not been returned into private ownership, and other lakes provided they are connected by rivers assigned to the State Water Fund or they are assigned to the State Water Fund according to the procedure established by the Government of the Republic of Lithuania;
  a) Not privatized water bodies established with the funds of the state or local government budgets.

The Stock of the Unoccupied State Land comprises state land which is not allotted for the use by natural and legal persons, is not leased or transferred into private ownership

4.10 Poland

Author: Zbigniew M. Karaczun

Introduction

Since 1989, the extended process of privatisation of state property has begun in Poland. The proceedings have incorporated all economic sectors: industry, services and agriculture. In the case of services and agriculture, the main object of privatization was production capital (buildings, production and technological equipment) and marketing area, whereas, in the case of agriculture, privatization mainly concerned the land. Therefore, this text concentrates primarily on the issues mentioned above.

Historically, Poland is an agricultural country, where arable land is the dominant factor in the land structure. Therefore this branch plays an important role in the national economy. Almost 30% of the Polish population is involved in farming, of which 66% live in rural areas. Agriculture is the main source of income for 4 390 thousand people, i.e. over 11% of Poland's total population, including 27.4% of the rural population. In 1945 the share of agriculture in GDP production accounted for over 60%, and in spite of the fact that the share of agriculture in GDP creation is decreasing (in 2001 the share of agriculture in GDP creation was about 4 %), the soils used for agricultural and forestry purposes still dominate. Arable lands account for 59% of the total area of the country, with the rate of 0.48 hectare of arable lands per capita (Table 1).

Table 1. Changes in the form of soil utilisation in Poland

	Share (in %) of the country territory in specific years				
	1950	1980	1990	1995	2000
Agricultural soils	65,5	60,6	59,9	59,7	58,9
Forests and soils covered with trees	22,0	27,8	28,0	28,7	28,8
Others	12,5	11,6	12,1	11,6	12,3

[GUS 2001]

After 1945, the Polish agriculture was the only one country in Soviet communist block to maintain its character including the ownership aspect. Private ownership was dominant: individual farmers managed around 75 percent of arable land. Polish farmers paid a high price for keeping private ownership. Lack of investment resulted in the bad state of rural infrastructure. Additionally, as the communist state tolerated only small farms and would discourage young people from running them, the majority of the already existing farmsteads are technically backward and fragmented. Towards the end of the 1980s, the average farm size was about 6.5 hectares, and more than 30 percent of farms were less than 2 hectares. Changes after 1989 began the process of privatisation both in agriculture and in agro-food enterprises. Instead of that a characteristic feature of the Polish agriculture is a disseminated structure of farms – small and medium-size farms still prevail (see Table 2).

Table 2. The structure of farms in Poland

	Years			
	1990	**1995**	**1997**	**1998**
The number of farms (in thousands)	2138	2048	2008	1989
Farms with the surface of 1 – 1,99 ha (in %)	17,7	20,9	21,9	22,6
2 – 4,99 (in %)	35,1	33,7	34,4	34,0
5 – 6,99 (in %)	14,9	13,4	12,7	12,4
7 – 9,99 (in %)	14,9	13,3	12,3	12,3
10 – 14,99 (in %)	11,3	10,7	10,3	10,2
15 – and more (in %)	6,1	8,0	8,4	8,5
Average acreage of the farms (in ha)	7,1	7,6	7,8	7,7
Including arable soils	6,3	6,7	6,9	6,9

[GUS 1999]

Restructuring and privatisation processes have also occurred in the food industry. Thanks of that almost 90% of GDP are produced by the private enterprises.

1. Overview of Privatisation

When did land privatisation begin?

The real land market in Poland was created by establishing the State Treasury Agricultural Property Agency (AWRSP) in 1991. Even that it were some attempts to privatise State Owned Land between 1989 – 91 it could be stated that before The Agricultural Property Agency of the State Treasury was established the process of agriculture land privatisation has not started. The Agricultural Property Agency of the State Treasury was established under the Law on the Management of Agricultural Real Estate of the State Treasury dated October 19, 1991. AWRSP is a trust organisation, authorised by the State Treasury to perform ownership rights towards the state property in agriculture as well as other real estate and components of the property. AWRSP has been obliged to take over all the property of liquidated state-owned farms, other agricultural real estate of the State Treasury as well as realty from the National Land Fund.
AWRSP performs its tasks as a state legal person following the principle of self-financing. The taking over the assets of liquidated state agricultural enterprises is followed by the elaboration of the restructuring programmes determining the use of assets or their disposal. There are among them:

- Sale;
- Lease or rent;
- Contribution in kind into the companies (including companies established by AWRSP);
- Transferring for permanent management to the state organisation entities without personality-at-law;
- Passing under administration;
- Conversion of stock.

The real estate belonging to the AWRSP may be also passed free of charge to territorial self-governments for infrastructure investments to Polish Academy of Sciences, the Agricultural Chambers, the National Board of Agricultural Chambers, the State Universities and State Research or Development Institutions for fulfilment of their statutory tasks. Farmland of the low quality can be passed to State Forests or lie fallow.

Ownership transformations in state agriculture affected not only the 1600 farms, but also around 4.5 million ha of land, which accounts for 13% of the area of Poland (22% of all farming land). These 4.5 million ha account for, among others, 300,000 ha of lakes and ponds, around 200,000 ha of forests, 20,000 ha of nature sanctuaries. The transformation process conducted in those areas is of a great importance, not only for agriculture, but also for the entire natural system of Poland. Agriculture covers around 60% of the area of Poland and plays an important part in the shaping of the natural system of the country.

To what extent is the process completed? (i.e. provide an estimate: "land privatisation is in its early stages" or "land privatisation is about 75% complete".)
It could be two answers. From one side it could be said that land privatisation process is almost complete – 100 % of the previous State Owned land has been taken over into the AWRSP Stock. But from the second side only 20% of this land has been sold (see below).

Since the establishment of the Agency, it has incorporated into State Treasury Agricultural Property Stock about 4.69 million hectares of land, including all of the former state farmland. Of this, AWRSP managed to sell 960 thousand hectares, 210 thousand ha was passed free of charge. There are about 3,5 million hectares of land still remaining in the AWRSP Stock. This land is disposed through lease, administration and management and perpetual use (see table 3). There are 689 thousand hectares remaining to dispose of in the State Treasury Agricultural Property land. The Agency sells the State Treasury Agricultural Property land through legal tenders to natural and legal persons. Natural persons have purchased almost 3/4 of the sold land. There are two main reasons why AWRSP has been able to sell less than 1 million thousand ha. First the shortage of financial sources of the farmers in Poland, and second the small profitability of agricultural production. Small interest in buying agricultural land from AWRSP by individual farmers can be a lost chance for field consolidation[62].

The legal regulation regarding the ownership right and private ownership is currently well developed in Poland. Therefore ownership rights are well protected after the privatisation. All disagreements regarding the ownership are (or could be) judge by the civil court.

According the new Environment Protection Law (adopted in year 2001) land owner is responsible for remediation action if he has polluted soil or if he bought land where soil is contaminated (unfortunately until now the intervention level of accumulation of different types of pollutants have not been accepted yet. It means that in practice it is "dead" law). The owner doesn't have to finance remediation work if somebody else polluted his land (in this case author of contamination is responsible for cleaning). If the author of contamination is not know or contamination is so high that it is risk for human health, public authorities are responsible for cleaning. There are no specific public funds, which finance exclusive remediation work, but that kind of works could be finance by environmental funds as well as by special soil protection fund (which collected fees for change agricultural and forest land for non-agricultural and non-forest reason and mostly finance reclamation activities).

[62] According to the Act of the Parliament of 26th of March 1988, a special land exchange and consolidation programme has been established. The work is conducted by the specialized geodetic units acting within the framework of the state voievodship (province) administration financed from the State budget. In 1997 only on an area of 10.5 thousand ha was the work on improving the land structure finished (MRIGZ 1998).

Table 3. Land taken over into Agricultural Property of State Treasury Stock and its redistribution as of the end of the year in 1992 - 1999 (in thousand hectares).

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total land taken over into AWRSP Stock	1.432	3.300	4.232	4.413	4.506	4.592	4.646	4.666	4.694
In which from:									
Former state farms	1.369	3.028	3.728	3.741	3.750	3.751	3.752	3.754	3.758
National Land Fund	59	260	436	538	570	579	594	602	608
Others	4	12	68	134	186	262	300	310	328
Land from AWRSP Stock									
Redistributed through:									
Sale	10	59	124	240	432	581	728	846	967
Free of charge transfer	0	8	21	51	85	107	148	182	210
Bringing into company	0	0	7	8	9	9	13	14	14
Redistributed through:									
Lease	49	900	1.981	2.744	2.928	2.890	2.810	2.695	2.619
Management, Perpetual usufruct	0	2	20	41	65	107	122	123	122
Administration	0	93	374	333	268	248	208	135	39
Awaiting disposal	1.373	2.238	1.705	996	719	650	617	671	682

How much private land currently exists in your country? (Please include the definition of "private" used in your sources, i.e. does it include land held by groups, associations, municipal owned companies, communities, etc.) Compare current situation (% private land) with before privatisation.

Distribution of the WRSP Stock together with political transformations led to considerable changes in the structure of the farmsteads, especially in aspects relating to their legal status and property ownership. Three-sector division (state-owned farms, agricultural co-operatives and private farms) of agriculture has disappeared. At present, the structure of Polish agriculture consists of only two sectors:

Private sector, where the former co-operative sector is included (the farmers bring their private property to the company – including the land) and individual farms

Public sector, encompassing state-owned and communal farms.

Table 4. Area of agricultural soils by users in Poland in 2000 year

Specification	Before privatisation		After privatisation		2001/1991
	1991 in thousands	%	2001 in thousands	%	%
Agricultural soils – total	**18 674**	**100.0**	**18 392**	**100.0**	**98.5**
Private sector:	**14 948**	**80.0**	**17 054**	**92.7**	**114.1**
Individual farms,	14 211	76.1	15 550	84.5	109.4
Agricultural production co-operatives	2 725	3.9	341	1.8	47.0
Public sector:	**3 726**	**20.0**	**1 339**	**7.3**	**35.9**
State-owned farms	3 477	18.6	956	5.2	27.5
AWRSP farms	3 251	17.4	561	3.0	17.3

[Petryna F., 2002][2]

The main effect of redistributing the WRSP Stock and 'de-collectivisation' of the co-operative sector was a very rapid growth of the private sector. The acreage of agricultural land used by this sector between the years 1991 – 2001 (the period when the area of agricultural land in the entire country decreased by 0.3 million hectares) increased by more than 2 million hectares, and its share in the usage of arable land increased from 80% in 1990 to 91.2% in 1996 and 92.7% in 2001 (Table 4). The growth of the private sector took place at the cost of the former state sector. The acreage of arable land in usage by state-owned farms decreased by more than 2.5 million hectares, and their share in usage decreased from 18.6% to 5.2% (Table 4).

The main beneficiaries of the inter-sector flow of the arable land have been the individual farms. The acreage of arable land in their usage increased by 1.3 million hectares, and their share in the usage of the arable land in total increased from 76.1% in 1991 to 84.5% in 2001. This increase took place when the acreage of agricultural land was decreasing in the entire country. It can therefore be concluded that in order to allow the increase mentioned above, more than 1.5 million hectares of arable land must have been transferred to individual farms. The main source of land transfer to individual farms was the redistribution of AWRSP Stock, including the land of the former state-owned farms (PGR). From the reports presented by AWRSP, it can be seen that by the end of the year 2000, 0.7 million hectares of arable land were sold to individual owners from the AWRSP Stock (392 thousands hectares as real estates with size up to 50 hectares; 47 thousand hectares as real estates varying in size from 50 to 100 hectares) and 1.3 million hectares were taken on lease (more than 713 thousand hectares as real estates up to 50 hectares; 189 thousands hectares as real estates varying in size from 50 to 100 hectares). The prevailing part of the land, especially the real estates up to 50 hectares in, were used for increasing the size of previously existing farms and in, a lesser degree, for creating new individual farms. From the total acreage of 1.5 million hectares of arable land, which was transferred to individual farms from 1991 to 2001, 95% comes from the redistribution of AWRSP Stock. The remaining part of the acreage was transferred to these farms within the framework of de-collectivisation of agricultural production co-operatives.

[2] Petryna F., 2002 Zalesianie gruntów rolnych zasobu (Afforestation of agricultural soils of the WRSP Stock) 03. 2002 *Agroprzemiany*

Provide available breakdown of privatised land: agricultural/urban. Further, if possible include here the specific amount of each type of land that has been privatised (agricultural, forest, industrial, wetland, and rangeland)?

Privatisation mainly included the arable soils of the former Par's, but, as is has been stated above, among these were approximately 300 000 hectares of lakes, 200 000 hectares of forests and 20 000 hectares of areas of high environmental value. Only as little as 1% (i.e. 3 000 hectares) of the lakes taken over by AWRSP was privatised; the rest was taken on lease by fishing companies (89% of the acreage); in administration (4%); and in management (1%). 15 000 hectares of the lakes still need to be redistributed.

Part of the forest acreage was privatised, but the majority was transferred to the resources of the State Forests (Lasy Pa stwowe) enterprise. However, detailed information on the quantity of privatised forest area is lacking.

The majority of the environmentally valuable areas were transferred (free of charge) to National Parks, to municipal authorities, etc. Some of them became private property, yet details in this respect remain unknown. AWRSP took over approximately 333 000 of flats with their accompanying infrastructure. At the present moment, 83% of them have been privatised. The rest remain in AWRSP Stock.

What privatisation activities are currently being implemented?

At the present moment various privatisation activities are being implemented. First of all, the process of privatisation is still in progress in industry and services sectors. Nevertheless, this process concerns mainly production property, whereas taking over the land (i.e. plots belonging to the privatised companies) constitutes a much lesser degree. There is no data concerning the acreage of land taken over by private entrepreneurs in this process.
The second process relates to agriculture. AWRSP is still active: the remaining part of the agricultural lands (i.e. approximately 0.68 million hectares) in its stock is being redistributed. The lands being taken on lease, in administration and in management are being sold. The AWRSP lands are being sold to the present leaseholders (having the right of pre-emption) and other parties interested.

In order to perform its tasks efficiently, AWRSP has set up 11 regional branches and 6 subsidiary offices. One of regional branches is situated in Warsaw and is also responsible for the enterprises of the special importance for national economy (animal and plant breeding). The Agency sells or leases the assets following the tender (auctions or bidding of written offers). The list of APS real estate offered for sale or lease as well as announcements regarding the tenders are placed on the information boards in the relevant commune's (gmina) office where given real estate is placed and in the appropriate AWRSP regional branch (subsidiary office).

The information on intended sale or lease of property which estimated value exceeds an equivalent of 10,000 dt of rye - fixed according to the regulations on agricultural tax - is published in newspapers having at least voivodship wide circulation. A list of real estate for sale or lease is announced 14 days before the invitation for the tender.

Describe land privatisation efforts in your country since 1989. (If there is a written history of these activities simply provide it as an annex (preferably as a Word or pdf file.

If not, please briefly describe the history.) See attachment (papers by Karaczun Z. and Wasilewski and Krukowski)

2. Overview of Environmental Impacts

Research concerning the environmental impact of the ownership transformations in agriculture is not conducted in Poland.[3] In the 90's the Institute did some work in this area for Sustainable Development, which investigated the impact of the ownership transformation on the environment in relation to privatisation in industry and in agriculture.[4] The report has shown that the criteria of environmental protection were not taken into consideration whilst making decisions concerning privatisation. It has been therefore concluded that the process was a lost chance for improving the management of the environment in Poland. At the same time, the process has disclosed several environmental problems caused by the new owners of the privatised lands.[5]

Does any evidence indicate that private land ownership has improved management of certain natural resources (e.g. agricultural policies, forest management)? Describe areas where this is the case.

The new owners of the privatised farms conduct more efficient (economically) and intensive rural economy, as AWRSP data shows. In contrast to state farms (PGR), which suffered financial deficits, the new owners can profit from their activities, and according to AWRSP data, the owners of smaller acreage farms achieve better financial results than the owners of large-acreage farms (more than 1 000 hectares).

The evaluation of environmental resources management is more difficult. Research conducted by the Institute for Sustainable Development[63] has shown that some of the new owners over-intensify the agricultural production, which results in environment pollution (e.g. by excessive fertilization, or using pesticides). It is worth remembering that AWRSP lands are bought by prospering farmers; i.e. those who use greater doses of fertilizers or pesticides than the average for each farmstead in the entire country. These are people whose future plans are closely connected with the agricultural sector. For them the majority of environmental protection activities constitute a serious impediment in rural economy. The second group of buyers are people willing to profit financially from the purchase of land. They over-intensify the agricultural production and conduct it without any consideration whatsoever for environmental protection criteria (this concerns mainly the buyers of large acreages). The third group consists of buyers not interested in agricultural activity, but in purchasing the land solely for assigning it to other purposes. Some of the new owners purchased the agricultural soils in order to assign them for house-building areas (mostly areas in the neighbourhood of large cities). The further urbanisation of environmentally valuable areas as well as those, which are perceived as tourist attractions, is rather common. Recreational buildings are constructed there. This primarily

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[3] In relation to the lack of such research, the majority of data quoted in this chapter is based on evaluation performed by the author of the text.

[4] Karaczun Z., Grze kiewicz R., 1996: Ownership transformation in agriculture vs. environment protection. Report Institute for Sustainable Development, Warsaw. Report can be ordered directly from Institute: ISD, 00 – 743 Warsaw, Nabielaka 15/1 POLAND

[5] Karaczun Z., Grze kiewicz, 1996. Ibidem.

[63] Karaczun Z., Grze kiewicz, 1996. Ibidem.

concerns the shores of lakes, as well as large forest complexes, subsequently diminishing the environmental value of such areas.[64]

A separate group of buyers consists of people who are the leaseholders of the AWRSP property. These people, not interested in long-term agricultural activity but trying to maximize their own profits, make use of the inappropriate supervision of AWRSP and misuse the leased areas. However, the threat of ending the lease as the result of confirmation concerning the misuse of the leased areas considerably reduces such practices.

At the beginning (after the privatisation had begun) one could observe cases of inappropriate forest management in the privatised forests. This was caused by three factors: first of all, by the desire for immediate profit; secondly, by the lack of relevant legal regulations for private owners; and lastly, by the ill adjustment of the existing forest safeguards to the supervision of the privately owned forests. As a result, the new owners were cutting down large areas of the newly acquired forests.

It seems, however, that the new owners are far better at water management. As in the majority of cases the lakes were taken over by fishing companies and their line of management relies heavily on achieving high long-term profits therefore these resources are managed in a sustainable way.

What have been specific problem areas (e.g. liability for industrial sites, land contamination)? Have specific incidents of human health/environmental impacts been reported? Are these primarily urban or agricultural? How have these problems been addressed? Is there a process by which polluted sites have been/are being remediated? Have agricultural lands identified as being contaminated been taken out of production as a result of the "privatisation" process, either by individuals, communities, associations, or other interested parties?

One of the remnants of the former PGR is the disposal of hazardous wastes, where outdated pesticides and their containers were deposed. At the beginning of the 90's about 750 of such places existed in the entire country. Most of them were constructed in a way that could not secure proper levels of environmental protection; others (ca. 30%) were in such bad condition that they constituted a direct threat to the environment. The problem of inappropriate storage of hazardous wastes could not have been solved for a long time since the costs of land reclamation exceeded available financial resources of the new owners (or leaseholders). Moreover, clear legal regulations appointing the party responsible for such proceedings were lacking.
The first attempt to improve the situation was made in the mid 90's, when the State Environmental Inspectorate made an inventory of all the hazardous waste disposal sites, describing their condition and, in the process of selection, choosing those which were to be removed first. At that time the first works were begun to remove some of these disposal sites. In 2001, Polish regulations concerning environmental protection were amended and the parties responsible for treatment of the polluted areas were designated. At the same time the efforts to remove the disposals of hazardous wastes are continued. They are based on the contracts signed between the voivodship offices (regional administration), which took upon themselves

[64] More detailed discussion of this problem see: Wasilewski, Krukowski: Environmental effects of transition: A case study of the land conversion for sub-urban house building in two selected provinces of Poland The paper could be downloaded from web page: http://www.ceesa.de/NitraPapers/Wasilewski.pdf

the duty of removing the disposals, and the *starosta* offices (local administration). Removing of the disposal sites is financed from the voivodship (regional) environmental protection funds. It is estimated that the works will be completed between the years 2004 – 2005.

Another problem, partly related to privatisation, is the pollution of the areas formerly occupied by the military bases of the Soviet Army[8]. After the Soviet Army left Poland, it became clear that most of the military bases were highly polluted – especially by hydrocarbons and heavy metals. Therefore, in the mid 90's, extended treatment works on these areas were started, which are financed by the state budget.

What kinds of lands, have been excluded from privatisation (forests, wetlands, contaminated properties, riparian zones, biologically rich lands)? (Please provide definitions used by the government in characterizing any lands that have been excluded.)

The following areas are excluded from privatisation procedures according to legal regulations: Flowing waters (rivers, streams, lakes where rivers flow in and out of), Coastline of streams (although this regulation is commonly violated), Nature reserves, The areas belonging to national parks (within the areas of some national parks there are lands belonging to private persons – with the right to divvy their land as they see fit).

Privatisation has been brought to an end within these areas, for which re-privatisation applications were submitted. Areas having this status can be leased, yet until the end of the privatisation process they cannot be sold (neither by AWRSP nor by public authorities) to new owners[9]. It is estimated at the present moment that approx. 2 million hectares of land will remain in AWRSP stock in order to satisfy future re-privatisation claims.

3. Environmental Impacts by Sector

Since 1989, Polish agriculture has struggled with serious problems (see Annex). As a result of this, the intensity of rural economy decreases, which has positive consequences for the natural environment.

Agricultural Land

Has there been an increase, a decrease, or no change in agricultural production on privatised land? Does it appear that these changes are related to changes in land tenure or are they the result of some other factors?

As mainly prosperous farmers trying to increase their production bought the arable lands, new farms were characterised by greater efficiency. It relates mainly to smaller farms – up to 100 hectares of land. Large farms (above 1 000 hectares) attain worse results. However, research in this matter is lacking, and the economic effects are measured mostly on the basis of on-time payment of the lease rent by leaseholders of AWRSP lands.

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[8] Some of these areas were taken over by the Polish Army; some are to be privatised.

[9] This stipulation refers to arable lands as well as to other property (e.g. building plots in urban areas) for which re-privatisation applications were submitted. Re-privatisation is further complicated by the lack of unanimous legal regulations in this respect; therefore property restoration takes place on the basis of court sentence or decision issued by administration authorities. Each re-privatisation case is dealt with individually.

Has pesticide use on private land increased or decreased? What have been the primary causes for this? Have there been changes in irrigation practices?

The amount of fertilizers used in Poland as well as the pesticides has decreased since the 1990s (Table 5).

Table 5: Use (pure nutrient) of pesticides, artificial and lime fertilizers

		Annual Amounts				
		1985	**1990**	**1995**	**1999**	**2000**
Artificial fertilizers (NPK)	Tonnes/ha	175.2	95.1	71.4	87.4	85.8
Nitrogen fertilizers (N)	Tonnes/ha	66.1	39.9	43.5	48.4	48.4
Phosphorus fertilizers (P2O5)	Tonnes/ha	47.3	22.3	15.0	17.3	16.7
Potassium fertilizers (K20)	Tonnes/ha	61.8	32.9	17.9	21.7	20.7
Lime fertilizers (CaO)	Tonnes/ha	139.4	139	108.9	104,2	95.1
Pesticides (active substances)	kg/ha	0.8	0.5	0.5	0.6	0.6

Source: GUS 2001

The area under irrigation has decreased as well since the 1990s. The amount of sewage used for irrigation has considerably dropped (Table 6). This, in turn, reduced the danger of this kind of degradation.

Table 6. Irrigation in agriculture

	Years				
	1980-89	**1990**	**1995**	**1999**	**2000**
Area of irrigation (thousand ha)	340.0	301.5	201.1	8914	99.1
Numbers of installations	2 100	1 659	1 443	710	821
Water intake (hm^3)	450.0	518.8	208.9	94.1	112.6
Including sewage (w hm^3)	50.0	53.1	6.0	2.3	2.2

Source: GUS 2001

The above data concerns the entire area of Poland and all manner of farms. Data concerning the differences in fertilisation and irrigation between the new farms (created as a result of privatisation) and others is lacking. Nevertheless, it seems that the level of fertilisation and the use of pesticides may be higher (prosperous farmers) than in the other groups. In some cases (e.g. where the new owner of the arable land has the market for his products – for example growing potatoes for chips) a great increase in the intensity of the agriculture was observed with a 5 – 7 times increase in the intensity of fertilisation and pesticide use. In the scale of the entire country, however, this is a marginal phenomenon.

What have been the trends regarding grazing lands (public and private grazing rights) and what have been the broader trends regarding livestock numbers? Environmental impacts of grazing (soil degradation, water pollution, etc)

The scope of the livestock production decreased (Table 7), and consequentially the acreage of lands used as pastures decreased as well. Primarily, low-efficiency pastures were given up together with those where grazing causes serious problems (e.g. water-logged areas or mountain areas, etc.). In many cases it causes natural succession in these areas and their subsequent loss. This is especially dangerous in the case of wetlands, which provide refuge for waterfowl and mud birds (e.g. the areas of Biebrza ski National Park). Therefore parts of such

areas will be potentially included in special agriculture-environmental programmes in order to maintain environment-friendly way of management. Difficulties described concern all types of farms – from the point of view of privatisation, this is significant because marginal lands are not bought and subsequently there is no rural economy in these areas.

Table 7. Livestock numbers

Thousand heads	Year			
	1986 - 1990[1]	1991 - 1995[1]	1996	1997
Cattle of which: cows	10 509 4 972	7 942 4 052	7 136 3 461	7 307 3 490
Pigs of which: sows	19 080 1 921	20 540 1 928	17 964 1 677	18 135 1 756
Sheep of which: ewes	4 535 2 528	1 591 959	552 350	491 315
Horses	1 076	787	569	558
Chicken	53 383	38 246	44 142	49 286

[1] - annual averages

3.2 Forest Land

Poland's woodland area approximates 28.5% of the country's area and even though it is smaller than the European average it has continually grown since 1945. The majority of the forests belong to the state – approx. 6.94 million hectares. Private and municipal forests occupy approx. 1.59 million hectares. A system of supervision over the forests and forest safeguards are well organised and managed by the state. State forests are managed by an enterprise called The State Forests. Forest breeding, as well as its protection and timber harvesting, take place according to a special management plan. It concerns both private as well as state forests.

In the second half of the 90's, a discussion took place about the possibility of forest privatisation. Foresters, naturalists and the members of ENGO were opposing this idea. After many heated discussions the forest privatisation project was abandoned, therefore, most of the forests remain in the hands of the state.

Has tree cutting increased, decreased, or not changed significantly on privatised land? Compare forestry practices on private with practices on state held land. Detailed data in this matter is not available.

At the beginning of the 90's, an abrupt increase in tree cutting was noted in the private forests, due to lacklustre supervision over the private forests, as well as ill adjustment of the legal regulations to the new political and economical situations. At present the supervision over private forests has been strengthened and the owners of such areas need to have forest management plans (private forests) and these plans are the basis for rational timber harvesting.

Describe specific environmental impacts: soil erosion and river sedimentation? Have large blocks of relatively uncut forestland been fragmented? Impacts on old-growth forests? Impacts on habitats?

The most common danger for soil coming from agriculture is erosion. Almost 28 percent of the land area is endangered by wind erosion, 27.9 percent by water erosion and 18.2 percent by gullying (Table 8). Arable land situated in central and eastern Poland (85 percent of the total

area of Lodzkie Province) is mostly endangered by wind erosion; northern and upland districts by water erosion (71 percent of the total area of Bielskie Province) (GUS 1998). Despite the measures undertaken, the danger of this form of degradation has not decreased and it should be expected that it would continue to be the basic form of degradation of soils in agricultural use.

Table 8. Vulnerability of soils to erosion in Poland, 2000

Kind of erosion	Total area endangered		Degree of hazard (% Of Polish area)		
	Km2	% Of Polish area	Low	Medium	High
Wind	86 332,0	27,6	17.3	9.3	1.0
Water	89 074,9	28,5	13.8	11.0	3.7
Deep (rill)	54 748,5	17,5	10,5	4,3	2,8

Source: GUS 2001 and IUNG 2001

The main causes of erosion are Poland's limited woodland areas along with the predominance of light, sandy soils. The privatisation process had no influence over the acreage of the area prone to erosion. Planned forest management, however, leads to a decrease in the acreage of the old-growth forest since the majority of trees after reaching maturity are cut down. This form of management prevails with disregard to the type of forest.

Has tree planting increased? Where and on which lands (state, public, private)?

The majority of tree planting took place from 1945 to 1960. In the 90's the acreage of the afforested areas remained at a stable level: 70 000 – 120 000 hectares yearly. Until the year 1989 almost 100% of the afforestation projects were conducted by the state, but in the 90'the share of the private owners increased. It is estimated that the importance of afforestation will increase because a new law concerning the afforestation of agricultural soils has been passed.

The process of privatisation of agricultural soils favoured afforestation. Most of the marginal areas were given free of charge to the State Forests in order to be afforested. Further afforestation of low-value agricultural soils in the possession of AWRSP is planned. It is estimated that approximately 265 000 hectares of soils taken over by AWRSP should be afforested.

Due to the fact that one of Poland's objectives in ecological policy is the increase in degree of the country's afforestation (from 28.5% to 30%), an act concerning the afforestation of agricultural lands was passed in 2001. The farmers (owners of the private agricultural lands) who decide to afforest part of or all of their farms will receive support for the implementation of this plan (preparation of forest management plan, free tree seedling delivery) and are entitled to receive financial support from the local budget (maximum 35 USD for 1 hectare of afforested area monthly). The act entered into force on 1st January 2002, but considering the problems of the state budget the details of its implementation are not clearly established.

3.3 Wetlands

After 1945 the entire country was subject to extended land melioration works. Agricultural drainage was commonly implemented, which resulted in the loss of a considerable part of wetlands. Those works were conducted until the end of the 60's, and at the beginning of the

70's land melioration of water conditions were started on a greater scale. All melioration works were financed from the state budget.

In the 90's the situation changed. Crisis in the agriculture and budgetary problems caused a limitation of the scope of land melioration works. No new works were started and the conservation of the previously existing appliances was limited. As a result, approx. 1.3 million hectares require reconstruction or modernisation of the existing appliances. It can therefore be stated that the privatisation process has not resulted in the increase of drained lands.

The crisis led to abandonment of agricultural production in the marginal areas including wetlands. Although in a majority of cases it has positive effects on the environment, in some cases it may lead to the impoverishment of biological diversity (see case study in the Annex).

There is no data concerning the efforts made by farmers or local communities to re-create the wetlands. Such activities (in a limited scope) were taken up by environmental organisations.

3.4. Current public lands

Forty-five years of a socialist system have considerably changed the attitude to public goods in Poland. They are not perceived as common goods, but rather as nobody's goods, which favours misappropriation and degradation.

Socio-economic changes contributed to the rise of importance of private owners in environmental management. On the one hand the state cannot disregard the interest of private owners in its decision, on the other the owners have a growing sense of 'freedom' which leads them to think that they have the right to do whatever they wish with their property, which in turn often leads to activities contradictory to the requirements of environmental protection. At the same time the function of the state has diminished – both as a supervisor of the activities of private owners and as the owner of public goods. This phenomenon has dangerous consequences. Public goods are being misappropriated (e.g. it is common practice to build-up or fence the banks of flowing streams, which is against the law as such areas constitute public goods) and illegal activities are being carried out on private lands (e.g. construction of buildings without necessary administration permissions in areas of environmental importance). In the urban areas, municipal authorities often make decisions (without carrying out the necessary public consultations) about assigning municipal green areas for infrastructure purposes. A low level of self-organisation in the local communities and low environmental awareness (as regards the politicians and the entire society) are conducive in this respect. Court cases and administration proceedings against people and institutions violating the regulations of the usage of public goods are very rare in Poland.

At present it is hard to clearly establish how the trends in the management of public and private areas will develop. However, it seems that together with the increase of society's affluence and the solidification of a democratic system the demand for proper state control and supervision of the public goods will also increase.

Poland: Annex 1

Wasilewski A., Krukowski K[65]
ENVIRONMENTAL EFFECTS OF TRANSITION:
A CASE STUDY OF THE LAND CONVERSION FOR SUB-URBAN HOUSE
BUILDING IN TWO SELECTED PROVINCES OF POLAND
(Selected issues)

Privatisation of the State Farms in Poland

The changes of ownership in social sector were based upon the Act on the Administration of Agricultural Immobility of the State Treasury and upon amendment of certain Acts on the Administration of Agricultural Immobility of the State Treasury1, (Graph 1). On the basis of the above Act the Agency of Agricultural Property of the State Treasury (AAPST) was entitled to enforce the ownership changes in Polish agricultural sector.
According to the Act there were various forms of ownership changes depending on particular circumstances. Besides of the transformation of SOF into a company of ST the AAPST may utilise the property of SOF as follows (Art. 24 p.1): a) sale of property as a whole or in part according to the rules set in Chapter 6, b) relegation of property for fixed period of time for paid use to physical or legal persons according to rules set in Chapter 8 (mainly in a form of tenancy of rent), c) contribution of the whole property or in part to a company, Following the amendment of 29.12.1993 additional possibilities of property utilization were implemented:
Leasing – civil contract belonging to the group of unspecified contracts, which in case it contains the opportunity of property redemption, makes possible in this respect the privatisation the property of RAPST,
Cession of the property to the units of Polish Science Academy (PSA), universities and R&D units for the purposes according to their status,
Eventual cession to the state or communal entities,
Cession to the Agency of Motorway Construction and Maintenance for the road lines of motorways

The process of the establishment of RAPST in fact has been finished, because main properties creating RAPST (former SOF) are already overtaken. Insofar of the activities of the AAPST conducted within the framework of obtained entitlements clearly point the liquidation of social sector in agriculture and the establishment of family farms (according to the document titled "The Directions of the AAPST activities) as the main objective.

Extension of private land rights

A term "land property" according to Polish legislation means the land with all included items of the property, excluding buildings and houses if they are considered as a different subject of property rights. Other term related to "land property" is "resource of property". "Resource of property" is considered as immobility belonging to the ST, a county, a district or a province and not relegated in perpetual use or perpetual management (administration) and not burdened with the right for any use. According to the Act of 21.08.1997 on real estate

[65] Report has been produced in framework of CEESA research project. All paper could be downloaded from web page: http://www.ceesa.de/NitraPapers/Wasilewski.pdf

management (O.J. of 29.09.1997) following resources of properties were established:
RAPST,
County Resource of Properties (CRP),
District Resource of Properties (DRP),
Province Resource of Properties (PRP).

These properties create respectively the resource of properties belonging to the ST, a district of a province that are allocated in local spatial development plans for housing sites and for related construction of infrastructure facilities. They are relegated to a county as a legacy (donation) on demand of the county supported with important interest of the concerned county and if the ST, a province or a district cannot finance any objectives related to this immobility.

The Act of 21.08.1997 assumes a possibility of expropriation of the owners of immobility for public purposes. The expropriation of the owners of immobility or other rights is due to compensation equal to the value of expropriated property or the relevant property right paid for expropriated owner.

The properties are sold or relegated for perpetual use on the way of a tender. There is a possibility of non-tender disposal in case when the person applying for the purchase has pre-emption right or the transaction is dealt between the ST and local self-government authorities. The disposal of the property is on the way of exchange or contribution to newly created state of self-government legal person company, foundation or other cases specified by the law. In case of physical and legal persons, prevailing regulations do not impose any restrictions on the disposal of properties (land) to third parties. The contract of sale/purchase in this case shall be concluded in a form of notarised deed. Legal framework concerning the rules of the use of agricultural land and woodlands for non-agricultural purposes is specified in the Act of 3.02.1995 on the Protection of Agricultural and Forest Land (O.J. No 16, pos. 78, 1995). The protection of agricultural land and woodlands mainly concerns restrictions imposed on the changes of their use for non-agricultural and non-forestry purposes, prevention from degradation and devastation of the land, environment damages caused by agriculture, non-agricultural damages and land re-cultivation for agricultural purposes.

Zbigniew M. Karaczun

Situation in Polish Agriculture

Restructurization in rural areas

The beginning of the 1990s was extremely difficult for agriculture. The situation forced the government to join the restructurization process of this sector. Firstly, state aid was aimed at, among others, getting private farms out of debt by buying out overdue investment credits and determining preference conditions of repayment, granting modernization credits as well as credit subsidies for buying and managing the land. There was also the possibility of earlier retirement for farmers.

In order to support the agricultural policy and restructure Polish agriculture, the government set up several institutions. The most important are: the Agriculture Restructuring and Modernization Agency, the Agency for Agricultural Markets, and the State Treasury Agricultural Property Agency. The Agency for Agricultural Markets (Agencja Rynku Rolnego - ARR) was established in 1990. The major tasks of the Agency are aimed at conducting the state intervention policy of stabilizing the agricultural markets and protecting agricultural producers' incomes. The State Treasury Agricultural Property Agency (Agencja Wlasnosci Rolnej Skarbu Panstwa - AWRSP) is a state organizational unit established in 1991 and is mostly involved in the restructuring and privatisation of State Treasury. The Agriculture Restructuring and Modernization Agency (Agencja Restrukturyzacji i Modernizacji Rolnictwa - ARiMR) was established in 1994. The Agency conducts the government policy related to agriculture and rural areas and is aimed at improving living standards in rural areas through improving production effectiveness and quality and helping farmers become competitive on domestic and foreign markets.

Liberalization

In liberalising the agricultural sector, the government lifted special preferences for the state-owned companies, withheld subsidies from public farms, and made it possible to set up private agro-food enterprises. Due to the liberalization of international trade, cheap imported food started flooding into Poland; this made it difficult for Polish farmers to sell their products. The negative aspect bound up with the market liberalization was that the ties between producers and retailers were discontinued. It became more and more difficult to sell the crops. Therefore the system of minimal prices for particular agricultural products was introduced. The President of the Agency determines the intervention process for Agricultural Markets, taking into account the level of minimal and market prices. The President also defines the periods in which intervention prices are in force (intervention periods). According to the amended act of establishing the ARR, the scheme of intervention activities is limited to annual programmes, accepted by the Council of Ministers. The intervention is usually limited to the few markets e.g.: cereals, skimmed milk powder, honey, potato starch, hops and wool (only sales of the stock).

An element of liberalization is the development of an agricultural market infrastructure, particularly through the establishment of agricultural stock exchanges (currently in Poznan, Olsztyn and Lublin) as well as through the creation of wholesale markets (currently in Poznan).

According to the Rzad Polski's opinion (MRIGZ, 1998), the level of liberalization in Polish agro-food sector is far greater than in the EU Member States. About 75 percent of budgetary funds

regarded as a support for agriculture is actually transferred to the farmers' Social Insurance Institution. Export subsidies, except for small amounts of sugar, are practically not applied, and border protection against excessive imports of subsided agro-food products has also been less strict than in EU countries. It should be expected that during the process of integration the existing level of agro-food market liberalization would be reduced.

The development of input and output prices

The 1990s is a period of high inflation in Poland. Increase in prices in the years 1990 -2002 reached the level of about 800 percent. Such high inflation had a very bad impact on the farmers' welfare. Sums obtained in one year from selling crops were not sufficient to purchase means of production in the following year.

Table 1. Index of input and output prices by individual farms

	1991	1992	1993	1994	1995	1996	1996	
	Previous year = 100%						1980= 100%	1990= 100%
Output prices:	129.3	159.8	132.6	137.1	127.3	115.7	66 140	553.5
Plants	116.8	184.3	129.5	134.0	135.4	114.6	58 023	579.8
Animals	135.8	149.1	134.3	138.7	123.2	116.5	70 298	541.1
Input prices:	173.1	138.4	135.9	125.9	125.0	120.5	159	617.4
For consumption	170.7	140.4	133.9	130.2	126.6	120.7	360	638.6
purposes	177.9	140.4	138.4	123.9	123.4	120.7	159	637.8
For actual	164.7	132.2	131.3	127.1	127.7	116.8	360	541.8
production purp.							150	
For investment							770	
purposes							157	
							291	

(GUS 1998a)

Data presented in Table 1 show the economic situation of farmers worsened. This was because the increase in input prices was higher than that in output prices. Data presented in Table 2 show that, in the 1990s, the economic conditions got better in crop production but worsened in animal production.

Table 2. Relation between output to input prices in agriculture

		1991	1992	1993	1994	1995	1996
Prices of means of production (a=dt of wheat; b=kg of pork)							
Polish tractor "Ursus" - 1 piece	a	583	364	371	560	520	420
	b	4 702	4 617	5 440	5 423	7 127	7 973
Norway nitre 34% N - 1 dt	a	2.2	1.1	0.86	1.1	0.95	0.68
	b	18.0	13.6	12.7	10.3	13.0	13.0
Pesticide "Zolone" - 1 l	a	1.7	1.4	1.2	1.4	1.2	0.82
	b	13.6	17.3	17.5	14.0	16.7	15.6
Hard coal - 1 t	a	7.8	5.4	5.6	7.3	6.1	4.9
	b	63.1	68.7	82.2	70.8	83.5	93.3
Concentrate feeding "Provit"- 1 dt	a	4.1	2.6	2.4	2.7	2.2	1.7
	b	32.8	33.4	34.8	26.5	30.1	31.4
Wheat (seed) - 1 dt	a	1.6	1.2	1.5	1.6	1.3	1.3
	b	12.8	15.1	21.2	14.1	17.9	20.8
Bull - 1 piece	a	41.9	37.2	32.6	52.4	43.6	39.8
	b	339	472	478	507	598	756

Source: GUS 1998

4.11 Romania

Author: Dr. Ioan Vasile Abrudan

1. Overview of Privatization

Political initiatives to restore property to its previous owners and re-establish the free market economy became a reality at the beginning of the 90's, after the fall of communism. Specifically, in 1991, the Government embarked on a program of land restitution. As an initial measure, under Law 18/1991, most of the agricultural land was restituted to its former pre-nationalization (1948) and collectivization owners. Up to 10 hectares of agricultural land was restituted to each former owner or his/her descendants. In 2000 the proportion of the private land reached circa 85% of the total Romania's agricultural land (Romanian Government 2000), compared to 13.7 % during communism period. The private lands continued to be managed by their owners. During the restitution process, the land that was in collective farms has been restituted to its former owners and the management of the large collective farms dissolved.

According to the same law (Law 18/1991) 353,630 hectares of forest land were returned to around 400,000 pre-1948 individual owners. Most of the recipients of these small parcels of forest land (up to 1 ha, even if the forest area owned before nationalization was larger) were poor and, therefore, primarily interested in deriving cash benefits from the sale of trees from their land (World Bank 1999).

In 2000, another land restitution law (Law 1/2000) was passed by the Parliament and implementation initiated. Law 1/2000 sets the restitution limit to 50 ha of agricultural land per former owner/descendant and it is expected that up to 1 million ha of agricultural land will be further restituted to the former owners. A number of land privatization process difficulties have emerged. First, there have been situations where the previous owners did not have/find the deeds or land titles proving their ownership. However according to the restitution law the confirmation of three witnesses in the court can be used as a proof for former agricultural land ownership. There were also situations when the previous owners or their descendants (mainly the ones who emigrated) have not claim the land. But there were also cases when the same land was claimed by several people and the intervention of the justice department was required.

There have been no reports of previous owners who claimed the land and have not got it back or been compensated. However, there are cases of people formerly working for the collective farms during communisms (especially professionals: engineers, technicians etc., who were not locals but settled in the area) and have not got any land as they did not owned agricultural land before nationalization/collectivization.

According to Law 1/2000 all community, town and communal forests will be restituted to their former owners. The restitution is limited to 10 ha for individuals (natural persons) and 30 ha for churches, irrespective of the size of their ownership before 1948 nationalization. While most of the agricultural land has been restituted according to Law 18/1991 (see Table 1), the Government is now under pressure to proceed rapidly with the restitution of forest lands under Law 1/2001. It is expected that between 50% and 80% of the forests will stay under state control – see also the last part of section 2-Overview of Environmental Impacts.

Table 1 Situation of the agricultural land in 2000 (Ministry of Agriculture and Food, 2000)

Total area of Romania	238,391 sq. km (23.8391 million ha)
Total agricultural land:	62% of the country's total area (14.81 million ha)
- Arable	63.5% of the total agricultural land
- Pastures	22.6% of the total agricultural land
- Hayfields	10.3% of the total agricultural land
- Vineyards and orchards	3.6% of the total agricultural land
Forests and other areas with forest vegetation:	28% of the country's total area (6.79 million ha)
Agricultural land ownership:	
- State	15 %
- Private	85 %
Structure of the private agricultural land:	
- 74% family farms (circa 3.95 million farms; average size: 2.3 ha)	
- 8% family associations (circa 7200 family associations; average size: 132 ha)	
- 18% legal agricultural associations (circa 3500 legal entities; average size: 620 ha)	

Implementation of the forest restitution process has been delayed due to uncertainty of how to implement the legislation (which was amended by the Parliament in early 2002) and the operational capacity of the agencies involved in the restitution process. However, the situation at the beginning of February 2002 was that 1,579,151 hectares have been proposed to be restituted by local commissions for restitution according to Law 1/2000. Of these, the county commissions had validated 1,296,470 hectares, 824,977 hectares were deemed to be eligible for restitution by the local commissions and 561,275 ha were actually put in possession (see Table 2). Considering also the area restituted under the provisions of the Law 18/1991, in February 2002 the area of private forest reached 15% of the total forest area.

Table 2 Area restituted at 1st of February 2002, according to Law 1/2000 (Regia Nationala a Padurilor 2002)

Ownership Type	**Area (ha)**	
	Claimed	**Restituted**
Private individuals (natural persons)	916,036	4,688.77
Communities / undivided private ownership	725,857	154,951.16
Churches, education institutions	65,407	4,497.41
Municipalités, towns, communes	1,280,763	397,138.36
Total	**2,988,063**	**561,275.70**

Based on the submitted requests by different categories of forest owners it is expected that between 30% and 50% of the Romanian forests will be restituted. Considering the size of private ownership in 1948 (Table 3), about 98% of the previous forest owners (individuals) will have all of their forest returned to them (Abrudan et al. 2002).

Table 3. Forest ownership in 1948 (pre-nationalization) (World Bank 1999

Ownership	Forest Size	No of Owners	Total Area (ha x 1000)	Percent
Private	0 - 5	473 109	484.3	7
	5.01 - 10	10 685	69.8	1
	10.01 - 20	4 676	67.3	1
	20.01 - 30	1 082	34.0	1
	30.01 - 50	2 165	68.0	1
	50.01 - 100	1 561	109.6	2
	100.01 - 500	1 413	293.4	4
	500.01 - 1000	169	114.9	2
	1000.01 - 5000	117	203.5	3
	5,000.01 - 10,000	8	59.8	1
	> 10,000	1	10.8	0
	Subtotal	494 986	1 515.5	23
Institutions, Communities, etc.		9 469	3 310.5	49
State; Crown, Ministries etc.			1 878.7	28
Total			6 704.7	100

2. Overview of Environmental Impacts

The significant changes in land ownership that have occurred in the last decade had major impacts on the management of agricultural and forest land. In many parts of the country a decrease of the agricultural production has been recorded after privatization and this is reflected by the general trend of agricultural production in the last eleven years. In many cases this decrease has been determined by other factors than the change in ownership (the general economic situation of the country, the increasing area of abandoned lands, the poor financial situation of the land owners etc.). However, the management of the private agricultural land has improved in many areas, especially where the process of consolidation took place.

In general, the restitution of agricultural land has mainly had positive environmental impacts. Due to the poor financial situation of the family farmers and the agricultural associations the use of pesticides and irrigation has decreased dramatically in the last eleven years. Also the decrease in cattle and sheep stocks has reduced the negative environmental effects of overgrazing (soil degradation, water pollution etc.). As the industrial and mining activities have been significantly reduced in the last decade, the danger of land contamination has decreased accordingly. However, isolated cases of land/water contamination due to industrial activity have been recorded (e.g. Baia Mare cyanide spill in 2000). It is worth mentioning that none of these incidents have taken place due to agricultural activities. In 2000 in 101 Romanian localities (mainly towns) the industrial pollution exceeded the maximum admitted concentrations (NCS, 2000), affecting both human health and the neighboring agricultural and forest land. The productivity of about 900,000 ha of agricultural land is affected by chemical pollution due to socio-economic activities and circa 50,000 ha of land is affected by oil and salty water pollution (NCS, 2000).

Despite the fact that the industrial pollution has been reduced and the monitoring of the environmental factors has considerably improved in the last decade, the remediation of the

polluted sites has been relatively low due to the high costs. In recent years such activities were carried out only in a couple of areas affected by oil pollution and were financed by the National Oil Company – Petrom. On the other hand treatments to reduce the soil acidity have been applied annually on more than 100,000 ha of agricultural land. In the few cases of heavy industrial pollution, the contaminated agricultural land has been taken out of production. However, agricultural activities have been carried out on areas where low level pollution has been recorded, usually situated in the vicinity of the industrial centers.

As a general trend, the management of the private forests has been significantly poorer than the management of the state forests after the 1991 restitution process. Forest restitution has had in many areas a negative environmental impact. A large number of the new forest owners clear-felled or over-harvested their forest land, which resulted in negative environmental effects: soil erosion, stream and river sedimentation, landslides etc.

Considering the impacts of the 1991 restitution and the need to implement the second restitution law (Law 1/2000) and its potential negative impact, the Government has designed and implemented measures to increase the institutional capacity in the forestry sector and promote the sustainable management of private forests.

In 1999 the Forest Inspectorates were established in order to fulfill the control role of the state in relation to forest management, both in state and private forests. They have been further developed and in early 2002, sixteen regional Forest Inspectorates were operational, with 301 employees. In April 2002 the Government approved by Governmental Decision the establishment of the Private Forest Service within the Ministry of Agriculture, Food and Forests, in order to better coordinate and support the sustainable management of private forests.

The Government has provided support for afforestation and pest control on private forest lands. Although this support has not led to a significant increase in afforestation it contributed to the reforestation of some clear-felled areas and partially to the afforestation of some degraded agricultural lands. The costs of forest management planning for individual owners (natural persons) and the updating of the management plans are covered by the state budget. Support for the establishment of local associations of private forest owners, establishment of private forest nurseries and afforestation of degraded lands is also foreseen in the EU SAPARD program (expected to be implemented in the period 2002-2006), with the aim to reduce forest fragmentation and improve the management of private forests.

As a measure to avoid the negative impacts of forest restitution on biodiversity conservation, the strict nature reserves (equivalent to category I IUCN), natural monuments, seed reserves and forest genetic resources have been excluded from privatization, according to Law 1/2000. Illegal felling and hunting have been recorded in some protected areas but at an extremely reduced scale and with no major impact on the forest or biodiversity.

3. Environmental Impacts by Sector

3.1. Agricultural Land

In 2000, agriculture accounted for 12.6% of Romania's GDP and agricultural employment represented 42.8% of the national labor force (CEC, 2001). Although an annual fluctuation has been recorded in the agricultural production of Romania, the general trend shows a decrease in crop production and livestock numbers in the last decade. There were several reasons for the agricultural production decrease: (i) a high level of fragmentation in parcels of land, each usually

too small to be productive and economically sustainable in and of itself, (ii) the poverty of the new owners (family farmers), (iii) the lack of agricultural credit mechanisms, (iv) the poor state support and incentives for farmers etc.

Significant positive changes have been recorded in relation to the environmental impact of the agricultural activities. Mainly due to the economic situation and the poverty of the family farmers the use of pesticides and chemical nutrients has decreased constantly in the last decade, reaching in 2000 half of the quantities used in late 80s-early 90s. However, the use of pesticides is a common practice in the case of the agricultural associations or companies with a robust financial situation.

Agricultural associations are managing the private land whose owners voluntarily agreed to join in an association (established as a legal entity) and empowered a management structure (mainly professionals: agricultural engineers, economists, technicians etc.) to manage their land. In a few cases the associations are the "descendants" of old collectivized farms, but more generally they represent private owners/managers of land. Associations have the financial means to maintain the old levels of inputs or use some pesticides/fertilizers (however, less than before). There are no incentives for better environmental management but there are fines for worse management: the use of pesticides which are not permitted, land contamination etc. However the implementation of the environmental legislation on agricultural land is suffering due to the poor institutional capacity.

One of the main changes with a positive environmental impact (although it affected negatively the crop production) has been the reduction of the size of the irrigation system. Whilst in 1990 it covered 3,000,000 ha, in early 2000 the irrigated area represented only 85,000 ha (27,000 ha in private ownership). Most of the irrigation systems have been destroyed, mainly as a consequence of land privatization and fragmentation. On the other hand, the Government had not supported the development and maintenance of the irrigation network in the 90s. Under such circumstances the soil salinization has been significantly reduced in the last decade, but still affecting circa 614,000 ha mainly in the Eastern Romanian Danube Plain, Western Plain and Moldavian Plain (MWFEP, 2000). However, since early 2001 the Government and the Ministry of Agriculture, Food and Forests has taken a set of measures (mainly subsidies and incentive mechanisms) to rapidly expand the irrigated area to 1 million ha in 2002.

The area of grazing lands has recorded a slight increase in the last decade as a result of the arable land abandonment. In the last decade the negative impacts of grazing have been reduced due to the significant decrease in livestock numbers (mainly sheep and cattle). This was determined by the collapse of the former state farms after land privatization, and the general economic situation of the country and land fragmentation which have reduced the private investment interest in the sector. However there are areas in the country where overgrazing causes soil degradation and water pollution, especially in the Southern Romanian Plain and Moldavian Plain and in some traditional grazing areas in Romanian Carpathians (Apuseni, Fagaras, Maramures etc.)

Due to the reduction of industrial activities and closing of several mines and quarries the negative environmental impacts of such activities decrease accordingly. In 2000 only 15,000 ha were affected by pollution with urban and industrial waste, and 18,000 ha by soil removal through surface mining and excavation (MWFEP, 2000).

3.2. Forest land

With the absence of the institutional capacity and the legal and regulatory framework to ensure sustainable management of forests on private lands, the 1991 forest land restitution had serious negative environmental impacts in several regions of Romania. More than a quarter of the forest lands restituted in 1991 have been clear-felled or now have a canopy closure of less than 0.4.[66], and harvesting in many of the remaining privatized forests has exceeded annual allowable cuts (MAFF, 2001). Damuc-Neamt, Casvana-Suceava, Agas-Bacau, Harghita or Dolj are relevant examples in this respect (see Box 1).

Box 1. Impacts of the 1991 restitution of forest lands – Damuc Valley

In Romania rural communities are generally very poor. Consequently the receipt of title to one hectare of forest land stocked with high volume, high quality timber represents a large windfall. For most recipients of forest land, short term economic concerns, such as the cost of food heating, health, education, together with short-term fears, concerning the possibility that the State might reclaim the land or impose restrictions on its use, dominated equally rational (though for the impoverished individual far less relevant) longer term national goals such as watershed or biodiversity protection. As such, when land title was transferred from National Forest Administration (NFA) to individuals as part of the 1991 restitution program, trees were harvested extremely rapidly as individuals sought to cash-in on the windfall.

In the Damuc Valley in Neamt County, for example, less than 3% of the restituted forest land remained intact. Forests were seriously over-harvested with significant negative environmental impacts. The Damuc river is now heavily loaded with silt resulting from erosion of the denuded slopes, and further polluted with sawdust and machine oils as a result of the practice of using the river bed as the site for milling much of the timber. The restitution program has provided a short term cash injection for the communities of the Damuc Valley. A thriving saw-milling industry has development and most houses have large stacks of timber in their yards. A foreign company has established a sawmill at the head of the valley, and local people sell many of their saw logs there for processing. In the absence of Government controls that can be used to manage the level of timber harvested from private lands, access to this easy market, together with the lifting of export restrictions on wood, has further exposed restituted forests to rapid exploitation.

In the short term this could be viewed as a positive economic impact. In the longer term, however, an opportunity for sustained income generation has been lost. From a Total Economic Valuation perspective the program clearly had a significant negative impact on the value of the nation's asset. For example, reduced game populations represent an economic as well as an environmental loss, whilst the likely future landslides from deforested areas could seriously impact downstream communities.

One of the more disturbing aspects of the changes that have taken place in the Damuc Valley is the impression of anarchy. NFA staff provide accounts of threats as well as acts of physical violence against them as they have sought to prevent illegal forest clearance. New forest owners care little about the forest code, and do not understand how their actions on private land is any business of the State.

[66] The Romanian system for scoring the degree of canopy closure in a forest stand ranges from 0.1 for an "almost" completely open site, to 1.0 for full canopy closure.

On the other hand, there are regions in the country where the new private owners have followed the good forest management practices. The negative environmental effects related to forest block fragmentation have been somehow reduced by restituting the forests in compact groups of parcels at the edge of the state forests. The reasons behind this trend, in my opinion, are primarily the higher level of awareness of private owners and a better law enforcement (the control and inspection of the forest practices) in such situations.

As a general rule the forestry practices on private land have been significantly poorer than on state held land at it appears that this was a common situation even before the 1948 nationalization.

Table 4 Re-afforested and afforested area in Romania in the period 1991-2000 (NFA, 2001)

Year	State land		Private land
	Reforestation (ha)	Afforestation of degraded agricultural lands (ha)	Afforestation (ha)
1991	15,163	400	272
1992	12,243	127	186
1993	10,170	128	48
1994	13,563	302	879
1995	12,315	334	414
1996	11,541	389	696
1997	10,209	144	164
1998	10,416	154	90
1999	11,446	708	220
2000	12,382	766	250

After 1990 the afforested and re-afforested area has decreased due to the reduction of the annual allowable cut and harvested area (see Table 4). The afforestation/re-afforestation activities on private lands have been extremely poor. An increase in the annual afforested area is however expected in the next years both in the case of the state and the private lands as a consequence of the Governmental policy to afforest the degraded agricultural land improper for agriculture and the implementation of EU SAPARD program.

3.3. Wetlands

It is estimated that wetlands covered 5.8% (i.e. about 1.3 million ha) of Romanian territory prior to human intervention. This area of wetlands has been reduced to about one half of its previous extent (MWFEP, 1998).

Among the most significant ecological changes that have taken place in Romania during the communism period have come from alteration of river courses and construction of hydro-technical works. The loss of groundwater as a result of hydro-technical works has produced the partial or total dieback of about 20,000 ha of forest (MWFEP, 1998).

Draining of wetlands was promoted by the previous regime in order to increase arable land for agriculture. This practice led to the loss of approximately 400,000 ha of floodplains, particularly along the Danube river and in the Danube Delta (80,000 ha). The dyking of the Danube River

and the building of the Portile de Fier (Iron Gate) hydropower plants have also had a major impact by destroying spawning areas of many fish species. For instance, together with pollution, this factor has dramatically reduced the sturgeon and carp population (MWFEM 1998).

After 1990 almost all draining activities stopped as a result of the ownership changes and the economic situation of the country. Mainly due to the high cost, no draining of the restituted wetlands has been reported in the last years.

On the other hand, several initiatives for wetland protection and restoration have been promoted. About 3,800 ha of wetlands were restored in the Danube Delta Biosphere Reserve. Almost all restored wetland area is state-owned. Wetland restoration is also foreseen in the coming years on several thousand hectares in the Small Island of Braila (an EU Life-Natura Project) and Calarasi (a GEF Project). In both cases the land is state-owned.
In 2000, the governments of Bulgaria, Romania, Moldova and Ukraine agreed to start a unique collaboration – to establish a Green Corridor along the lower Danube River and Danube Delta and protect and restore the wetlands of the Delta and the Lower Danube (WWF, 2001).

In the case of wetlands no significant encroachment into public ownership has been reported in the last decade. However, in many wetland areas (including Danube Delta) illegal fishing and hunting have been reported.

3.4. Current public lands

In general there is no significant pressure on the currently publicly held wetlands, agricultural and forest lands for their privatization. Public lands represent circa 62% of the total land area (CNS 2000). There are however pressures and negative impacts on the sustainable management of these natural resources with certain environmental effects. The cases of illegal felling reported on state forest lands (representing about 2% of the total annual harvest, according to NFA sources), poaching or illegal fishing are representative examples in this respect.

A different situation is the one of the green spaces in urban areas. In many Romanian towns a reduction of the green spaces has been recorded in the last decade. The main reasons were the change in the land use as a result of the restitution, the concession of public lands to private companies (which built offices, shops etc.) or encroachment into the public parks. In some cases concession contracts have been signed between the local administrations of the public urban land and private companies, without fulfilling all legal requirements (including the environmental permit) and without the consultation of the neighboring community.

The same situation has been recorded in the case of some beaches along the Black Sea coast. Several cases of encroachment into the public land have been reported in the towns or resorts situated along the Black Sea coast, where private companies have illegally built shops, kiosks or restaurants. Although part of them has been demolished the private pressure on such lands is still very high and the capacity of the local authorities to deal with such cases is limited.

References

Abrudan, I., Tamas, S. and Ionascu, G., 2002: Privatization in Romanian Forestry. In: Proceedings of the Seminar: Privatization in Forestry, Belgrade, 2002, pg. 59-72

Commission of the European Communities (CEC), 2001: Regular Report on Romania's Progress Towards Accession, SEC (2001) 1753, Brussels, pg. 121

Ministry of Waters, Forest and Environmental Protection, 1998: Report to the Convention on Biological Diversity. Bucharest, Romania.

Ministry of Agriculture and Food, 2000: Report on the Agricultural Sector. Bucharest, Romania.

Ministry of Agriculture, Food and Forests, 2001: Press conference/November 2001. Secretary of State for Forests. Bucharest, Romania.

National Commission for Statistics (NCS), 2000: Statistical Yearbook. Bucharest, Romania.

Regia Nationala a Padurilor, 2002: Buletin informativ ianuarie-februarie 2002, pg.12

Romanian Government, 2000: Medium Term Development Strategy of Romania.

Romanian Government, 2000: National Plan for Agriculture and Rural Development. Bucharest, Romania.

World Bank, 1999: Economic Evaluation and Reform of the Romanian Forestry Sector. Final Report, World Bank, Washington DC.

World Bank, 2000: Support for the Romania National Forest Policy and Strategy. Final Report, World Bank, Washington DC.

***, 1991: Legea Fondului Funciar nr.18/1991 [Land Law], Monitorul Oficial al Romaine, Bucuresti.

***, 2000: Legea nr.1/2000. Monitorul Official al Romaniei, Bucuresti.

Abbreviations

EU –European Union

GDP – Gross Domestic Product

GEF – Global Environmental Fund

MAFF – Ministry of Agriculture, Food and Forests

MWFEP – Ministry of Waters, Forests and Environmental Protection

NCS – National Commission for Statistics

NFA – National Forest Administration (Regia Nationala a Padurilor)

SAPARD – Special Accession Program for Agriculture and Rural Development

4.12 Russia

Author: Pavel V.Kasyanov

1. Overview of privatization

Land privatization in Russia started 11 years ago, in 1991. This relates to agricultural lands, lands under industrial enterprises, and land in settlements. While forested lands, protected areas, lands of so called Water Fund in accordance with the acting legislation, as well as according the projected legislation, will stay in a public property (mainly in the state ownership and small part – in a municipal ownership).

Table 1 Areas of lands of different categories (The State Reports: "On the state of the environment in 1998", 1999 and "On the state of the environment in 2000", 2001)

N	Category of land	Area, million Ha			Subject to privatization +/-
		1998 (4)	1999 (5)	2000 (5)	
1	Agricultural lands	454,9	440,1	406,0	+ *(1)
2	Lands of settlements	20,9	18,6	18,7	+ *(1)
3	Lands for industry, transport, communication etc	17,6	17,4	17,3	+ *(1) -
4	Lands of the Forrest Fund	1046,3	1059,8	1096,8	- *(1,2)
5	Protected areas and recreational areas	31,7	31,7	32,0	--*(1,7)
6	Lands of the Water Fund	19,9	27,8	27,8	- *(1,3)
7	Reserved Lands	118,5	114,4	111,2	- *(1)
	TOTAL	**1709,8**	**1709,8**	**1709,8**	

Note: All lands in Russia are classified into 7 categories.

The above official categories refer to objectives of land usage: legislation defines allowed land usage for each category. For instance, agricultural lands and lands of the Forest or Water Funds are not allowed for building enterprises or houses independently of ownership rights *for this land (1, Land Code, 2001).*

To help conceptualize land reform in Russia, however, the following informal classes of land have been identified (by the author):

- State agricultural enterprises (sovkhozes) possessed large plots of the state owned agricultural lands;
- Co-operative agricultural enterprises (kolkhozes) had ownership rights for their usually vast plots; despite substantial formal difference in fact "a" and "b" were very similar;
- Individual farm-houses plots of land, homestead lands cultivated by villagers (who worked also for a sovkhoze or kolkhoz);

- Individual plots adjoining to the summer houses or farm-houses: land plots for gardening and vegetable growing (belonged mostly to town's or city's inhabitants). Land categories "c" and "d" were also rather similar although for "d" it can be individual and co-operative.[67]

It is important to mention that despite the fact that private property formally didn't exist until 1990s– dozens millions of soviet families possessed small plots adjoining to the summer houses or farm-houses plots of land, homestead lands. A majority of families in cities and towns as well as villagers had and have now such plots and grow vegetables, fruits, berries etc. for themselves and partially for selling. This agricultural activity is substantial, but to a certain extent not accounted for within the sector of the agricultural economy. However, even the accounted part, that is commodity production of the gardens (of course, not all commodity production is recorded officially since individual producers or co-operators often try to find final consumers directly, in a way invisible for the state's taxation system), makes more than a half of total domestic agricultural production. And this half is produced at one tenth of all agricultural lands (categories "c" and partially "d" below), i.e. 4 % of agricultural lands give more than 50 %; 57 % in 1998 (Russia in figures, 1999) of production and 10 % of lands. Categories "c", "d" and "e" (individual farmers) produce about 60 % of agricultural production. In the soviet time there were 4 major types of land rights and respective land users:

In the process of land reforms the system of land ownership, possession and use became more complicated. While some percentage of kolkhozes and sovkhozes still remain and vary by region; land ownership rights changed. In some regions kolkhozes and sovkhozes still dominate: in Tatarstan they make 90 % of agricultural enterprises, in Bashkortostan and Udmurtia - more than 60 %, in Kalmykia - 70 % (9; L.Rakovetzkaya, 1998). A new type ("e") of land owners – individual farmers - was formed, "new" farmers own now more than 12 million Ha of the total agricultural grounds. Number of farms since 1991 increased from 4 thousands to more than 270 thousands in 1997 (L.Rakovetzkaya, 1998).

In 1990, an average area of possession type "C" was 0,2 hectare per family (3 million Ha totally), in 1997 it reached about 0,4 hectare, in some regions - about 0,5 hectare (about 6 million Ha totally and more than 15 millions of owners) (L.Rakovetzkaya, 1998).

Average area of possession type "d" in 1997 made 0,08 hectare (L.Rakovetzkaya, 1998; 11, I.Starikov,1999)., total square - 2 million Ha (twice as much as in 1990). Two categories - "c" and "d" together makes 8 million Ha (more than 25 millions of owners) or more than 4 % of

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[67] In the Russian terminology traditional land possession, possession of rather small plots and agriculture at these lands is called peasant holding while farmers is a new formation for Russia which is a private alternative to large state or collective farms (sovkhozes and kolkhozes). I am trying to translate the Russian formulation for this kind of land possession precisely but I feel it's required to make some additional explanations: the purpose of this co-operatives usually isn't co-operative production activity. After folks (co-operative) develop their plots, everyone is free to grow everything except alternate usage or non-usage which may hinder neighbors (in this case such a member of co-operative can be excluded from the co-operative (if he/she hasn't privatized the plot)). Co-operation for them important at the initial stage when certain investments in the infrastructure are needed, of course such a co-operation facilitates the plot development process and in majority cases is the only way for people of very modest circumstances/means who make more than 90 % of the population. These plots also can be privatized, the only reason for creating co-operative before registering private property rights is the absence of individually marked plots, initially a co-operative is given one large plot that should be split into a number of the co-operative members. "D" is mostly the land possession of townsfolk). Lands of type "c" are usually lands of villagers (who possessed this land's plot historically) and townsfolk that have peasant roots or buy village houses with the attached lands. Major part of agricultural production of individual peasant's plots or townsfolk's is produced by the category "c" lands (of course, usually only villagers produce enough production to supply it to the market).

agricultural grounds in Russia. The average size of plots of two categories (C and D) is about 0,2 Ha.

In the case of "c" and "d" it's the privatisation of plots which already were in possession of peasants or townsfolk has been rather formal process (however, simultaneously, there are two additional processes: 1) the "old" possessors besides acquiring property rights over plots they possessed before also enlarge them, join the vacant nearby plots (mostly "c") and 2) the new interested persons get new plots (mostly "d"). There are no problems with private property rights over these plots and registration of ownership rights is a rather formal procedure: nobody objects this point but formally this issue hasn't been completely settled for each plot in practice however, the Land Code adopted in 2001 provides necessary juridical basis.

While listed in Table 1 categories correspond to the juridical classification of lands (juridically fixed destination) there is another classification – physical or actual classification of grounds presented in Table 2.

Table 2 Land distribution (actual usage in comparison with categories), Million Ha.

I	**Grounds – types of actual usage of lands**	**1999**	**2000**
1	Agricultural grounds	221,15	221,09
	including :		
A	arable land	125,3	124,4
B	Grassland	90,6	90,9
C	agricultural grounds which are included in the category of agricultural lands	190,6 (in 1998)	190,7
2	**Agricultural lands as a category*	440,1	406,0 =(190,7+215,3)
2'	Non-agricultural grounds which included in the category of Agricultural lands		215,3
	including:		
A	afforested lands		46,8
B	lands for the northern deer-raising (deer pastures)		98,7
C	lands with water bodies		13,2
3	*Forest grounds*	887,3	898,5
4	*Lands with water bodies*	211,7	219,0
	including:		
A	rivers, lakes, artificial reservoirs, glaciers, snowfields	70,9	71,7
B	marshes	140,8	147,3
5	*Lands of deer pastures*	282,1	325,5
6	*Lands with buildings*	5,4	5,4
7	Lands with roads	7,9	7,9
	Land ownership distribution:		
1	New farmers	12	
2	Homestead lands ("C")	6	
3	Gardening (and truck gardening) plots ("D")	2	

4	Communal-tribal land tenure for deer-raising	21	
5	Owners of land shares	116	
6	Land Redistribution Fund	33	

Agricultural land in Russia in a broad sense totals about 26,6 % (in 1998), 25,7 % (in 1999) and 23,8 % (in 2000) of the Russian territory. However only 42 % (about 190 million Ha) of agricultural lands are used of agricultural purposes. Of this 190 million ha, arable lands (croplands) amount 126,5 million Ha (27,8 %) and grassland, hayland make about 90 million Ha (about 20 %). Also 19,5 % of agricultural lands are covered with bushes and low productive rural forests (of former collective farms – kolkhozes). Substantial part of agricultural lands is formed by deer's pastures (land for deer-raising) – 145,7 million Ha. Farmers share of land is about 6 % of those 190 million Ha and share of individual vegetable gardens, gardens and other small individual rural farms together with new farms totals about 10,5 % of 190 million Ha agricultural lands or 9 % of so called total agricultural grounds (land actually used for agriculture that doesn't coincide with the categories due to destination) which incorporate/include agricultural grounds from different categories of lands (not only agricultural land category but also agricultural grounds of the settlement lands, Forest Fund lands and some others).

Purposes and tasks of the land reform were formulated in adopted in the end of 1990 laws: "On the land reform", "On the farming", "On the social development of villages", "On changes and addenda to the Constitution of the Russian Federation" and in the Land Code of the RSFSR from April 25, 1991. The legislative base declared a soft way of reforming. However, actual reforms were conducted through Presidential Decrees. In 1991 – 1993 the reform passed an administrative stage when lands of majority of collective farms (kolkhozes) and soviet farms (sovkhozes) were parceled out among respective rural population. The Presidential Decree N 323 from December 27, 1991 started the real process of privatization of kolkhoz and sovkhoz lands. Kolkhozes and sovkhozes were obliged to newly register their legal states (joint-stock company, agricultural association, co-operative society, private farm). Regulations of the Decree were concretized in the Governmental Decree "On reorganization of kolkhozes and sovkhozes" (from 29.12.1991 N 86).

After tremendous protests of members of kolkhozes in February, 1992 (kolkhoz's Forum) the Government had to admit to members of agricultural enterprises not only re-organize them but also to keep/conserve the old form (the Governmental Regulation N 138 from March 6, 1992). A number of the Presidential Decrees (N 631 from June 14, 1992, N 1767 from October 27, 1993, N 2118 from December 7, 1993, N 2287 from December 24, 1993) established private ownership for lands under industrial objects, admission of foreigners to participate in auctions and competitions for privatization of state and municipal enterprises, allowing purchase and sale of the land shares. The Presidential Decree from March 2, 1992 determined mechanism of land shares determining and distribution.

Area of lands in every district (municipality) was divided by number of persons having right to get a share of lands for free. The land rights were given to the rural population: employees of sovkhozes and kolkhozes, the former employees of kolkhozes and sovkhozes independently on the present place of living within Russia, other rural people employed by public organisations). Many important factors (such as specialization of former enterprises, needs in fodders, share of cattle breeding in agricultural production) were not taken into account. Many enterprises got in a critical situation, particularly highly-mechanized, large quantity of livestock, with a small personnel. Excessive lands were separated and attributed into the so called

Redistribution fund. As an example see in Table 3 information on privatization in 4 enterprises of Mikhailovsky district of Volgogradskaya oblast'.

Table 3 Privatization of Select Agricultural Enterprises (21; K.Pankova, 1999)

Former agricultural enterprise	**Area, hectare before sharing**	**Number of people having right to get land**	**Withdrawn lands into the redistribution fund**	
			Ha	%
"Zavety Lenina"	15466	555	6070	39,2
"Rassvet"	15381	925	300	19,5
"Sekachevsky"	11368	425	4752	41,8
"Reconstrukcia"	19881	1287	-	-

People got shares, some areas were withdrawn to the special fund and the only real first result was that enterprises (kolkhozes and sovkhozes) lost large areas and became reduce production of cattle, especially pig-breeding, young cattle fattening, sheep breeding. Owners of small shares usually are not able economically, technically to start self-dependant production farming. Technics, equipment and technologies of large former enterprises are not suitable for small farms, also it is physically impossible to share equipment between all folks. Moreover, small farms in overwhelming majority of regions will not be viable in any case. So, enterprises to a substantial degree were saved while land rights were distributed between persons. Cultivation and production are conducted as before the land privatization. Until 1996 buying and selling "marketable land shares" were not allowed. However, the Presidential Decree from March 7, 1996 gave all rights for dealership (according to the Civil Code) to owners of land shares.

Table 4 Kolkhozes' And Sovkhozes' Land Privatization (21; K.Pankova, 1999)

Groups of enterprises according share of withdrawn lands, (% of total land before privatization	Group average value (of withdrawn share)	Crop productivity, centner/hectare (After privatization)			Net profit per, thousand rubles per 100 Ha(After privatization)	Profitability, % of large enterprises whose land were privatized but they continued to work after privatization of shares
		winter crops	potatoes	perennials		
Less than 10	3,8 %	34,2	154	39,2	40,2	34,2
10-20	17,6	29,8	143	30,0	29,6	28,4
20-30	24,2	20,4	126	28,4	20,9	23,2
Over 30	37,0	14,3	90	20,6	18,4	16,0
Average	24,4	25,0	132	25,4	23,4	20,6

Table 4 displays impact of shares distribution and privatization as well as of withdrawal of a part of land to the redistribution fund on productivity and profitability of agricultural production of the reformed enterprises. It's obvious: the more area was withdrawn the worse are economic results. The problem of the reform was and is its violent nature.

By 1999 92 % of new owners of land shares get certificates for the plots, 43 % of these 92 % did nothing with these shares, 38 % of new owners lease their shares, 17 % of owners invested their shares in an authorized capital stock. 60 % of farmers returned their shares back gratuitously, persons that abandoned villages (moved to towns) often even forgot that they are owners of 7-10 Ha (per person) (13, V.Miloserdov, 1999).

Totally there were re-organized 23,5 thousands of kolkhozes and sovkhozes, 115,9 million Ha of agricultural lands were privatized (1999). 11,6 million of workers and former workers of kolkhozes and sovkhozes became owners of land shares (11, I.Starikov,1999). There were formed/created about 279 thousands of new farms, they got 12,6 million Ha of land (by 1999); in 2000 there were 261 thousand of farms with the total area 14,38 million Ha with average size – 52 Ha; 11,6 % of farms are larger than 100 Ha with the share of farms less than 20 Ha – 55,9 % and less than 10 Ha – 38 %. (25, N.Ogarkova, 2001). As a result of reforms 137 million Ha or 62 % of total agricultural grounds (221,1) became private property. Also there was created the Redistribution fund with total area about 33 million Ha (11, I.Starikov,1999).

Average area of a farm makes about 50 Ha, however in a regional dimension this value vary from 2 to 399 Ha (15, A.Soskiev, 1999).

First years of the reform the shares were not legally registered, they were just virtually assigned. After 1996 almost 100 % of owners of the land shares got proper certificates of ownership. Initially each person got his/her own share of land only virtually, but even after 1996 these shares in majority cases were not marked out on the ground. Size of a share depended on the initially available land (area of a kolkhoz or sovkhoz), lands quality and number of respective folks as it was shown in Table 2. It's necessary to mention that only a part of former kolkhoz's or sovkhoz's lands was distributed among people (working persons, pensioners and other rural people). Other part of lands (including arable lands in a hope for high demand from the farmer's side) was transferred to local rural administrations and so called Redistribution fund. Thus, local authorities got enough room for manipulation. Actually agricultural lands area reduced by 30 million Ha between 1991 and 1995, 23 million Ha were transferred to local administrations, 4,5 million Ha – to so called reserve lands.

An important issue was creation of necessary conditions for a land market. There was developed the methodology for calculating land's prices (as 200 rates of the land tax). In 1996 average tax rate was 4000 rubles per 1 Hectare of arable land varying from 1913 rubles in Arkhangel'skaya oblast' (region, province) to 11138 rubles in Krasnodarsky Krai. By 1998 more than 50 regions had their own regulation of land relationship. Some of the regions such as Saratovskaya, Samarskaya and Kaliningradskaya oblast's adopted laws allowing purchase and sale of land.

The most developed is the land market of lands, grounds for developing (building up). Mainly it is not an agricultural land but there are legal or not quite legal ways of conversion agricultural lands into other categories with the purpose to sell out for builders/developers. While agricultural lands usually costs several dollars per 1 Hectare, plots for developing may cost thousands times more expensive (for example, in Moscow area (close to Moscow) prices vary from 500 to more than 4000 USD per one hundredth part of hectare (20, T.Nefedova,1999).

Land reform in Russia passed several stages since its beginning in 1991, however it's rather far from its completion even now. After 10 years the Land reform has brought rather negligible positive results in a country dimension/scale. Despite it is stated that more than half of agricultural lands is in private property in fact this land property is rather virtual, because it is

only "a share on paper". Even more critical issue was that there were no mechanism or model of how to transform very large, sometimes gigantic agro-industrial enterprises possessing dozens of thousands Ha and staffed with thousands or many hundred of employees. As for really private ownership for agricultural lands – about 6 % of lands belong to farmers but they produce only 2 % of agricultural production, i.e. their efficiency in average is 3 times less than productivity of other producers. Major cause of this situation is that farmers as well as other big producers are specialized first of all at grain-crops while "small producers" whose business is based on individual homestead lands are specialized on potatoes and vegetables. This "division of labor" in combination with the high labor intensity (they use mostly manual labor) allows to those numerous (million of people) owners of small plots produce more than a half of agricultural production from 10 % of agricultural lands. In 1998 they produced 91,2 % of potatoes, about 80 % of vegetables, 56,6 % of meat, 48,2 % of milk, 29,8 % of eggs. Their productivity is by 25 times higher than in large agricultural enterprises, and by 35 times – than new farmers in average (8, Klyuev, 2000).

Majority of farmers possess rather small plots that doesn't allow to work effectively. Other huge problems are lack of experience of activity in the market conditions and, of course, extremely unfavorable general economic situation, lack of equipment and circulating capital that results in reduction of cultivated areas and productivity. For instance in Tambovskaya oblast' 62,46 thousand hectare of farmer's (new farmer) lands or 37 % were not used at all (25, N.Ogarkova, 2001). Major producers in 1998 were individual ones. Average farm area size in 1999 was approximately 50 hectare while average size of 15 % of leading/advanced farms makes 200-250 Ha which is comparable with farms in Canada and USA.

There are several categories of agricultural producers that run business rather successfully. The first one is about 40 thousands of farms, i.e. 15 % of total amount of registered farms (1999). The second one – about 4 thousands (of total 27 thousand) of new large collective enterprises (joint-stock companies, trust partnerships, limited societies, reformed sovkhozes and kolkhozes). Old collective farms were reformed or re-organized: some of them were reorganized rather formally (in terms of enterprise structure and activity), some of them – essentially, but the land property rights changed everywhere. Among 27 thousand of large enterprises there are 20 thousands of agricultural associations of all types (trust partnership, joint-stock companies, etc.), new co-operatives and 7 thousand of kolkhozes and sovkhozes (about 25 %), which saved their status (10, P.Sergeev, 1999).

The third one – homestead lands of rural folk which produce more than half of agricultural production. This phenomenon apart from reduction of the production volume of other categories of land users has some other reasons. There is the "division of labor" between peasants on the one hand and farmers and large enterprises on the other hand. Specialization on potato, vegetables, fruits, honey and some other products in combination with the high labor intensity (they use mostly manual labor) allows to those numerous (million of people) owners of small plots produce more than a half of agricultural production from 10 % of agricultural lands. In 1998 they produced 91,2 % of potatoes, about 80 % of vegetables, 56,6 % of meat, 48,2 % of milk, 29,8 % of eggs (8, N.Klyuev, 2000), in 1997: 51 % of wool, 74 % of honey, 77 % of fruits and berries, 73 % of vegetables, 30 % of eggs, 47 % of milk, 55 % of meat, 90 % of potatoes(35, "The Way in XXI century", 1999). Their *LAND* productivity is by 25-30 times higher than in large agricultural enterprises, and by 35 – 40 times – than new farmers in average (8, N.Klyuev, 2000; 30 and 40 times is my estimation – P.Kasyanov).

However, if we assess the labor productivity that's quite different picture since these 55-60 % of the agricultural production are manufactured by million of people, even dozens of millions,

while in the farming only several hundreds of thousands people are engaged. (As I indicate below - 44 millions of households of 50 millions ones living in Russia possess small plots, however only the smaller part of this number supplies the production to the market. (35, "The Way in XXI century", 1999)

Large enterprises and new farmers on the one hand and peasant (whose business is gardening and truck gardening) are characterized by quite different proportions of the production factors such as land, labour, equipment and technologies as well as different specialisation.

These small plots (unlike new farms or large enterprises) are almost not required a circulating capital, equipment or, more precisely, the peasants prepare the planting stock themselves or buy some seeds if necessary, the equipment is very simple and cheap or sometimes can be manufactured and/or repaired by own strength. Also they often use mainly natural fertilizer got from their own or neighbor's cattle. Small homestead producers are usually also less dependant on the market situation because first their profitability is rather relative notion because they do not calculate their labor expenses in monetary terms, they need not formal book-keeping and managerial staff (they are workers and managers themselves) and they do not have or almost do not have any other current expenses. They cannot brought themselves to ruin except some force majeure cases such as losses of all production due to fire or other disaster. However, this danger threaten all producers but its probability is very low. And even in this case (force majeure) a small producer will regenerate easier than large producers.

Small producers used to run modest but sustainable business. It's interesting to mention that the experience of the second half of the 19th century and beginning of 20th century showed that peasants were more effective than large enterprises used hired labor. S.Kara-Murza cites A.Chayanov's serious study (the well-known Russian agricultural scientist of the beginning of the 20th century): "In Russia in the period from 1861 (year of the serfdom abolition) to 1917 family's peasant homestead existed along with the large capitalist enterprises; the situation came to destroying the capitalist sector..."(22, S.Kara-Murza, 1999). The reason was that peasants had better economic results and just won in the competition. Usually this patriarchal mode of production is also environmentally sound because:

- It is fixed and proved by a tradition;
- Peasants produce crops for their domestic consumption and for the market at the same plot;
- Peasants live and work at their own plot, they feel this small piece of land as something with which they interact directly and unaided, it is not an abstract property just an assessed value of real property, it is not even just their nearest environment, it's their vital space.

Owners of land shares (all *27 thousands*) form the largest (in terms of area) group of land owners counting 11,3 millions of people concentrated up to 80 % of agricultural grounds. Employees of agricultural enterprises makes only 25-30 % of these owners, while pensioners and employed in a social sphere make about 70-75 % (6, Agrarian Program of the party "Yabloko", 1999).

Economically viable farms may function effectively, profitably only in some regions of Russia, under correct agrarian policy, only via evolution and can't be the only form of agricultural enterprises/producers. In this context it's important to mention the project on land privatization and reorganization of agricultural enterprises started in Nijegorodskaya oblast' in 1993-1994. This project was undertaken jointly by the International Financial Corporation, the Administration of Nijegorodskaya oblast' and the British Know-How Fund (financial support). It was a pilot project aimed to elaborate the "mechanism", the model: how to provide the land

privatization in combination with the real reorganization of former kolkhozes and sovkhozes, i.e. to find ways, options of how persons who got their shares can use, manage them in an efficient mode/way, for instance – to combine shares of several neighbors or to start the family business. (Frankly speaking this model or models should be developed before privatization started). In 1993 there were selected five rather typical enterprises for the pilot project.

Table 5. Ways of the agricultural enterprises reforming within the Project of The International Financial Corporation (23, "RosAgroFund", 2000)

N	Region (o. -oblast', K. – krai, R.-republic)	Number of reorganized enterprises	Total number of new enterprises	Including number of farms or other individual producers	Share of cases of reorganization without splitting, %	Average area in possession of new enterprises, hectare	Area transferred to new enterprises hectare	Number of land shares owners
1	2	3	4 a	4 b	5	6	7	8
1	Nijegorod-skaya o.	274	891	506	34	880	783870	114706
2	Orlovskaya o.	149	292	117	52	1522	444295	58434
3	Rostovskaya o.	40	168	79	42	1808	303723	23732
4	Ryazanskaya o.	9	64	-	-	524	33508	2189
5	Kirovskaya o.	15	72	39	7	610	43906	4709
6	Volgograd-skaya o.	14	156	97	0	848	132278	6610
7	Tul'skaya o.	2	3	0	50	4084	12252	1086
8	Samar-skaya o.	5	8	0	80	5047	40373	3540
9	Stavropol'-sky K.	4	4	0	100	4590	18359	3444
10	Omskaya o.	4	4	0	100	13023	52093	3394
11	Leningrad-skaya o.	5	5	0	100	2334	11672	2979
12	Krasnodar-sky K.	1	4	0	0	1490	5958	1086
13	Moskov-skaya o.	3	8	4	67	738	5900	2413
14	Vologod-skaya o.	6	7	1	83	1493	10452	2165
15	R. Kalmykia	1	1	0	100	62254	62254	516
16	Lipetskaya o	8	11	0	88	3436	37792	5905
17	Voronej-skaya o.	9	9	0	100	4367	39303	5312
	Total	549	1707	843	34	1110	2037988	242220

In 1994-1995 the developed model of privatization was spread to other three regions: Rostovskaya, Orlovskaya and Ryazanskaya oblast's. The positive results of the pilot project first stages allowed to recommend the model for other regions of the Central and Central Chernozem (black earth) zones. The gained experience and knowledge were reflected in the manual on the land privatization and reorganization of agricultural enterprises. Then, the project was spread to Kirovskaya and Volgogradskaya oblast's which were interested in two different models: reforming (of kolkhozes/sovkhozes) and their reorganization respectively. Finally the project embraced 17 regions and some of its important results obtained from 1993 to the mid 1999 are shown in Table 4. (Of course, project embraced only a certain share of lands and enterprises, different throughout 17 regions) (23, "RosAgroFund", 2000).

Table 5 displays different ways of the agricultural enterprises reorganization or reforming, so different only within the above Project. While in Volgogradskaaya oblast' all "old" enterprises were split and the lands were distributed among farmers in some other regions no one enterprise was split (note: within the project).

In 1997-1998 based on expert groups carried out the pilot project there were formed 5 non-commercial organizations: at the federal, interregional and regional levels: "RosAgroFund" (the Russian Agricultural Fund), "AgroMir" (Central Black earth belt), "YugAgroFund" (South of the European Russia),"NijAgroFund" (in Nijegorodskaya oblast') and "VolgAgroFund" (in Volgogradskaya oblast'). Their major purpose is to assist the agrarian reform carrying out, dissemination of acquired experience, carrying out training courses (they trained more than 15 thousand people until 2000. "RosAgroFund" states that new, reorganized enterprises have optimal size and number of personnel, they are more mobile in terms of timely and correct reaction on the market situation (demand), of course unless kolkhozes and sovkhozes (at least in soviet epoch) they usually do not admit excessive use of fertilizers. From the economic point of view the best results are achieved by trust partnerships.(23, "RosAgroFund", 2000).

"RosAgroFund" also states that the reorganized enterprises in Nijegorodskaya oblast' increased the grain-crops productivity by 10 %, dairy-cattle productivity – by 26 %.

In Siberia land reform resulted in a deep crisis: since 1991 (when reforms started) volume of agricultural production had been decreasing annually by 6,1 % in average (data of 1999). In 1998 the sown area reduced by 6,7 million Ha or 26 % from 1990, for cereal crops – by 5,0 million Ha or 30 %, in 1997 88 % agricultural enterprises were unprofitable (17, I.Kurtzev, 1999).

Livestock of cattle and pigs reduced by about 40 % (from 1990 to 1998), number of goats and sheep – by 70 %, meat production reduced by 40 %, milk – by 28 %, eggs – by 29 %, wool – by 78 %, grain-crops – by more than 33 %, 20 % of arable lands are not sowed (19, G. Gamzikov, 1999).

The first plots under privatized enterprises were sold out in 1993. Some regions (subjects of the Russian Federation) started the process before the Land Code was adopted. They followed the presidential Decrees and governmental regulations. For the beginning of 1999 in Samara there were sold about 1,5 thousands of plots, in Saint-Petersburg – more than 2000, about 200 plots were sold in Saratov, Orenburg, Chita (each), about 100 plots in Astrahan' and Leningradskaya oblast' (region), more than 50 plots in Amurskaya, Astrahanskaya, Kemerovskaya oblast's. Also the process is going on in Novgorodskaya, Vladimirskaya, Yaroslavskaya, Tomskaya, Kirovskaya and other Russian regions. As regards size (square) of sold out lands results were as follows: Orenburgskaya oblast' – 2600 Ha, Chitinskaya oblast' –

1900 Ha, Hakassia – 1300 Ha, Novgorodskaya oblast' – 800 Ha, Saint-Petersburg – 1200 Ha, Leningradskaya oblast' – 800 Ha, Vladimirskaya oblast' – 700 Ha etc. Selling of land plots under privatized enterprises took place in 55 regions (subjects of the Russian Federation) (16, E.Byakov, 1999).

In 2001 the Land Code was finally adopted, however it refers to a number of other laws or regulations that should be developed. One of these laws is "On turnover of lands of agricultural destination" has been a subject to intense debate. Despite the governmental draft passed the first reading and usually other stages: second and third reading of any law are rather smooth in this case further debate are expected. Simultaneously, the presidential Commission headed by Dmitry Kozak, vice-head of the presidential administration, analyzes and considers all effective laws, including those related to the land issues. The work is ongoing, however, preliminary proposals are to make amends to the Land Code, the federal law "On delimitation of the state property over lands", to the federal law "On protected areas" passed in 1995, March, "The town-planning code" passed in 1998, May. The commission proposes to abrogate a number of laws including the law "On the non-commercial gardening, truck farming and dacha's associations (of citizens)" from April, 15, 1998 N 66-3, the law "On the land melioration" (10.01.1996), the law "On the organization of the use of land" (18.06.2001), "On the state regulation of provision of the agricultural lands fertility" (16.07.1998). The reason isn't that there is no more need in appropriate activities but that these activities should not be regulated by special laws. The above amendments, as it is expected will be developed in the mid fall.

2. Overview of Environmental Impacts

As it was shown above private land ownership or, at least possession of small plots of household land, in Russia has a rather long story from the soviet period (pre-revolutionary (before 1917) situation is not considered). There was no state environmental control over small individual plots possessed by persons or families. However, there are many examples of good agro and eco practice in small family possessed plots. Since share of land belonging to families increased since privatization, one can expect that good practice and effective work were expanded onto former state lands.

Role of farmers is still not very important however there is evidence that farmers take care of their lands better than former sovkhozes (see item 3.1.4.)

Environmental problems of the soviet period were significant. Russian agriculture came to the reformation period with heavy and numerous environmental problems. Some of these problems can be solved via changing property relationship or via introduction of long-term lease and turnover of lease rights or/and life tenure of land. However, there is a number of ecological problems to resolve which it is required the state (regional and in some areas even federal) policy and good organization of the use of land.

Heavy burden of the soviet period land exploitation. In all regions of black earth (chernozem) zone: Orlovskaya, Saratovskaya, Volgogradskaya, Rostovskaya oblast's, steppe's parts of Krasnodarsky and Stavropol'sky krais as well as in some other territories level/degree of plowing up makes 60-70 % that is twice as much as in Germany which is characterized by a heavy density of population. This rate (60-70 %) exceeds an admissible level. Consequences are intensive wind and water soil erosions, dehumusification and other kind of land degradation. Croplands are 4 times as much as grasslands which have very low productivity being located in ravines, gullies and other awkward places (30,E.Molchanov,

2000; 26, "The Land resources and the state of soils in Rostovskaya oblast'" the Report. 2001).

In the northern and more humid regions such as Tverskaya, Vologodskaya, Arkhangel'sksya oblast's and some other regions there are grasslands of satisfactory productivity, however, for the last 25 years, the area of these grasslands reduced by 2-2,5 times. At the same time were not decreased areas of low productive grasslands in some very dry regions such as Kalmykia, Saratovskaya, Rostovskaya, Volgogradskaya oblast's where desertification is continuing. (26, "The Land resources and the state of soils in Rostovskaya oblast'" the Report. 2001).

At the beginning of the land reforms 112,8 million Ha were eroded; 30 % of arable lands are eroded (water or wind), this results in loosing 1,6 bln. tons of soil that equals 38 million tons of nutritive materials (USSR). Harvest at these lands is from 20 to 75 % lower. From 1954 to 1987 there were lost 25 million Ha of agricultural grounds due to bushing, natural foresting and swamping, including 14,2 million Ha in non-black earth zone (Nechernozem zone) including 3,2 million Ha of arable lands (33, A.Rutzkoi, 1993). It is appropriate mention here that in the 1990th agricultural grounds reduced by 31,4 million Ha including arable land – by 12,9 million Ha; from 10 to 12 million Ha is not used and bushing or ewamping (14, A.Rodin, 1999).

In major agricultural region humus losses over last 100-120 years (1880 – 1999) made iin average from 30 to 50 %. While hundred years ago Dokuchaev's (Dokuchaev was a famous scientist studied soils) analysis shown 7-10 % (on average) content of humus in black soils nowadays it is at a level 4-7 % and and in some regions (of black soil = chernozem zone) even about 3 %. (12, A.Sh'erbakov, 1999; 33, A.Rutzkoi, 1993) In intensive agriculture and farming zones soils are overconsolidated which results in harvest decrease by 15-25 %. About 134 million Ha were contaminated by through/via industrial air pollution (note: all data in the two above paragraph relate to the former Soviet Union) (33, A.Rutzkoi, 1993).

3. Environmental Impacts be Sector

3.1. Agricultural Land

Economic crisis (context). Agriculture like the economy in whole fell in a deep crisis, output reduction reached more than 40 % (in agriculture) and about 50 % (Russian economy).
In 1998 reduction of agricultural production in comparison with 1997 was 12,3 %, including 18,8 % - in agricultural enterprises and 4,1 % - from individual plots and farms (6, Agrarian program of the party "Yabloko", 1999).

Reforms (in a broad sense) resulted in a deep crisis one of the causes of which was an accelerated reorganization of sovkhozes and kolkhozes. The more area of an enterprise (sovkhoz or kolkhoz) was distributed among individuals the worse economic consequences came. This distribution was artificial and mostly virtual. 90 % of agricultural producers are unprofitable. Due to artificial sharing of entire, integral enterprises, collective farms were broken technological processes, crop rotation, agronomic, zootechnics and veterinary services. In overwhelming majority of cases labor productivity decreased. Farmer's economy has not been established: only 40000 of 270000 farms in the whole country contribute to (are involved in) a commodity production (6, Agrarian program of the party "Yabloko", 1999).

Despite formally more than half of agricultural lands has been privatized, actually only about 6 % of land belong to new producers – farmers who produce however only 2 % of agricultural production. For different crops their share of production varies: grain-crops 6,2 %, sugar-beet –

3,5 %, meat and poultry – 1,8 %, milk – 1,6 % (15, A.Soskiev, 1999). Also about 10 % of lands belong to small individual owners of vegetable gardens, gardens (plots of land attached to houses) etc. which produce about 55-60 % of agricultural production in the end of 90-th (in 1990 they produced only 24 %, however this increasing is much more due to general reduction of output by 40 % than because of the absolute growth of their production despite increasing land area in their possession by 5 times). 44 millions of households of 50 millions ones living in Russia possess small plots, homestead land (however, this phenomenon has a long story).

The shift of agricultural production to the compact homestead may slightly increase environmental pressure in these compact areas. However, this is to large extent a relative growth, while absolute growth is estimated at a level 25-30 % (their area increased by 1,9 times). So, outside these homestead plots environmental pressure reduced dramatically while in homestead this pressure hardly has increased (especially taking into account increasing land areas). These homesteads usually apply patriarchal technologies of plant growing and cattle-breeding which almost completely exclude impact of equipment/machinery. They better balance waste (manure) production and its utilization. However, ecological efficiency of this type of agriculture is not clear and needs in further special study. The environmental impact may be caused by mono-specialization, for instance, in potatoes growing as well as by many other factors, however there are data, including public opinion poll undertaken by professor Sergei Andryushenko in Saratovskaya oblast' (the final results of the processing data obtained via the poll will be available in June) confirming that people more carefully cultivate their own or the leased plots.(31, S.Andryushenko, 2001)

Hydro-chemical studies in Rostovskaya and Kurskaya oblast's shown that water quality in large rivers has been improving, while many minor streams are even more heavy polluted. The reason can be the increasing of fertilizer application by individual homesteads (there are no statistics on this) . (8, N.Klyuev, 2000).

It is also important to mention that homestead lands are in many cases inside towns or cities, including Kursk and Rostov on Don (30 % of territory in each city) and Novocherkassk (60 % of territory) while two latter cities are included in the list of the most heavily polluted (by the industrial air pollution) cities. Production and consumption of agricultural products there can be explained by very low level of incomes (subsistence farming). (8, N.Klyuev, 2000).

Land plots also are given in the vicinity of roads and railroads. Intensive cottage building in the 90s is carried out often illegally in the water protection zones that results in worsening of water quality including water bodies/reservoir used for drinking water supply as well as in some other negative impacts (8, N.Klyuev, 2000).

Sometimes, environmental problems are caused by misbalanced structure of agriculture. For instance in Kurskaya oblast' among farms proportions between the plant growing and the cattle-breeding are as 16:1 while the average for all types of enterprises is as 1,06:1. So, farmers are not able to provide their fields with natural fertilizers. Another example: in Rostovskaya oblast' 68 % of farmers specializes in growing sunflower, share of land under sunflower makes 45 %. It's well-known that sunflower is very destructive for soil, the "biological weapon" that tends the soil exhaustion, generating specific diseases and pests. Minimal periodicity for sunflower must be 6-7 years, while in the given case it is approximately 2 years in average. Share of lands with sunflower should not exceed 14-16 % instead of actual 45 (8, N.Klyuev, 2000; 26, "The Land resources and the state of soils in Rostovskaya oblast'" the Report. 2001).

During the 1990s there were lost additionally about 30 million Ha or more than 22 % of total sown area (this area exceeds the Great Britain's territory) (8, N.Klyuev, 2000).

Generally, it looks like a positive from the environmental point of view process, especially in steppe and forest-steppe areas which are undoubtedly over-plowed up. However, spontaneity of this process substantially reduces its economic and especially environmental efficiency. First, losses of land happen in distant areas while in areas close to cities and towns, in suburbs where environmental pressure/load on land was high before reforms, land use become more and more intensive. Secondly, lands that aren't used any more as agricultural nevertheless should be put in order to be useful for environmental, recreational, forestation purposes or as grasslands. In fact these lost lands are just covered bushes, trees and often "export" pests, vermin and diseases. Third, losses of agricultural lands should be compensated by increasing efficiency of remaining land's use.

It's possible to conclude that clear positive environmental results in agriculture are the consequences of reforms in a broad sense that means not only land privatization or processes in agricultural sector but overall economy reform tended to a dramatic reduction in both industrial and agricultural production. This reduction resulted in numerous positive environmental effects however rarely comparable with the production volume reduction (especially taking into account that soil contamination by many kind of chemical substances is rather inertial (takes time to bring out). Maximal reduction of cultivated lands takes place in the remote areas, more than marginal for agriculture regions: Murmanskaya oblast', Chukotka, Magadanskaya and Astrakhanskaya oblast's and some others. However, much more important indicator is losses of arable lands. The biggest arable land losses happened in the Southern steppe regions which are among the major agricultural producers such as Rostovskaya, Saratovskaya, Krasnojarsky Krai (about 25 % reduction), Orenburgskaya oblasts, Altaisky Krai (about 15 % reduction). (8, N.Klyuev, 2000).

Decreasing of environmental pressure on pastures happened also due to reduction of livestock: cattle (2,1 times), pigs (2,3 times), sheep and goats (about 4 times). This is especially important for areas with the danger of desertification such as Kalmykia, Dagestan, Tyva, Altaisky Krai, Astrakhanskaya and Rostovskaya oblasts. Reduction of the livestock has also other positive consequences such as reduction of wastes from live farming, decreasing needs in forage reserve, prevention of soil's over-consolidation which is the cause of worsening physical features of soil, increasing of evaporation and finally to the soil pickling. Unfortunately, often the above waste are utilized as organic fertilizer even worth than in the pre-reform period due to lack of equipment, money for fuel. So, insufficient amount of cattle also breaks optimal proportions between agriculture, farming on the one hand, and the cattle-breeding on the other hand (8, N.Klyuev, 2000).

While large enterprises reduced their capacity dramatically, peasant's homestead saved livestock. This resulted in shifting cattle-breeding to the individual homesteads. In Kurskaya oblast' in 1998 homestead had 25,2 % of cattle against 11 % in 1991, 56,6 % of pigs against 22%, 60,8% of sheep and goats against 9% and 57 % of poultry against 50 %.(8, N.Klyuev, 2000). Chemical fertilizer application by large enterprises (no statistics about individual homestead producers) reduced from 88 kg per hectare in 1990 to 16 kg in 1998, natural/organic fertilizers – from 3,5 tons – to 0,9 tone according to(8, N.Klyuev, 2000) and from 3,7 tons (in 1986-1990) to 0,4 tons according to (18, A.Postnikov, 1999). Delivery of fertilizers to agriculture decreased since 1990 to 1998 by 10 times, including phosphatic manure potash fertilizers – by 15 times (9, L.Rakovetzkaya, 1998). In some regions situation is even more dramatic: application of chemical fertilizers in Novosibirskaya oblast' reduced by 25

times, in Tambovskaya oblast' be 36 times, in Omskaya oblast' by 70 times. Natural fertilizers were not applied almost at all in Amurskaya and Volgogradskaya oblast's, Tyva and Kalmykia. It is important to mention that environmental problems caused by chemical fertilizers in the soviet time were due to inappropriate technology of its application rather than amount (80-90 kg of chemical fertilizer is at the level of India and far below than in many countries: USA – 130 kg, China – more than 300 kg, the Netherlands – 550 kg per hectare!). (8, N.Klyuev, 2000). More details on the fertilizer application are presented in Table 6.

Table 6. Application of fertilizers for different crops (18, A.Postnikov, 1999);

Type of crop	1990	1998
	totally applied, million tons	
Grain-crops	4,9	0,6
Sugar-beet	0,6	0,1
Sun-flower	0,2	0,02
Vegetables and potato	0,4	0,05
Forage crops	3,4	0,3
	Applied per hectare, kg	
Grain-crops	81	12
Sugar-beet	431	125
Sun-flower	85	5
Forage crops	78	10
	Share of lands where fertilizes are applied, %	
Grain-crops	67	20
Sun-flower	65	15
forage crops	63	15

As for the "new farmers" the share of lands where fertilizers are applied even less and equals 10 % (9, L.Rakovetzkaya, 1998). In 1998 there were applied only 60 million tons of natural fertilizers against 482 million tons in average in 1986-1990 and against 1 billion tons as it was stated in the approved by the President "The target integrated program of stabilization and development of agricultural production in the Russian Federation for 1996-2000" (so, "reality reduced the program" to 6 %).

The above mentioned economic crisis as well as heavy/bad ecological heritage of the soviet agriculture system are much more powerful factors predetermining environmental impact in agriculture than current consequences of privatization. It means that under circumstances when only about 14 % of land were in fact privatized and 85 % of producers working at this land often struggle just for survival, it is often unrealistic to expect from their side to concern about long-term environmental consequences.

It is well known fact that use of pesticides and fertilizers reduced dramatically – approximately by 7-10 times in average. There are two causes: first excessive use of both types of chemicals in the soviet epoque and second (stronger one) absence of money to buy them nowadays. From the first sight it looks like a completely positive from the environmental point of view factor. However, it is good only in case if we are going to abandon these lands and not to grow anything in the future.
Of course, for the environment's favor it's better do not cultivate land at all and do not grow crops. However, if it is intended to run sustainable agriculture one should keep, maintain

balance of chemicals in soil. Another consequence of reforms is reduction of cultivated lands, these land become spontaneously afforested, covered by bushes and low quality forests.

Positive individual results obtained due to the land reform:
There are many good examples of how private initiative resulted in a success in agricultural production and rational land use or even land rehabilitation. First of all I'd mention a group of people headed by Mr. Alexander Vygovsky. In November, 1991 they created in Tarusa (small town in Kalujskaya oblast') at their own modest resources a unique organization named "Environmental rehabilitation Service". It is a non-governmental organization of scientists-entrepreneurs and farmers which operates in the field of restoration and reconstruction of post – anthropogenic landscapes, land reclamation, adaptation of urban dwellers, immigrants and refugees to work on the land; also they search for new forms of harmonizing land use. They started from acquiring of 26 Ha of degraded and deserted lands. They rehabilitated this land and created a model of land rehabilitation and cultivation. Simultaneously they yield, harvest at this land. Now they run courses of the land rehabilitation and ecologically sustainable land use practices. Other services the organization does are (24, A.Vygovsky, 2000) :
a) reconstruction of degraded lands (from the computer to a practical implementation);
b) providing scientific, methodological, instructive and legislative information for land users.
Also they produce seeds and planting material (cultivated and wild plants) as well as apiary products.

Of course, this example does not mean too much in a country scale. However, I found it necessary to briefly describe this case because it is a bright example of environmentally friendly thinking combined with energy, private initiative and this case occurred due to reforms in Russia and first of all due to the land ownership reforming. Another important aspect is that the organization doesn't limit scope of its activities by its own rather small plot of land. On the contrary they have ambitious purposes to assist all land users interested in environmentally sound land use and cultivation, as well as land and soil rehabilitation.

Another example, a farm headed by Mr. Andrei Davydov, also from Kalujskaya oblast'. Former Captain of the Russian Army (retired in 1991), then a businessman rented in 1992 156 Ha of deserted lands for 20 years. Between 1992 and 1994 he created a farm, bought equipment, cleaned fish-farming ponds, built a power transmission line, almost completed building of a road, built 3 houses for workers. These years production was unprofitable. However, since 1994 the enterprise (farm) gets certain support from the regional government: compensation for infrastructure development, courses, seminars and consultations of the regional Agricultural Department, as well as some subsidies for cattle breeding. Now his farm uses about 600 Ha of lands only a small part of which is privatized, and Davydov runs profitable business. No doubts that farmers like Davydov are interested to use the best and ecologically sound agricultural technologies allowing to get sustainable harvest. (27, A.Davydov, 2000)

This example of course is not as unique as the previous one and for sure there are rather many similar cases in different regions of Russia. They may differ in some details: total land area, specialization, shares of rented and own lands, initial environmental conditions and climate etc. In many cases there were no initial substantial environmental problems or they were not obvious or detected. The important note is that farming (I mean newly created private farms) is not a widespread practice or to be more precise share of such farming in land ownership and especially land production is still very modest and it is to a great extent a reflection of objective causes.

One can mention that the World Union of Nature protection 2 years ago started the Program "Sustainable agriculture and development of rural areas" aimed at environmental and social purposes/results (29, D.Cherniahovsky, 2000).

3.2. Forest Land

There is no reason in framework of this study to pay attention to forest lands since they can not be private. Probably it can be reasonable to mention that timber cutting down reduced in 90-th by 2,5-3 times in comparison with the end of 80-th and now volume of timber cutting down officially makes only 22-23 % of allowable level. However, unofficial (criminal) cutting is a widespread practice especially in the Far East regions where very high demand, first of all from China and Japan sides, stimulates all kinds of law violation. Many experts state that criminal timber cutting is comparable with the allowed one. This situation is for sure very dangerous as in economic sense as in social one and most of all – in environmental sense. Not so critical but similar situation takes place in the North-West region of Russia and everywhere if there is a high demand for timber. At the same time more distant forested areas become more and more wild, state resources for the forest care have been decreasing since beginning of 90-th.

3.3. Wetlands

As for wetlands, overwhelming majority of wetlands is located at the lands of the following 3 categories:

- Forest fund lands
- Protected areas land
- Water Fund lands.

Lands of all these categories can be only in the state ownership.

If bogs, marshes appear at agricultural lands it doesn't mean that owner of this land should restore a wetland ecosystem. Agricultural lands are not intended/designated for wetland's ecosystem protection. On the contrary, unless it is a plot of land classified as agricultural land the owner should manage it agricultural land. If it is not possible any more this area can be attributed to the Forest Fund lands or Water Fund lands or protected areas depending on its location. In this case it'll be turned/passed to the state ownership.

There are good examples of how some enthusiasts take care on wetlands or parks and forests but their actions/activity is not linked with the property rights over these lands. In many cases these people live close to respective wetlands, parks or forests (or rivers – in this case we deal not only with river but also strip of land along rivers). In most cases these people form a non-governmental organization and get grants, usually foreign ones for their activity.

3.4. Current public lands

There is an officially fixed (by law) procedure of turning public forest land into other categories, for instance, for settlement, as well as general rules of turning lands from one category to another. Nevertheless, there are cases of encroachment into public lands.

Definitions (1,The Land Code of the Russian Federation, 2001):

Agricultural lands – or more exact: Lands of agricultural destination - are lands outside of settlements given for agricultural needs/purposes as well as destined for these purposes;

Lands of industry, energy, transport, communication, broadcasting, television, information system, lands for space activities, lands for defense, safety and other special destinations are lands that are located outside of settlements and are used or destined for activity of organizations or other subjects in the field of industry, energy, transport, communication, broadcasting, television, information system, space activities, defense, safety and other special destinations;

Lands of protected areas are lands that have special environmental, scientific, historic, cultural, aesthetic, recreational, sanitary or other value; these lands are withdrawn from economic activity and turnover and a special legislative regime is established for them;

Lands of the Forest Fund are all forest lands (including lands covered or uncovered with forests but destined for forest renewal such as cleared spaces, glades, fire-sites etc.) and destined for forest growing non-forest lands such as roads, marshes, gaps, vistas etc.;

Lands of the Water Fund are lands covered with water bodies, lands of water bodies protection zones as well as land given for hydro-technical constructions, water inlets and other water facilities and protection zones around the above constructions and objects;

Reserved lands are lands owned by the state or municipalities and not given to citizens and legal entities with the exception of the Redistribution Fund lands.

References

The Land Code of the Russian Federation, 2001.

The Forest Code of the Russian Federation, 1997.

The Water Code of the Russian Federation, 1997.

The State Report "On the state of the environment in 1998", Moscow, the State Committee on the Environmental Protection, 1999;

The State Report "On the state of the environment in 2000", Moscow, the State Committee on the Environmental Protection, 2001

Agrarian Program of the party "Yabloko", 1999.

The federal law "On the protected areas", 1995

Agricultural land usage: environmental consequences of the reformation processes. Russia in 90-th. N.N.Klyuev. 2000.

The economic and environmental problems of the agrarian reform in Russia". L.Rakovetzkaya.

"The rural self-government and peasant's co-operation – social economic symbiosis". P.Sergeev, doctorant of the All-Russia Institute of the Agrarian Issues and Informatics.

"Natural Resources is the National Wealth of Russia", Moscow, the State Duma edidtion (the Parliamentary hearing proceedings), 1999, INCLUDING:

"On the impact of land relations on increasing of economic and social efficiency of property rights distribution", I.Starikov, Deputy-Minister of Economy of the Russian Federation.

"Destiny of the Russian Black Earth" A.Sh'erbakov, academician of the Russian Academy of Agricultural Science.

"Land issues: necessity to change the course" V. Miloserdov, academician of the Russian Academy of Agricultural Science.

"Ways to increase the soil fertility and the land reform", A.Rodin, Corresponding Member of the Russian Academy of Agricultural Science.

"Social and Economic consequences of the reforms" A.Soskiev, Corresponding Member of the Russian Academy of Agricultural Science.

"Privatization of the lands under enterprises and the investment (against real estate) attraction become the priority tasks" E.Byakov, The Russian Fund of the Federal Property.

"The principles of regulating the land relations in agriculture (the Siberian example)", I.Kurtsev, Doctor of Economics, Corresponding Member of the Russian Academy of Agricultural Science.

"The care on the arable land fertility is the major condition of the food safety of the country", A.Postnikov, P.Popov, A.Kondratenko.

"On the issue of the Siberian natural resource use in agriculture", G.Gamzikov, academician of the Russian Academy of Agricultural Science.

"The Land Reform and agriculture", T.Nefedova, Doctor of Geography, Institute of Geography RAN.

"Land shares in the collective land use", K.Pankova, Doctor of Economics, professor of the All-Russia Research Institute of economics, labor and management in agriculture.

Sergei Kara-Murza, "Favorable Lenin's mistakes", magazine: "Nash Sovremennik", N 10, 1999.

On the project on land privatization and reorganization of agricultural enterprises. Information from the site of the organization "RosAgroFund". http://www.raf.org.ru

A. Vygovsky. The site of the "Ecological Restoration Service" http://tarusa.ru/~ers/history.html

"The current problems of peasant's homestead development in Russia", N.Ogarkova, Ph.D. in economics, researcher of the All-Russia Research Institute of economics, labor and management in agriculture, 2001;

"The Land resources and the state of soils in Rostovskaya oblast'" the Report. 2001.

Proceedings of the Round Table on the "Sustainable development of the rural areas". http://www.icptacis.ru/archive/ including:

"On the role of farming in achieving and maintaining the sustainable development of rural areas", A.Davydov, head of the farm;

"Carrying out the project "Providing employment and increasing incomes of a rural population", I.Dmitrienko, Vice-Head of the Administration of the Lodeinopol'sky district of the Leningrad oblast';

"Program "Sustainable agriculture and rural areas development", D.Chemiahovsky, Project Manager;

"Optimization of the land use to provide sustainable development of rural area", E.Molchanov, main researcher of the Soil Institute named after V.Dokuchaev.

"Social factors of the agriculture transition to Sustainable development, S.Andryushenko, V.Rubtzova, V. Pahomov, O.Evdokimova. The Institute of Agrarian Issues of the Russian Academy of Science. In the book "Regional agriculture systems: economy and sociology. Saratov, "OOO General LPD, 2001, pp. 179-184.

Draft the Federal Law "On turnover of lands of agricultural destination"

Agrarian reform in Russia. A.V.Rutzkoi. Moscow, 1993, Pp. 176.

"Russia in figures", Brief statistical manual, Moscow, 1999

"The Way in XXI century" (series "The Systemic problems of Russia", Moscow, Ekonomika, 1999. Chapter 12. "The Agrarian and Industrial Sector, rural communities and food provision of the Russian population".

4.13 Slovakia

Author: Lívia Bíziková

1. Overview of Privatization

When did land privatization begin?

From the beginning, the privatization was understood as a key issue towards the transformation of the economy. The land privatization and restitution began in 1991 (in former Czechoslovakia), Act no. 330/1991, Act no. 229/1991 and its amendments laid down legal framework. The process of restitution [land, movable and immovable property] was followed by the transformation of co-operative farms according to the law adopted in 1992. After 1994, the privatization of state farms began effectively. The both mentioned laws represented the initial approach to state farm privatization, but in 1991-1994 many restitution and privatization claims were settled prior to start state farm privatization. Several privatization options were considered, but no final decision was taken during this period. In 1993, it was adopted the Act no. 282/1993, which regulates the restitution claims of church. In 1991, Slovak Land Fund was established with the aim to manage the land under state tenure and to supervise the process of restitution and privatization.

To what extent is the process completed? (i.e. provide an estimate: "land privatization is in its early stages" or "land privatization is about 75% complete".)

In 1993, there was clear that the restitution will take much longer as it was expected. The under estimated human and financial capacity of cadastres offices, lack of records and uncertainty of geodetical plans to confirm the rights for ownership were the main reasons of the delaying the process of restitution. In 1995, the government implemented the programme of reconstruction of geodetical plans and other documents in order to reconstruct the distribution of land property according to original owners.

The process of restitution is still not completed. In 1993 was expected the ending of the process in 1998. The above-mentioned problems of cadastres offices postponed the date of finalization [amendment of law no. 180/1995] on 1. September 2005. The number of submitted claims' was132 741 to December 1992. Until 1996, the 60% of submitted claims were completed, in 1998 it was 85% and in 2000 it was nearly 93%. High amount of claimants stemmed from the extremely high fragmentation of land ownership [For details see the overview of privatization process].

How much private land currently exists in your country? (Please include the definition of "private" used in your sources, i.e. does it include land held by groups, associations, municipal owned companies, communities, etc.)

Provide available breakdown of privatized land: agricultural/urban. Further, if possible include here the specific amount of each type of land that has been privatized (agricultural, forest, industrial, wetland, and rangeland)?

Private ownership – title to property; it implies that the owner is free to exploit or dispose of the assets. There is no available data about the proportion of restituted or privatized urban land.

Except of naturals persons, the land ownership was broadened to trade companies and co-operatives [registered in trade registration system], municipalities, churches and other registered religious groups.

The process of restitution was the fundamental process to restore the property rights. In the transition, the term restitution is used in two different cases: one involves only state property, the second only property associated with former collective farms. In previous regime, land ownership of individuals within the collective farms remained legally, even if they were not free to exploit it.

Practically, the whole property was on the hands of state [Table 1]. [For detailed information about transformation of collective farms see overview of the privatization].

After the privatization and restitution, the agricultural co-operatives have changed the ownership structure, and operate as a shareholder company type of enterprise. Agriculture land under state ownership belongs to Slovak Land Fund. More than 45% of state owned land is forest. The new structure of the ownership is presented in table 3.

Both the Slovak Land Fund and natural persons, who do not use the restituted land, lease it. Taken this into consideration, the agriculture land using is divided parts between: agriculture co-operatives, and small farmers. The most significant increase was obtained in the case of land using by small and medium entrepreneurs, which number increased about 25% in last 10 years. The agriculture co-operatives decreased their land using [owned + lease] 15-20%, because the original owners took out their own lands from the co-operatives during the restitution. Also increased the number of small farmers about 7.6%. [Table2, Chart 1.] The percentage of the leased land is the highest in case small and medium entrepreneurs [95%] less in small farmers [32%] and in agricultural co-operatives are about 15%.

Restitution and re-privatization of state forests

Re-privatization – process of restitution of forests. For the re-privatization of forests, there were submitted about 86776. Form this number, until end of 1998, 40 322 claims were completed with whole volume 813000 ha. Nearly ¼ of claimants were refused. About 15% left for the next years. Uncompleted claimants will not change significantly the forest ownership distribution, because the claimants are about small forests size, but probable increase the fragmentation.

As, it was mentioned in case of land restitution and privatization, we have to distinguish between forest ownership and the use of them. For the new ownership structure see table 3. Because of strict regulation about harvesting, forest restoration, but also missing knowledge about forest managing; many of new owners prefer to lease the owned forests back to state. [See chart 2.] It is about 1/3 of private owners and 1/5 of shared ownership lease their forests back to state. [Under shared ownership in Slovakia, we understand the community-run type of forests, where the municipality and the owners control the management activities either.] For the differences in forests management practices see part 3 - forests.

What privatization activities are currently being implemented?

Currently, the process of restitution is nearly completed. Finalization of process allowed to extent the privatization of other agriculture companies, which is completed. The important part of restitution is the de-fragmentation of land. it means, if somebody has lands in different places, Slovak Land Fund can exchange for the fragmented parcels. The de-fragmentation was the part of the adopted laws in 1991, but it has not been done yet.

The main cause of the delaying is the reconstruction of cadastre offices and the low interest of the government. The government does not recognize the de-fragmentation as an important issue. For properly completed de-fragmentation it is necessary the correct records about original ownership and about new owners. It will be possible after finalization of modernization of cadastres offices and their records. The completion of the cadastres offices restructuring is expected in end of 2005.

Another opened issue is the problem of compensation for persons, which land was excluded form the restitution or their activities are restricted in order to safe some natural resources in the land.

Describe land privatization efforts in your country since 1989. In your discussion of the issues, please differentiate between environmental effects of the privatization process, versus environmental effects of the breakdown of Soviet-era infrastructure, policies, systems.

The restitution and privatization have represented the very controversial issue in the whole aspects. In case of legislative background, there were adopted 12 acts and amendments. The first laws adopted in 1991, which was limited the restitution to the natural persons. The process of restitution was not automatic, but person had to submit application with his claim. The restitution was restricted to the 150 ha of agricultural lands, but not more than 250 ha with forestland together. The deadline for the claims was December 1992. The trade companies and different types of co-operatives [closed in 1948] were excluded form it. Also the foreign individuals were excluded, because the obligation of having Slovak/Czech citizenship. This obligation was later to changed, but still is nearly impossible to privatize land for foreigners. The responsibility for managing state owned land and the land of unknown owners; also the supervising the process of the privatization and restitution are the tasks of Slovak Land Fund.

The process of restitution is still not completed. In 1993 was expected the ending of the process in 1998. The mentioned problems of cadastres offices postponed the date of finalization [amendment of law no. 180/1995] on 1. September 2005. Finally, the restitution will restore the private ownership of land and also increase the process of privatization. The land under the non-finished process of restitution could not be the part of the privatization until 1999. In 1999 the amendment has allowed the privatization of land with uncompleted restitution [also with a financial compensation goes to the new owner].

It is difficult to estimate the percentage of land available for restitution 65% of whole lands in Slovakia, together with agricultural, forests, grassland and other land.

Privatization of agricultural co-operatives[68]

The transformation co-operative farms were a key part of the reform process, as it affected the property of enterprisers operating on almost 70% of agricultural land. **During the previous regime the land owners of the land in the co-operatives were known, but they could not use their rights.**
The principal goal of the transformation process was to established clear and individual ownership rights for all the property of these co-operative farms. More than 50% of authorized persons [former land owners who can prove ownership of some of their property being used by the cooperative] decided not to become members of the transformed agricultural enterprise.

They have an average share of land around 40% of total value of transformed enterprises. This means that a large part of assets [cash - payment equal to that total value] could be withdrawn massively in the last possible time, which was in 1999. It was clear, that the economic situation of co-operative farms would not be able to meet the future requirements of property withdrawal from non-members – which raised the prospect of wide spread bankruptcies.

In November 1995 the Slovak government adopted Act No. 264, which amended Act No. 42/1992. This amendment required transformed enterprises to deliver property certificates in a form of negotiable securities so-called "co-operative farm participation certificates". This amendment clearly cancels the options of the withdrawal of the property and replaces it with negotiable securities. The amendment also provide for entitled persons the opportunity of obliging the enterprise to return them their property shares in kind for the purpose of private farming. So this would be versus asking for a cash settlement. This provision, which had to be used before 29 February 1996, was used in a few cases.

Thus the new legislation pushed the process of transformation of co-operatives away from "one man one vote" principle to a **shareholder company type of enterprise**. In long-term perspective such changes can move towards a more efficient and more flexible management.

The case of 10% co-operatives, the process of transformations was completed very quickly. In the hands of these co-operatives remain all equipments [irrigation, storage], which can increase production and also minimize environmental impacts. It is because they would be keeping all inputs safely stored and not spread out among many different farms with different environmental standards. The co-operative were the transformation took longer time lot of equipment was sold. The worth financial situation could not allow them to invest into new technologies either with aim to decrease environmental impacts of the production.

For the confiscated property such as livestock or machinery, there were settled formulas for the calculation their value in the current prices. For this property, the entitled persons had right to get the similar certificate as for land - "co-operative farm participation certificates" or financial compensation. Before1995, there was the opportunity to ask for the direct financial compensation. After 1995, the certificates were given for the entitled persons. For the financial compensation, the co-operatives could sell some machinery and livestock or other property to create financial source for the compensation.

[68] OECD 1997

Privatization of state farms[69]

The large part of state farms was privatized under the process of restitution and compensation procedures; the remainder was privatized under the legislation governing the privatization of state property. Restitution claims had to be settled out of state property before privatization could be initiated.

State farms were not very attractive for potential private investors because of their outstanding debts and loss-making operation, so the government considered the special scheme for the privatization. Although the initial approach to state farm privatization was finalized in 1992, it was not until 1995 that the privatization of state farms started to make progress.

The privatization of state farms accelerated in the second half of 1996, when the direct sales method was used. Under direct sales procedure, state farm property [land, machinery, livestock] was sold to a bidder selected by the National property fund. The end of 1996 had privatized 61% of those farms, 38% of them were into liquidation because of their poor financial performance.

Under state tenure left: 26.4% of agricultural land, 47% of forests, 27% of grassland. The agricultural land, grassland are leased to different private subjects. The forestland is managed by stated owned company. **There are no state farms left. State is not the owner of livestock.**

Private farming, which's is derived the most income from the agriculture production appear after 1989. Individual farmers are not required to register as other entrepreneurs, but are subject to a simple registration to municipal office. The small farmers have a good relationship to their lands and majority of them has adequate education and experience. The small farms prefer to use granted money from the state. The Ministry of Agriculture offers some grants to promote ecological ways of farming, to invest into the irrigation facilities. These opportunities are used by less than 15% of small farms. It is mainly because of difficult and strict initial conditions for the farms to be suitable to get the grant. It is also the problem of lacking information about grant possibilities.

The loans from banks, it is not widely used by small owners. This is also caused by strict initial condition and also by the absence of the interest from the banks. The restructure of banks were finished in previous year. Probably in coming years, the situation will be better in case of bank loans for small farms. The privatization was continued with the privatization of state owned companies processing agricultural outputs.

Fragmentation

The extreme fragmentation of land ownership is one of the fundamental problems of land management in Slovakia. In 1993 some 9.6 millions plots were registered. The average size of a plot was 0.45ha and some 12-15 people owned each plot. This situation was due the historic development of economic, legal and social relation in Slovakia. The negative consequence is the delaying the process of restitution. The final proposed step of the restitution is the de-fragmentation of small parcels located in different places to one bigger in one place. The unfinished de-fragmentation is slowed down the preparation of long-term investments.

[69] OECD 1997

Role of the central and local government

The laws regarding the private ownership are widely accepted and recognized as necessary steps forward to the transformation of our society. Also the security of land tenure rights was completed few years after the revolution.

The process of land privatization and restitution were managed and controlled by the central government. There were no direct repots about the corruption during the restitution, but the corruption is one of the biggest problems of Slovakia. Take this into account; the corruption had significant power during the process of restitution.

In 2000, there were settled the legal framework for public administration reform with the aim to increase the competences of local government. The new territorial units with local government started work on 1. January 2001. According the adopted legal framework between the competencies of local government will be: communal, territorial and species protection of nature and landscape, protection of trees outside forests, quality and quantity protection of water managed by municipalities, municipal environment protection and programs, municipal waste management and its programs, compliance with the building law, including building permits issuance for selected constructions, environmental monitoring and environmental information. The proper functioning local authorities in whole aspects are expected after 2005.

Land market in Slovakia

Generally speaking, the land market is undeveloped in Slovakia. For correct assessment, there is missing the complex monitoring system, which can refer exact data about the market. Only small parcels for gardens and for house or cottage construction are being sold. Presently, the agriculture land for agricultural production is leased not sold. The market prices for land differ from the location. In some location, it is about ten times higher than the official price [according the land quality]. Especially in mountain areas, the prices can be lower about more than ten times as the official price. The developing of the land markets depends strongly on the increasing of the production and also on the support to agriculture.

2. Overview of Environmental Impacts

Does any evidence indicate that private land ownership has improved management of certain natural resources (e.g. agricultural policies, forest management)? Describe areas where this is the case.

The collapse of the previous regime ended the large-scaling farming. The elimination of administered agricultural prices for crops and livestock and lack of public financing for subsidies sharply changed the input-output ratio. Declining of inputs followed the decreasing of overall support to agriculture.

At the present, the environmental risk caused by agriculture is mainly associated with lack of developed infrastructure, education and codes of good farming. Taking this into account, the **support of increasing** overall agricultural outputs **can** affect the environment negatively in the future.

Environmental problems caused by agricultural do not appear to be a priority issue of the government. The agriculture is treated with fragmented measures under supervising of the Ministry of Agriculture and Ministry of Environment. The environmental measures for forested lands are controlled separately according to Forest Management Plan.

The environmental measures for agriculture are controlled by ministry of Environment. There are adopted 8 acts about water quality without any special interest to agricultural water pollution. All acts are under supervision of the Ministry of Environment. Also other acts about land contamination, sewage systems, and plant protection are under control of the Ministry of Environment. The monitoring of the agricultural impacts to environment is again divided between the Ministry of Agriculture and Environment. Agricultural authorities monitor the condition of soil and Ministry of the environment monitors water and other negative impacts. In last five years, there are lot of programmes were implanted to improve the monitoring systems.

In end of 2001, several restrictive measures to water pollution from agriculture were imposed by new act. The adopted law will come into force on 1. January 2003. The aim of the act is to control and minimize the nitrate pollution of water from agricultural production. The cat will be under responsibility of Ministry of agriculture.

The Act. No. 307/1996 "Soil protection" gives only general measures for the environmental impacts. There is no functioning controlling mechanism and no settled penalties by the Ministry of Agriculture. In the end of 2002, the new laws about the arable land protection [limits for pesticide, fertilizers, crop rotation practices] will come into the parliament. The responsibilities of controlling authority of the agricultural practices are under preparation. The enforcement of the acts are very weak and the process of efficient enforcement increasing very slowly.

The Ministry of agriculture offers some grant programmes for framers to ensure more sustainable agricultural production:

- Soil protection programme – the aim of the programme is to support ecological way of farming to promote natural condition of soil
  Budget for 2002: 170 mil. SKK
- Overall support of investments in agriculture - support the investment to irrigation systems and other necessary machinery
  Budget for 2002: 2100 mil. SKK
- Forest protection programme – support the forests regeneration activities
  Budget for 2002: 550 mil SKK

The relation of the private owners to their land is differs from the each case. Some of the are tried to ensure proper management of their lands. On the others hand, many of them look into their land as an opportunity to gain yields in the short time. Majority of the new owners are the descents of the original owners. Many of them do not have necessary agricultural or forest management qualification.

What have been specific problem areas (e.g. liability for industrial sites, land contamination)? Have specific incidents of human health/environmental impacts been reported? Are these primarily urban or agricultural?

How have these problems been addressed? Is there a process by which polluted sites have been/are being remedied? Have agricultural lands identified as being contaminated been taken out of production as a result of the "privatization" process, either by individuals, communities, associations, or other interested parties?

The **contamination** of land is the problem only in selected areas. According the statistics of ME SR, 0.4 % of land is designated as highly contaminated. The highly contaminated is the problem, which persisted here from previous regime. It is problem of the lands in urban areas around big factories in and some buildings used by Soviet army. These areas were excluded from the restitution, but there are not exclude from the privatization.

Firstly, there was the obligation for all private companies of the factories to clean and to remedy the contaminated sites. This fact decreased the probability of privatization. Finally, this approach was rejected and there is no legal pressure to force the private companies to clean the sites.

In 1996, there were adopted the act about the obligation to remedy the site for owners. Unfortunately, there is no functioning mechanisms or authority to control the fulfilling of this obligation. There were adopted a programme for municipalities to get state grant to remedy their contaminated sites. The grant is valid only for municipalities were the industrial parks will be established.

There are some activities to remedy these sites, especially the contaminated places left by Soviet army. Government finances the activities. There have not been direct incident about human health/environmental impacts reported.

What kinds of lands, have been excluded from privatization (forests, wetlands, contaminated properties, riparian zones, biologically rich lands)? (Please provide definitions used by the government in characterizing any lands that have been excluded.)

From the restitution and privatization were excluded: cemetery, sports and other recreational facilities, mining areas, natural protected monuments. Either was excluded the land for special purpose [area of the boarders, etc.].

Please describe other environmental impacts not specified above.

3. Environmental Impacts by Sector[70]

3.1 Agricultural Land

The role of the agriculture in the total economic activity is declining. The share of GDP was fallen from 7% in 1990 to 5.08% in 1998. The employment in sector is decreasing, but still is higher than it is necessary to the effectiveness of the sector. The employment rate dropped down form 13.28% to 5.73% in 1998. More than half of the land is planted with cereals, mainly wheat and barley, and about the quarter by fodder crops. The volume of planted fodder crops decreased in last years in line with the reduction of the number of the livestock. Except sunflower and fresh vegetables, the production of all other crops reduced. [Chart 3.] Against increasing cost of inputs, the prices of outputs increased about 10-30% during he period of 1990-1998. The yields grow very slowly only about 5-15% without subsidies and about 10-35% with subsidies. The yields in agriculture production are higher than in livestock production.

[70] Statistical data in this chapter: Blaas 1999; Varinský 1994; ME SR 1999; ME SR 2000; MA SR 2000; MA SR 2000.

The reduction of production has influenced the agriculture co-operatives and small and medium entrepreneurs either. The positive trend of increasing production is obtained only in case of small farmers. They represent 9% of agriculture producers. They are less depended on big investments as bigger producers. The average size of their land is less than 10 ha, which can be owned or leased. **[The average size of restituted plot was 0.45 ha.]**

The decrease of both plant and livestock production were about 10.5-25% during period 1991-1998. The absolute level of subsidies remains nearly at constant level in 1991-1999. The increase was only about 5-15%.

During the transition periods the **use of fertilizers** decreased sharply in all form of farms and companies. However, in current years, the use of fertilizers slightly increasing, the level still remains under more than half of the pre-transition period. [See chart 4.] The main reason for such decreasing is the enormous growth of the prices of chemical substances [2-3 times] against the growth of the prices for agricultural inputs [increase about 10-30%] and reduction of subsides. The using of organic fertilizers declined because of decreasing the number of farm animals.

During the communist period the average level of inorganic fertilizers [phosphates+potassium+nitrates] was about 240 KG/ha. Currently the level selected inorganic fertilizers dropped down to 43.5-45.5 kg/ha in 1993-1996 then rather increased to 55.5-57.0 kg/ha in 1997-2000. The slight increases are expected in next years, but the level still remains significantly bellow years before 1989.

The **acidification** of agricultural land is detected. To decrease the negative impact is require the increase the amount of lime. The extreme acidification is still not occurring thanks to decline amount of fertilizers and SO_2 emissions.

The situation is identical for the using of **pesticides**. The increase of their prices, worsening output-input ratio and decreasing subsidies are the main reason for the declining. The current level remains at the half of the pre-transition use levels. The strong drop was visible during 1989-1992 then moderate reduction was presented. These trends are characteristic for agriculture co-operatives, small and medium entrepreneurs and small farmers either. [See chart 5.]

The crop rotation **was one of the agricultural practices used in the previous regime. Now, using of its decreased, because of strong orientation to profit in short period of time. Many framers or companies are oriented their plant production to the crops with the maximum profit. It is clear, that the using of crop rotation is minimized, but presently none significant negative impacts were reported. Negative effects of extremely exhausted land can appeared together with ignored crop rotation and low level of used fertilizers.**

Land fallowing was not used in Slovakia. This trend continues currently.

Irrigation practices

The irrigation of centrally planned agriculture was adapted to high size collective farms. After the process of privatization and restitution, partially the irrigation equipments remain under state control and partially on the hands of the different private owners. Their co-operation to provide successful services is effective only in small cases.

New investments were not installed only the uncompleted irrigation systems from previous regime were finished. Presently, less than 70% of irrigation systems work, but they are in very bad technical conditions. The consequence of his negative situation is that the irrigation for smaller parcel is on the boarder of the effectiveness. The final costs of irrigation are minimized by the subsidies, which from 40-60% are invested to the irrigation expenses. The effects of the irrigation were decreased by improper choice of plant.

The condition of drainage systems is even worse. Only 40% are functioning properly and in many cases the ground water increase can happen. The negative impacts of bad technical conditions of the drainage systems affected hardly the small landowners, where is the possibility of bigger investments lower. The state subside system can participate in the financing the irrigation equipment about ¼, but it is still not enough.

Water

Slovakia is quite rich in water, but the resources are very vulnerable. The majority of water pollutants in agricultural areas come from the community public sewage systems.
The wastewater of agriculture production is treated 97.3% and the agriculture. The negative impacts to groundwater and soil are rise from the storage of manure. Only 53% of farms have proper equipment to the storage. Nearly in half cases, it is the equipment of the agricultural co-operatives, which remains from the previous regime.
Water quality for irrigation is improved in last year.

Grazing

According to our legislation, grasslands are type of land and to change them into another type, the natural person need the permit of the ministry of agriculture. After 1989, the size of grazing increased in mountain areas. In the previous regime the grasslands were re-cultivated and used as agricultural lands, but with the very low production. Now, these areas are turned back to grasslands. During previous regime the grasslands were used very intensively. Currently, in case of decreasing the number of livestock [Chart 3], the using of grasslands decreased. It has negative effects to biodiversity, especially in mountain areas. The grass species with high size and strong root systems replace smaller species, which is are in many cases vulnerable or engaged. Owners of small grassland without livestock or low number of them are used to burn down the own grasslands.

The **decline in the total acreage of arable land** and **increase of permanent grassland area** continues, stimulated by subsidies to support the permanent change of plots of land. During 10 years period, the proportion of grasslands increased about 4%.

The erosion is the problem of the whole region. According to statistical data, in 1999, approximately 60% of land is extremely or hardly affected by erosion. The high level is caused by strong erosion of grasslands, from which more than 65% are strongly affected. The land is endangering mainly by water [50%] and wind [10%].
The erosion is recognized as an urgent problem of land in Slovakia, but the real steps and policy to combat erosion is expected in the new act about soil protection in the end of 2002.

Biodiversity was affected significantly by large-scale agriculture during recent decades.
A high proportion of habitats was destroyed, especially wetlands, wildlife habitat and landscape.
Thanks to decreasing of production and used chemical substances in agricultural co-operatives

the negative effects are declining. On the other hand, the grass ecosystems rich in species are more exposed to danger due to agricultural land abandonment.

3.2 Forest Land

Forest in Slovak republic is the key resource for the economic development and environmental protection. About 1.9 million ha of Slovakia are classified as forestland with net forest area of about 1.8 million ha. From theses amount 15.7 of forests are recognized as protected areas. About 28% of the forest area is located in mountainous areas over 800 meters a. s. l. Forests have a good balance of broadleaved and coniferous species.

Forests in Slovakia have important environmental functions. They have rich and diversified flora and fauna. The economic importance of the forest sector as reflected in national accounts is modest, but with increasing tendencies in last couple of years. Only about 0.5% of GDP is produced by the forest sector. Share of GDP is stable during last ten years. The wood industry – including the mechanical, furniture, pulp and paper sub sectors – adds considerable value to the raw material from Slovak forests. Its contribution to GDP is approximately 7%.

The major long-term environmental stress on Slovak forests, which sustain from the previous regime, is the aggressive air pollution from the country and its neighbors. The forest legislation applicable for Slovak forests has been developed progressively over the last five centuries until 1970s with the aim to regulate forest management and limiting private ownership. Present forest legislation mostly reflects this long history. It has been amended in 1993 in order to fit the requirements of the recently adopted national policies. This amendment provides a good basis for ecological forest management focused on strong regulations to protect forests from being converted into other forms of land use, detailed regulation on reforestation, improvement felling, harvesting. Of course, the exclusive rights of state to use forests have been abolished. Under the forest legislation the forests have to be **managed under mandatory Forest Management Plans** and under the control of a specialized forest manager in case of each type of ownership.

With the emergence of non-state forestry, there is a pressing need to develop and support a new approach to forest management planning in order to fit a wider range of forest sites together with specific needs of their various owners. Government commission is preparing new guidelines for Forest Management Plan, which aims, on the one side, at the developing broad forest management principles for areas than the previous management units, and at developing simplified Forest Management Plan for various owners within these areas, on the other side.

According the prepared management plans of Forest Management Plan the **annually** allowed **cuts** have increased very slightly about 5-7% during last 10 years. It is about 5181000 m^3 of wood. The tree cutting increased in the both state and non-state owned forests. In the non-state forests the cuts are about 10% higher than in forests used by state in last five years. In either state or private forests, the annual cuts remain under the level allowed by forest management plans.

The effectiveness of wood processing is higher in private owners. The costs for harvesting is about 10-20% lower in private forests and the processed wood is higher quality. There are no areas where significantly greater tree cutting were officially reported. According to my consultation, the illegal cutting is appears in case of some poorer villages in the eastern Slovakia.

State forest enterprises are responsible for the management of state owned forests, from regeneration to logging, according to Forest Management Plan. **The allowed managing activities are prepared as Forest Management Plan and set up mandatory by law.** Whole overview of investment into the forests, with managed area and cuttings are described in tables 4, 5.

The continuing reduction of subsidies can affect the forest management in negative way. For the current level of subsidies see chart 6.

The investments to forest protection and forest management are higher in privately used forests including municipalities. [Charts 7, 8.] This is because of **inefficiency occurred in the state entrepreneur**. Main problems of State forest entrepreneur are over employment [4 person per 1000 ha] and managing lot of non-core activities such as apartments, social centers. Also not whole yields from timber activities do not remain in the state entrepreneurs, but it goes to state budget. From the state budget the entrepreneur gets money, which amount decline from year to year and not enough to cover the basing needs of the entrepreneur. Partially the subsidies for forest development and protection are used to cover other losses of the state entrepreneur. Also the private users have opportunities to get grants from the state or another sources.
The restructuring of SFEs is proposed probable for next year. The decreasing investments to forest management in a both side arise in case of using old equipments.

Since 1 January 1999 Act no. 287/199 Col. of laws has affected the **functional classification of forests** in SR. [Chart 11.] Thus a detriment is arising due to increased costs and restrictions in the management of forests in accordance with the requirements of nature protection and reduction of benefits due to restriction on full-use wood production. Unfortunately, the financial compensations of non-state owners of this detriment are not regulated by legislation.

Age composition of the Slovak forests differs at present from the theoretical structure. Regarding proportion of age categories in the forested areas, percentage of middle age categories (5-9) is higher than optimal percentage. Other age categories are below this level. 13 year old forests and older include mainly protected forests and some special-purpose forests with 150-year cutting age and continuous regeneration period. With regard to the fact that a majority of these forests do not have the requested composition of all-aged natural forests, more attention is paid to their gradual change into closer-to-nature types of forests in order that they could better fulfill their public welfare functions.

About **erosion** in forests, there is only scattered information. The exact information is about the erosion from the forests roads, which is in Slovakia higher than the erosion from arable lands. The whole lengths of roads are constant during last decades, but the investments to the roads are in both types of forests nearly zero. Only in the half of them were installed measures to minimize the erosion.

3.3 Wetlands

Unfortunately, the wetlands as a land are not monitored neither by Ministry of agriculture nor Ministry of the environment. Some of our wetlands are the part of protected areas with the special requirements for their management. But, they are still not excluded form the restitution; only the new owners should fulfill the special management activities. [Also see the chapter about public lands]. The parts of wetlands, which were drained in the previous regime, are

recorded as agricultural land and they make part of privatization without any special requirements.

In the western part of the country were restituted wetlands **to private ownership**, which made part of border areas in the previous regime. Some other wetlands, which make part of Ramsar convention, were restituted. Thanks to the activities of NGO, the proper management of them is proted in these areas.

The drainage activities decreased about 30-40% against the previous regime. It is caused by the lack of suitable technical equipment for draining and not by supporting special management of wetlands. The restoration of drained wetlands is practically not promoted with programmes or other allowances by the government.

3.4 Current public lands

The percentage of protected land relative to total land area of the country is about 1.8. The problem of the compensation for public land is still unsolved. The land considered as natural monuments are excluded from the privatization and restitution. The all-level protected areas [national parks, nature preserves, etc.] are not excluded, but the owners have to respect the special management requirements of the areas. Currently the average share of private ownership of protected areas is about 30%. The rest 70% of protected areas are under state control.

The new owner has to respect the special management practices in the protected areas.
For limited activities in the area, especially woodcutting is minimized; the owner has right to get financial compensation from the state. The Act. 24/2002 regulates the measures for a calculation of the compensation. The most difficult the situation of the forest protected lands. Because of the long-regeneration process the price of the non-cutting wood are difficult to set down.

The problem is worse, because of unclearly defined responsibilities between the Ministry of Agriculture and Ministry of Environment in case of protected areas. For the forested protected areas the Forest Management Plan are also valid with some special management activities to save the natural resources. The Ministry of Environment claims, that these regulations are weak to ensure the protection. The satisfactory answer to this problem requests the creating the fund for protected areas, which will be able to buy the parcel form the owners and co-ordinate the management.

References

Blaas, G., 19990. Analýza vývoja po nohospodárstva a potravinárstva v obdocí rokov 1990-1998. Crocus, Bratislava. [Analyses of the development of agriculture and food production in 1990-1998].

OECD. 1997. Review of agricultural policies. Slovak Republic, Paris.

Green report. 2000a. Forestry. Ministry of Agriculture of Slovak Republic.

Green report. 2000b. Agriculture and food industry. Ministry of Agriculture of Slovak Republic.

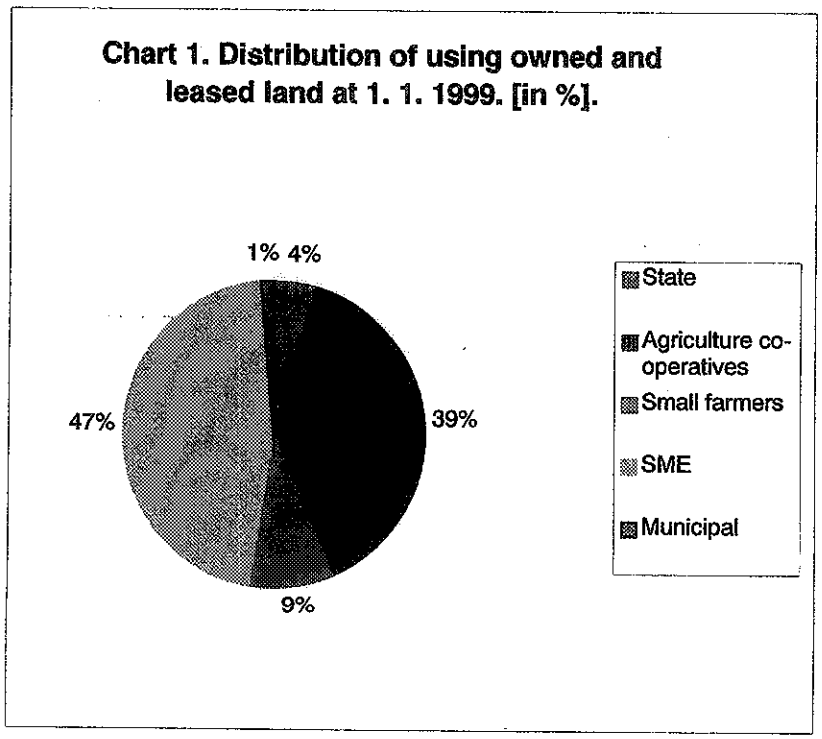
Návrh koncepcie usporiadania pozemkového vlastníctva. 1993. Ministry of Agriculture of Slovak Republic. [Proposal of arrangement of land ownership.]

Varinský, J . 1994. Lesy a lesnictvo Slovanska – stav a perspektívy [miscellany]. Slovak Academy of soil research. [Forests and forest management in Slovak republic – state and perspectives]

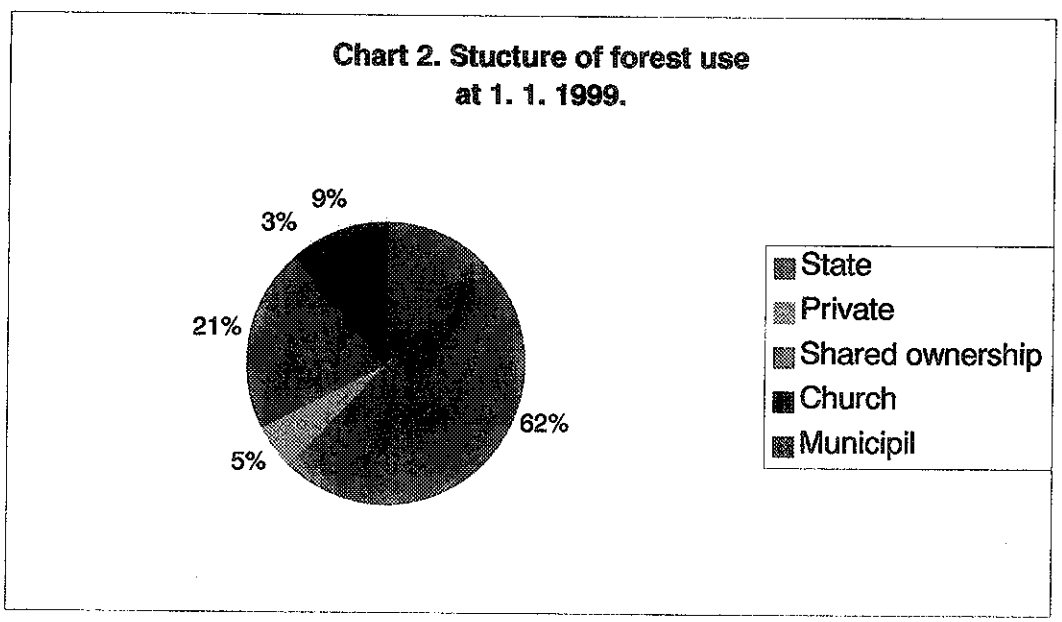
Klinda, J. & Lieskovská, Z., 1999. State of the environment in Slovak republic. Report. Koprint, Banská Bystrica.

Klinda, J. & Lieskovská, Z., 2000. State of the environment in Slovak republic. Report. Koprint, Banská Bystrica.

Annex



Source: Ministry of Agriculture SR 2000b



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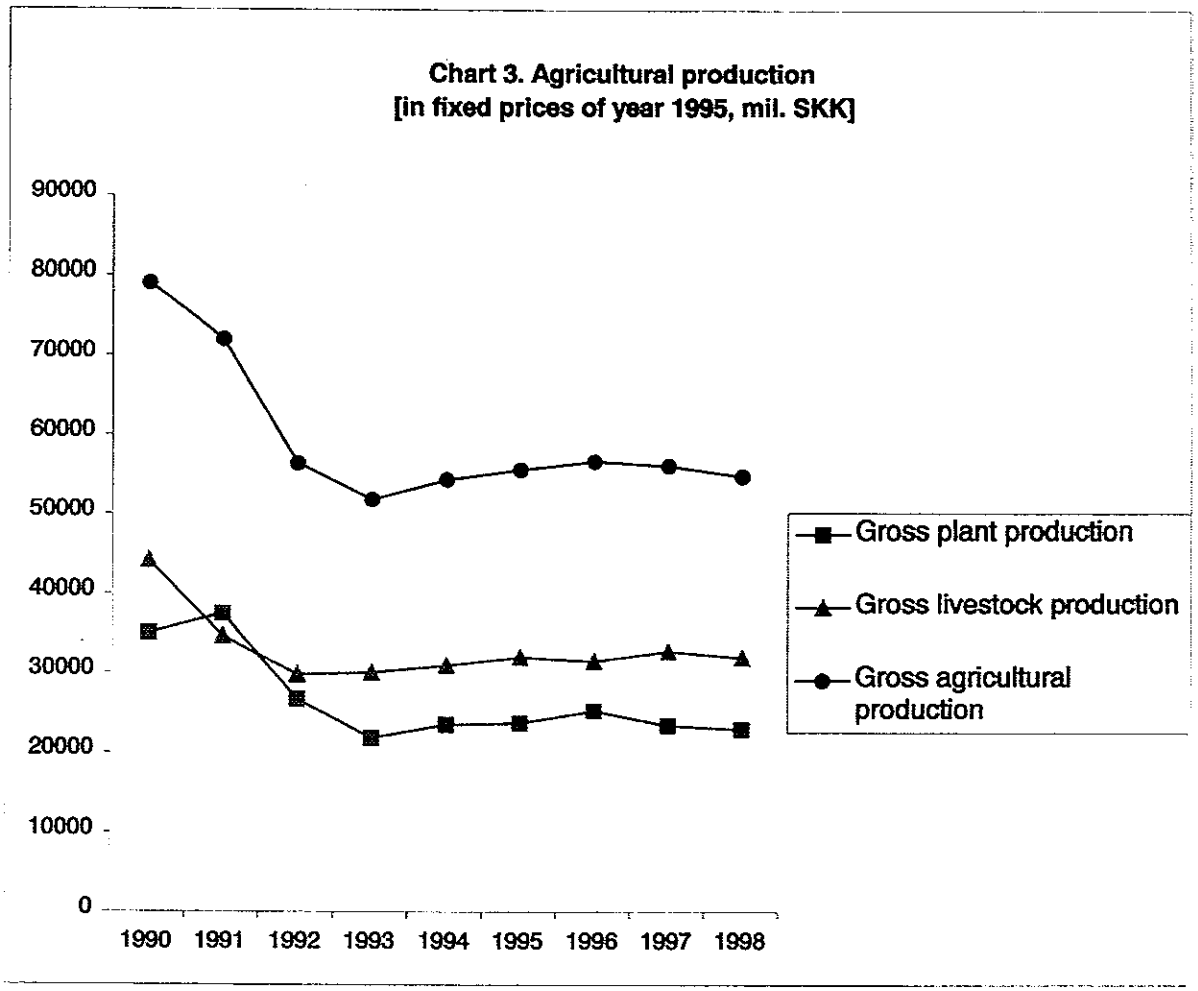

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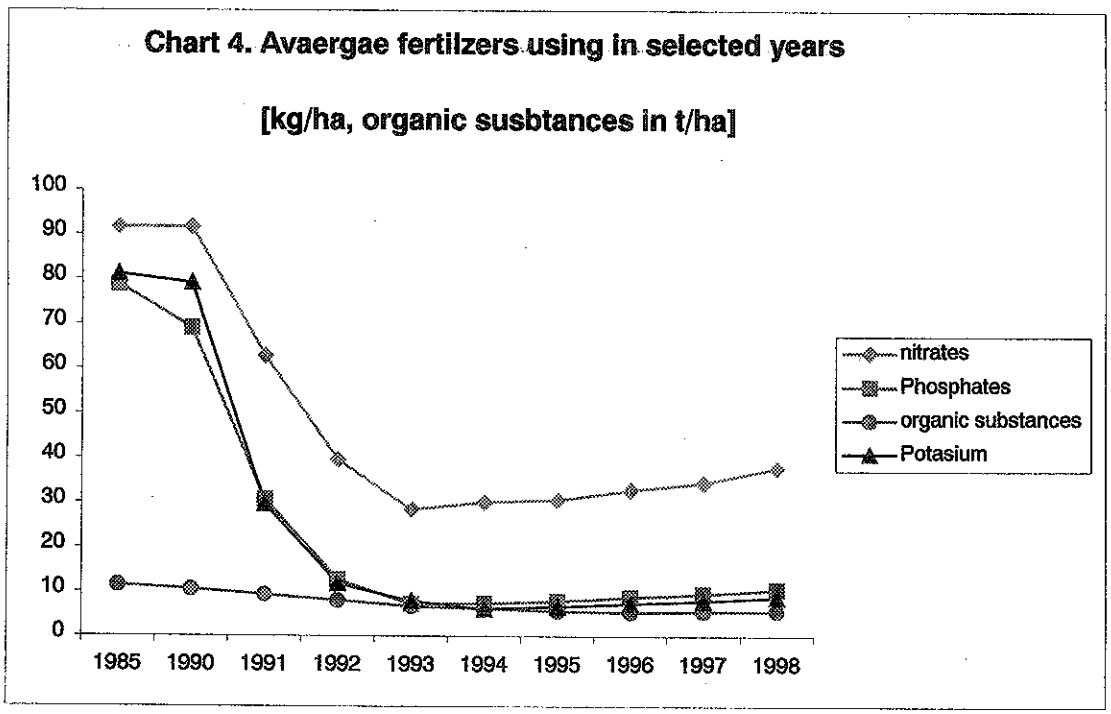

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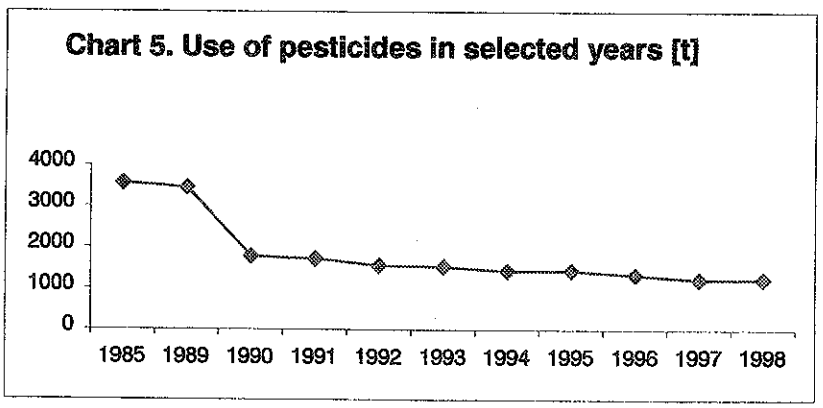

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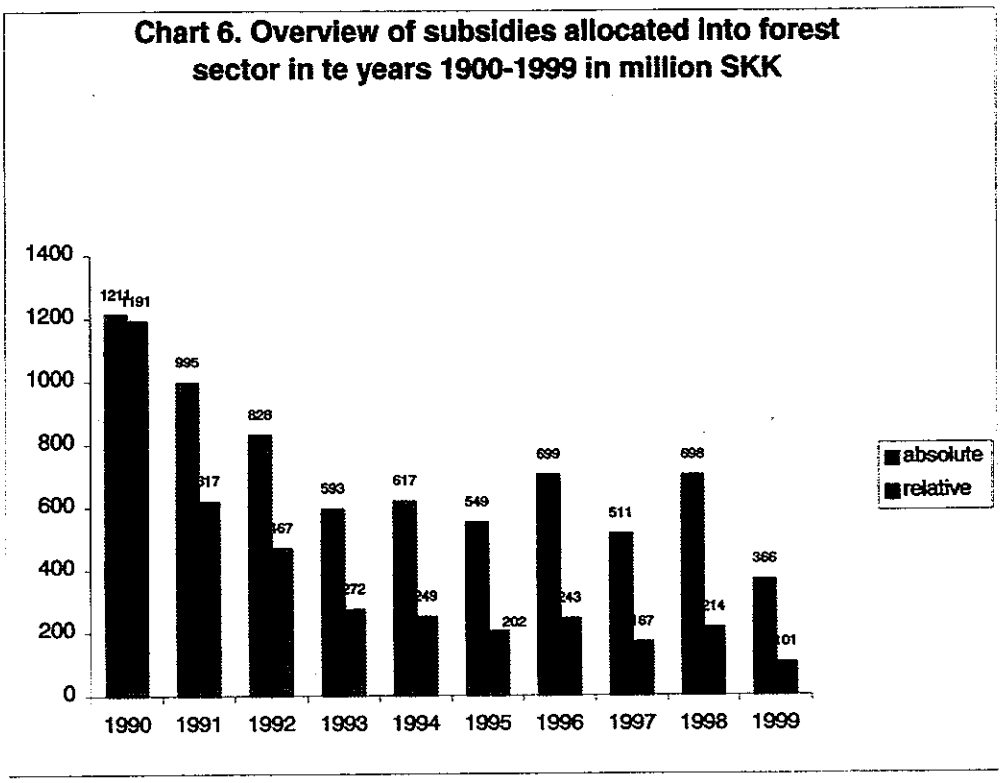

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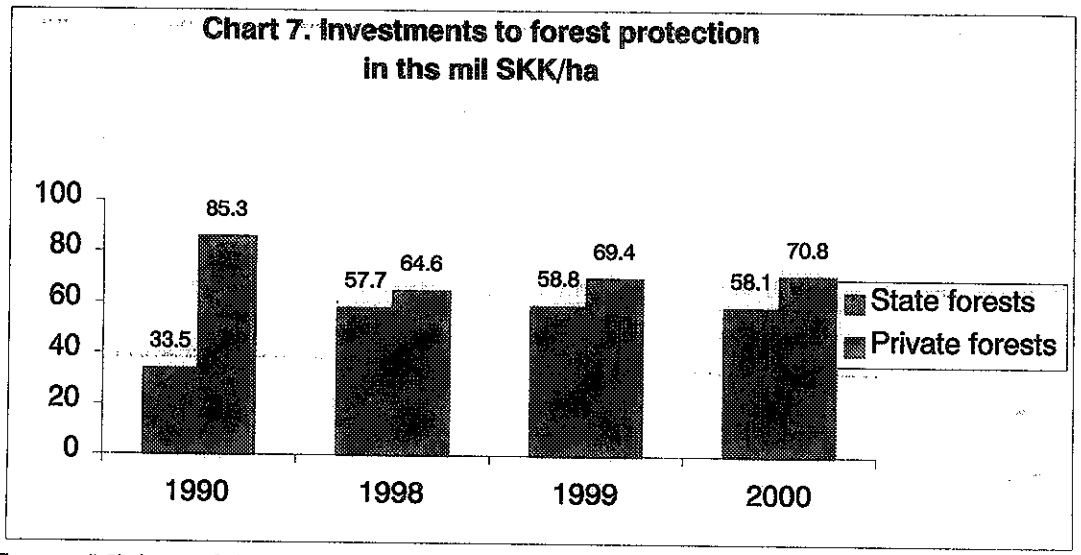
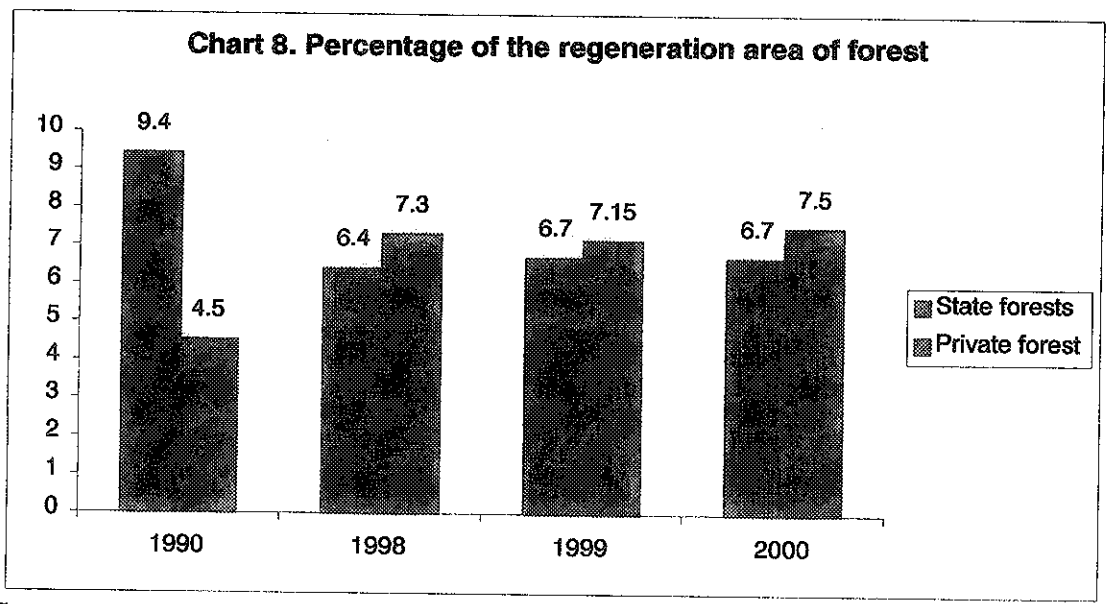
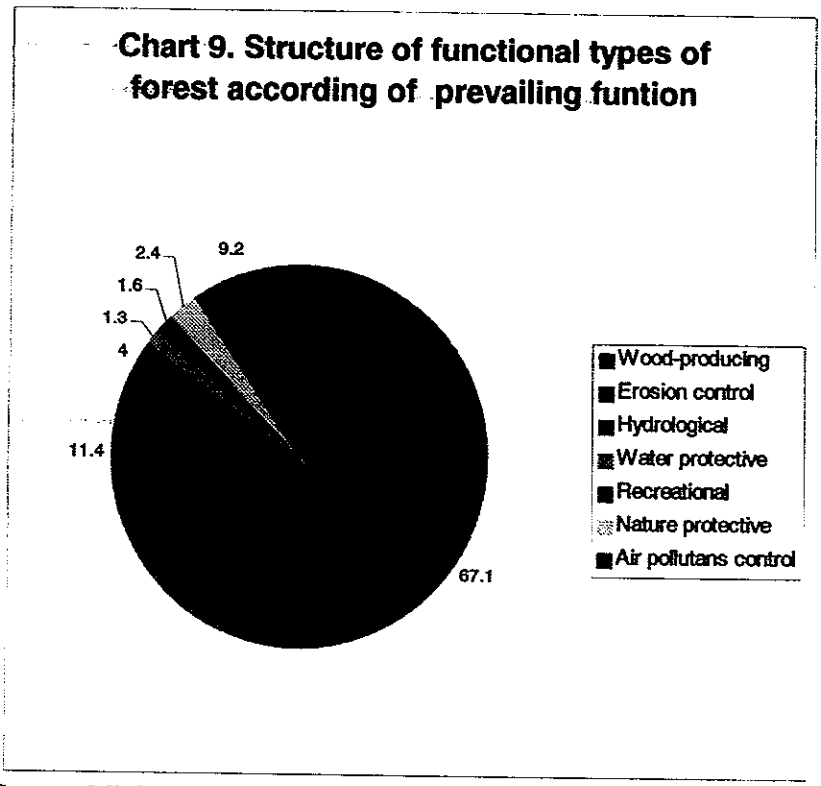


Source: Ministry of Agriculture SR 2000a, own calculation.



Source: Ministry of Agriculture SR 2000a, own calculation.



Source: Ministry of Agriculture SR 2000a

Table 1. Distribution of land ownership: in 1970 and 1980.

	1970			1980		
	Land in ha	No. of farms	Average land ownership	Land in thousands ha	No. of farms	Average land ownership
Cooperative farms	2632000	1902	767	2477000	638	2596
State farms	2632000	85	4315	2477000	64	563
Owners of gardens	2632000	324099	1.19	2477000	283171	0.45

Source: Blaas 1999

Table 2. Current economic structure in Slovak agriculture.

	Number	Size in ha						Average area [ha]
		<50	51-100	101-500	501-1000	1001-3000	>3000	
Cooperative farms	893	10	8	74	229	486	86	958
Small farmers								
Trading companies	868	86	52	212	174	246	98	1320

Source: Blaas 1999

Table 3. The structure of the restituted and reprivatised land according to the type of land.

	Agricultural land [in%]	Forest [in %]	Grassland [in%]	Other [%]
State	26.4	47	27.3	57.4
Agricultural co-operatives	69	0.5	65.2	26.7
Private	4.5	39	7.2	15.4
Municipal	0.05	10	0.2	0.5
Church	0.07	3	0.1	0.02

Source: Blaas 1999

Table 4. Selected parameters of non-state forests.

	Specific-units	1990	1998	1999	2000
Forest regeneration investments	ha	1924	5549	5390	5678
Weeding and shrub cutting [treatment of young stands]	ha	870	952	4176	4200
Protection of young forest stands	ha	12295	34005	34176	34126
Forest protection [direct costs]	Ths SKK	41000	54000	59773	61015
Timber together	Ths m^3	929	1844	2015	2050
Investment construction together	Mil SKK	71	155	160	170

Source: Ministry of Agriculture SR 2000a, own calculations

Table 5. Selected parameters of state forests.

	Specific units	1990	1998	1999	2000
Forest regeneration investments	ha	18524	8123	8324	8536
Weeding and shrub cutting [treatment of young stands]	ha	15084	3793	6418	6600
Protection of young forest stands	ha	188220	47899	42689	45995
Forest protection [direct costs]	Ths SKK	46000	59939	60456	59986
Timber together	Ths m^3	5032	3164	3173	3231
Investment construction together	Mil SKK	581	422	366	382

Source: Ministry of Agriculture SR 2000a, own calculations

4.14 Ukraine

Authors: M. Kobets, V. Pridatko, and V. Serenko

1. Overview of Privatization

When did land privatization begin?

Officially, land reform and collective farm reorganization in Ukraine started in March 1991, six months before Ukraine gained its sovereignty. Land reform in Ukraine is conducted in three main stages. The first stage is privatization and transfer of agricultural lands to collective ownership of agro-companies. Second is division of communal lands into lots and issuance of land certificates, verifying lot rights of each member of a collective agricultural enterprise (CAE). The third stage is reorganization of CAEs into new, efficient agricultural entities based on private ownership of land and other property. The first two stages are nearly completed.

First Stage of Reform: Land Ownership Transferred from the State to CAEs

To create favorable conditions for privatization of agricultural lands, two new forms of land ownership were introduced in 1992, in addition to standard State ownership: collective and private. Ukrainian legislation provided for two ways of privatizing agricultural lands. First, the State began the transfer of agricultural lands from the Reserve Fund to private ownership by farmers. Second, the State initiated measures to bestow on members of collective agricultural enterprises (CAEs) the ownership over land used by their CAEs.

When exclusive State ownership of land was abandoned in 1992, almost all agricultural lands were in use by CAEs, which had replaced the traditional collective and State farms. Therefore, privatization of lands collectively owned by CAEs became the main target of Ukrainian land reform. The underlying idea was to privatize these lands while organizing agricultural production, on the basis of combining the benefits of private land ownership and large-scale commercial farming, thus escaping the danger of miniaturizing farm size.

During the first stage of land reform, the attempt at implementing this idea resulted in transferring lands to collective ownership. That is why on March 13, 1992 the Verhovna Rada adopted a new version of the Land Code introducing collective land ownership. Thus commenced the first stage of land reform, its main objective being the transfer of land (except for agricultural lands that belong to State reserve) to collective ownership by CAEs and some other farm enterprises. This objective was generally achieved. As of January 1, 1999, 99.5% of CAEs had received the lands in their use in the new framework of collective ownership. 27.6 million hectares, i.e. 45.7% of agricultural land in Ukraine, passed from State to collective ownership. Collective ownership then was transformed into private ownership by reorganization of CAEs and land sharing process.

Second Stage of Reform: CAE Members Receive Land Share Certificates

However, it soon became apparent that the transfer of land to collective ownership by CAEs in itself does not convey land ownership to CAE members. To strengthen the legal status of CAE members as co-owners of land, a Presidential Decree was issued on November 10, 1994 *"On urgent measures to accelerate land reform in the sphere of agricultural production."* The Presidential Decree re-focuses reform efforts from transferring lands to collective ownership by CAEs to

sharing the collectively owned lands. Under the concept of land sharing, every CAE member receives the right to a land share evidenced by a land share certificate. A land share may be freely disposed of by its owner, who can convert the land share into a land parcel, the ownership over which is evidenced by a State deed.

The sharing of collectively owned agricultural lands was the essence of the second stage of the land reform. This stage has been completed. At present, the land has been distributed in all CAEs that had received land into collective ownership. Almost 6 million individuals, former members of nearly 11,000 CAEs, received land share certificates.

Third Stage of Reform: Distributing Individual State Deeds to Land and Restructuring of CAEs into Market-Oriented Farming Enterprises

Agricultural land sharing efforts failed to achieve the main objective of the reform, that is, to make CAE members "working owners" of CAE land and property. In the aftermath of land sharing, CAE members still remained mere employees. Moreover, there was no zeal to carry on the land and property sharing envisaged by the Presidential Decree. Often, land share certificates, instead of being issued to CAE members, were locked in the safes of CAE general managers. In other words, the collective land and property ownership appeared to rest mostly with the general manager, rather than with ordinary CAE members.

Even though collective ownership was abandoned under the new Constitution of Ukraine, adopted on June 28, 1996, the legal status of the CAE as the entity with which collective ownership over land and property actually rests has not much changed. Moreover, the CAE as a legal entity competes with ordinary CAE members who are co-owners of shared land and property. It is therefore apparent that *as long as the CAE continues to exist, collective ownership will de facto remain intact* and the members will not become true owners of land and property.

In light of the above, further steps to intensify land reform have been undertaken. On January 10, 1997, an All-Ukraine Conference was held in Kyiv at which current problems faced by Ukrainian agriculture were discussed. The Conference adopted a new land reform strategy that envisages the reorganization of CAEs into market-oriented business entities based on private land and property ownership. The individual's ownership of land is validated by a State deed to a particular plot of land, which is identifiable on the ground. Recommendations of the All-Ukraine Conference laid the foundation for the third stage of Ukrainian land reform, which commenced in 1997.

The Decree of the President of Ukraine # 372/2001 dated May 30, 2001 "On Main Directions of the Land Reform in Ukraine for 2001-2005" provides "State of Land Relations Reformation in Ukraine in 1991-2000" (see below).

Ukraine posseses a powerful potential of land resources. Of the 60.3 million hectares of land almost 70% (41.8 million hectares) is agricultural land, while 17% (10.4 million hectares) is forest land. Some 4% of the country's territory (2.3 million hectares) is built-up. A significant amount of work was carried out in 1991 for reformation of land relations, as a result of which they became irreversible. However, the final goal—economically efficient and ecologically friendly use of land in Ukraine—has not yet been reach. 49.7 % of the land remains under state ownership after redistribution of land resources. 26.4 million hectares of land was divided into parcels, and handed over to the ownership of 11,419 enterprises. 6.5 million individuals received the right to a parcel of land (share). The average size of the land plots (share) made up 4.1 hectare. There began a large-scale distribution of land parcels, and granting of State

deeds to owners of land plots (shares). A reserve land fund, having a total area of 3,070.3 thousand hectares, was set up. 22.4 million hectares of land was leased to owners of land plots (shares), rent payments for which exceeded UAH 1.6 billion in 2000. 11 million individuals privatized their parcel of land covering an area of 3,256 thousand hectares, while 37.6 thousand farms work almost 2 million hectares of agricultural land. The use of land for individual subsidiary farming, horticulture and vegetable gardening began developing quickly. Economic mechanisms for regulating land relations are being introduced. Agricultural land was assessed as to its pecuniary valuation, which totaled UAH 306.8 billion. A pecuniary valuation of nonagricultural land is also being carried out. Payment for land has been introduced.

Nonetheless, the positive results in carrying out land reforms have not yet led to a radical and efficient revival of agriculture, intensification of investment processes in other production branches, and raising the well being of the population. This creates the need for a comprehensive approach to the solution of problems regarding reformation of land relations on a market basis, in close connection with economic reforms in the country in general. A system of legislative acts, which would in the proper way ensure land reform, has not yet been developed. A mechanism for the free transfer of land parcels has not been created; neither has the problem of mortgage crediting been solved. Land reform measures do not have the proper financial security. Obstacles prevent development of land use by new owners, in particular in the establishment of modern competitive, highly profitable agrarian enterprises on the basis of individual subsidiary farms and small rural (farming) enterprises.

The solution to problems of regulating land relations in towns and other populated areas, in part by local self-governing bodies, was carried out without proper regard for the socio-economic designation of the land for creating a favorable vital environment. The specific weight of land build-up capacity is 1.5 to 3 times lower than corresponding indices in the developed countries. The land has neither been demarcated into state and municipal ownership, nor land management responsibilities distributed between state and local self -governing bodies. Land protection measures, mapping of agricultural land, soil reconnaissance, and determining areas of technogenically-contaminated land have nearly ceased. The newly established agrarian enterprises are not supplied with proper planning and mapping data, nor with information on the state of the soil. The technology for updating state land cadastres is out-dated. Land monitoring is not systematic and has no up-to-date hardware. The pecuniary valuation of nonagricultural land located outside the boundaries of populated areas is being carried out very slowly. Thus, it is necessary under present-day conditions to determine the Main Trends for further reforming land relations with the aim of ensuring effective use of the powerful potential of Ukraine's land resources.

To what extent is the process completed? (i.e. provide an estimate: "land privatization is in its early stages" or "land privatization is about 75% complete".)

According to information provided by State Committee on Land Resources of Ukraine, in the context of land titles issued, land privatization in Ukraine is about 30 % complete (See Appendix 1, illustrating land privatization progress as of December 15, 2001).

How much private land currently exists in your country? (Please include the definition of "private" used in your sources, i.e. does it include land held by groups, associations, municipal owned companies, communities, etc.)

Individuals own 10,902.7 thousand hectares of agricultural lands. Total area of lands owned by individuals is 11,346.7 thousand hectares (18.8% of total lands of a country). It is individual

property (private ownership). The term "private ownership" includes not only individual property, but also property of private (non-governmental) organizations. See Article 80 point a) of LCU, "Subjects of ownership right to land," that states:

The following are the subjects of ownership right to land:

a) to lands in private ownership – citizens and legal entities;
So the number of 29,109.2 thousand hectares (48,2%) includes both properties – citizens and legal entities.

According to State Land Cadastre (January 1, 2001):

Total lands of Ukraine – 60,354.8 thousand hectares (100%)
state ownership – 30,166.5 thousand hectares (50%)
collective ownership – 1,079.1 thousand hectares (1,8%)*
private ownership – 29,109.2 thousand hectares (48,2%)
*Please, note that we refer to State Land Cadastre (January 1, 2001). The Land Code of Ukraine, which determines three types of land ownership (private, **communal** and state), was adopted by the Parliament (*Verkhovna Rada*) later in October 25, 2001, and put into force in November 15, 2001.

- Structure of total lands:
- Agricultural lands – 71.3%
- Forested lands – 17.3%
- Lands under constructions – 4.1%
- Wetlands (Swamps) – 1.6%
- Open lands* – 1.7%

Water – 4.0%

- *Open Lands – Lands without vegetation. Regarding protected areas, please see below.

Territories and Objects of Special Protection and Preservation

The system of Nature Reserve Fund has been developed in accordance with the National Program of prospective development of Nature Conservation Protected Sites in Ukraine (Decision of the Supreme Council of Ukraine 177/9- BP of 22.09.1994). To coordinate the implementation of this Program, a special departments unit of Nature Reserve Fund has been established within the Ministry for Environmental Protection and Nuclear Safety. The functions of state management in the field of organization, protection and utilization of the Nature Reserve Fund, and operation of the State Cadastre of Nature Reserve Fund were imposed on this unit.

By January 1999, the Nature Reserve Fund of Ukraine included 6,728 territories and objects of 2,354.2 thousand hectares which amounted to 3.9% of the area of Ukraine. The Nature Reserve Fund of Ukraine consists of 15 natural and 4 biosphere reserves, 8 national natural parks, 228 sanctuaries, 132 nature relics, 17 botanical gardens, 7 zoological parks, 19 dendrological parks, 88 memorials of landscape art of national importance, and the rest classified as objects of regional and local importance. Over the last 6 years (as compared with 1992) the area of nature reserves has increased by 1,037.4 thousand hectares or by 78.8%.

The share of separate categories in the territory of the Nature Reserve Fund is as follows: nature reserves - 4.8%, biosphere reserves - 9.6%, national natural parks - 20.9%, nature relics - 0.9%, botanical gardens - 0.1%, zoological parks - 0.02%, dendrological parks - 0.06%, landscape art - 0.5%,

regional landscape parks - 17.2%, and reserve sites - 3.3% . The number of objects of the Nature Reserve Fund increased in 1998. Six Decrees adopted by President of Ukraine have announced the establishment of new and expansion of existing territories and objects of national significance. Two nature reserves in the Autonomous Republic of the Crimea (Kazantipskyi (450.1 ha) and Opukskyi (1,592.3 ha)), the Danube biosphere reserve (464022.9 ha, based on the Nature Reserve «Dunaiski plavni» in the Odesa region), and the Yavoriv national natural park (7078.6 ha) in the Lviv region have been established. The territory of the Black Sea biosphere reserve has been expanded and a number of sanctuaries and nature relics have been announced as protected. The network of nature reserves has been announced. In total the Nature Reserve Fund has increased by 108 territories and objects with total area of 145.2 thousand hectares during 1998.

A Decree of President of Ukraine of April 24, 1998, listed valuable nature territories with a total area of 6,388.7 hectares. These are reserved for creation of new and expansion of existing nature reserves and sanctuaries of general state importance over 1998-2005.

Article 78. "The content of the ownership right to land" of Land Code of Ukraine (LCU) states: The land in Ukraine can be in private, communal, and state ownership.

Article 80. "Subjects of ownership right to land" states:
The following are the subjects of ownership right to land:
a) to lands in private ownership – citizens and legal entities;
b) to lands in communal ownership - territorial communities, that exercise this right directly or through local self-government bodies;
c) to lands in state ownership – the state exercising their right via relevant bodies of state power.

Compare current situation (% private land) with before privatization.

Before privatization the land could be in collective and state ownership only. So, Ukrainians had no private lands, except small household plots (vegetable gardens) in rural areas.

Provide available breakdown of privatized land: agricultural/urban. Further, if possible include here the specific amount of each type of land that has been privatized (agricultural, forest, industrial, wetland, and rangeland)?

According to State Land Cadastre (January 1, 2001) in private (individuals) ownership and operation:
Agricultural lands – 10,902.7 thousand hectares
Forested land – 22.6 thousand hectares
Lands under constructions – 372.7 thousand hectares
Wetlands – 10.9 thousand hectares
Open lands (no or small vegetation) – 13,7 thousand hectares
Water fund lands – 14,8 thousand hectares

Article 19 of LCU states:
1. Lands of Ukraine are divided into the following categories by main purpose:
    a) lands of agricultural purpose;
    b) lands of housing and civil building purpose;
    c) lands of nature reserve and other environmental protection purpose;
    d) lands of health-improving purpose;
    e) lands of recreational purpose;

f) lands of historic and cultural purpose;
g) Forest Fund lands;
h) Water Fund lands;
i) lands of industrial, transportation, communications, energy, defense and other purpose.
2. Lands of any category that are not granted into ownership or for perpetual use can be considered reserve lands.

What privatization activities are currently being implemented?

Currently, the State Committee on Land Resources continues its activity on land title issues (The third stage of land reform continues).

Among donor projects supporting land reform we can name:

ULTI Project

On June 22, 2001, the United State Agency for International Development (USAID) began the Ukraine Land Titling Initiative Project. The new project is part of USAID's commitment to cooperate with the Ukrainian government in agricultural restructuring. The project's goals are to assist the Government of Ukraine to issue 1.8 million State Acts to holders of agricultural land share certificates and 13,500 State Acts to purchasers of non-agricultural land. The Project is scheduled to operate a land-titling program on a national scale for a period of 27 months. The project management is based in Kyiv, but will operate in all oblasts of Ukraine through a network of regional Project offices and private firms that contract with the Project to implement its goals.

One of the main focuses of the Project is to simplify the legal and procedural requirements for issuance of State Acts to new landowners. The Project team will include lawyers and technical specialists with a background in land legislation and land surveying. These specialists will work with Government of Ukraine agencies and ministries to formulate amendments to the legal base according to which State Acts are prepared and issued. The goal of these amendments is to reduce the cost of issuing State Acts. Another component of the Project is to widely distribute information regarding the process of issuing State Acts to agricultural land throughout the rural community.

USAID realizes that rural villages and towns have poor access to reliable information, a factor that leads to coercion of older and less knowledgeable citizens by those in power and with greater influence. For this reason, the Project will focus its public education and outreach component on delivering reliable and useful information to the rural communities in which it works. Much of the information will describe in detail the process of State Act issuance, the rights that each land share holder has during the process, the rights that a land share holder will have once they obtain their State Act and become a landowner, and the benefits and obligations that come with land ownership. More specifically, since many new landowners are likely to engage in lease relations once they receive their State Act, the Project will focus public information on issues relating to the conclusion of lease contracts for agricultural land. Finally, the Project will promote the protection of the rights of new landowners. The Project will cooperate with other foreign donor projects and Ukrainian NGO's to develop local and regional legal aid clinics. The Project's legal team will conduct training seminars for regional lawyers who are engaged in land relations and assisting new landowners protect their rights against those who violate those rights. As necessary, the Project will educate local administrations regarding the rights of new landowners and the protection of those rights. It is important to note

that local administrations should understand the benefits that private land ownership brings to the community as a whole. The project will stress these benefits, some of which include private investment, new jobs, and an increase in productivity.

Project "Sustaining Women-farmers in Ukraine"

The project "Sustaining Women-farmers in Ukraine" started June 1, 1999 in co-operation with UNDP, State Committee of Ukraine for Entrepreneurship Development, and the public organization Council of Women-farmers of Ukraine. The project aims to improve the status of rural women in Ukraine and raise the quality of life of rural women and the lives of their families under the new realities of the transition to the market economy, and grow the entrepreneurial and managerial skills of rural women. The project should draw the attention of the institutions and services from which women-farmers anticipate the most recognition and support: governmental institutions, credit unions, banks, Ukrainian and foreign companies, producers of equipment for small farms, and others. The project has a strong information technology (IT) component, implementation of which will facilitate the exchange of market information and experience, providing services in agro-tourism, and carrying out electronic commerce.
The project issued an information reference book, containing information and explanation of land reform and property relations in the agrarian sector of Ukraine. The important aspect of the project is the exchange of experience between women-farmers in different regions of Ukraine, and collaboration with colleagues from neighboring countries.

Joint Ukrainian-Swedish project "Capacity Building for the Implementation of a National Geospatial Data Infrastructure in Ukraine"

The Project is financed by the Swedish International Development Agency and implemented by the companies Swedesurvey and Geoinformatika. Project is closely collaborating with the Department of Geodesy, Cartography and Cadastre at the Ministry of Ecology and Natural Resources of Ukraine, the Swedish International Development Agency (SIDA) and "Swedesurvey." This cooperation was initiated in 1994 with the support of cadastre and title registration system introduction in Ukraine. Currently, three phases of the project have been successfully implemented. The implementation terms were: Phase I - January 1995-April 1996, Phase II - March 1997-April 1998 and Phase III - August 1998-July 2000. In autumn 2000, Phase IV of the Joint Ukrainian-Swedish project was started. In general, the aim of the project is to research the current situation and promote the formation and creation of National Spatial Data Infrastructure (NSDI) that is a key element of an efficient real property market system. Detailed project tasks include:

- To create the environment for the formation of a normative and legal base and to study the regulating issues in spatial data capture and processing.
- To create the environment for the introduction of international standards in geospatial data.
- To create the base map concept.
- To work out elements of NSDI technical implementation in Ukraine.
- To increase the public awareness about spatial data usage for practical tasks.

SOME UPCOMING PROJECTS:
Rural Land Titling and Registration Project and Cadastre Development
Communication of the World Bank dated December 2001
Project on Issuance of State Deeds for Private Land Ownership and Establishment of Registration System

Communication of the State Committee on Land Resources dated June 18, 2001

- Describe land privatization efforts in your country since 1989. (If there is a written history of these activities simply provide it as an annex (preferably as a Word or pdf file. If not, please briefly describe the history)

Three stages of Land Reform in Ukraine are described above. The consequences of steps on land privatization could be observed by looking through list of normative documents (See Appendix 2).

Agricultural Land Sharing Project conducted under the auspices of USAID. The pivotal principle of this Ukrainian project, managed by RONCO Consulting Corporation, is land demarcation on-site followed by issuance of state assignments verifying private property in exchange for land certificates. During the past couple of years, RONCO Consulting Corporation has already participated in restructuring of more than 500 CAEs in 17 Ukrainian regions and currently partakes in restructuring of 220 more CAEs. The former CAEs have been transformed into 48 joint-stock companies, roughly 300 limited liability companies and 280 private agricultural enterprises. More than 400 thousand land certificates and over 79 thousand state assignments verifying private land ownership have been issued to the restructured companies.

The average size of agricultural enterprises in Ukraine is about 1,300 ha. In general private farms are about 56 hectares in average. Fragmentation will increase in the near future as land titling progresses. The agricultural productivity in Ukraine strongly depends on annual hydrometeorological conditions. It fluctuates from year to year (for example, 21 million tons of grain in 2000 and 32 million tons in 2001). It should be mentioned that there is a measured increase in productivity for privately owned farms. Below is the Ukrainian productivity of grain in millions of tons per year:

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Year
35.1	26.5	27.9	32.1	26.8	24.3	19.6	24.5	20.8	19.7	19.4	Center/ ha

Project of Land Privatization and Reorganization of Agricultural Enterprises in Ukraine, executed by the International Financial Corporation (IFC).

The IFC management insists that the sole fact that farmers possess land certificates is a sufficient ground for reorganization of CAEs and, thus, there is no need to spend money on land demarcation and issuance of state assignments. During the last four years, within the framework of this project, 66 CAEs from four regions of Ukraine (Donetsk, Kyiv, Chernovtsy and Volyn regions) were reorganized into 128 new companies and 401 former collective farmers received land plots for establishment of new farms. At the moment, almost 44 thousand CAE participants (with pensioners making up a half of these) have exercised their right and received more than 167 thousand hectares of land. 14 regional state administrations, which previously addressed the IFC for assistance in application of the reorganization approach, have acknowledged that the project is a success.

2. Overview of Environmental Impacts

Please describe the general environmental impacts of changes in land ownership. Please include discussion of both positive and negative impacts including better natural resource

management. This section calls for a description of trends. Among others your description could include:

- Does any evidence indicate that private land ownership has improved management of certain natural resources (e.g. agricultural policies, forest management)? Describe areas where this is the case.

It is expected that private ownership of land will contribute to economic growth by promoting the best possible use of available land resource. But the benefits of private ownership could be realized when an efficient market for land exists, meaning that ownership is secure and freely transferable and that prices reflect the real value of this resource to its users. Secure land ownership and an active real estate market greatly increase the transparency of land-related dealings and reduce the incentives for transactions in the unofficial economy. In the case of Ukraine we do not have these conditions yet. Some individuals don't believe in irreversibility of Land Reform or are afraid that "the game rules" could be changed by Government. That is why you can find as evidences of management changes with conflicting values:

Negative: Some farmers want to get so called "fast money" and sow lands with sunflower year by year. In three to four years their agricultural lands turn into "desert" without crop rotation conducted properly.

Positive: We know about some examples from Sevastopol region and Kharkiv region ("Pecheneg Pole" protected area, that was developed under help of private agrarian firm "Fauna"). National TV demonstrated some other examples during 2001 year. Tourists can find many examples cafes' landowners developing small gardens (instead weeds plots). Unfortunately there is no example on private forest management improvement because of lack of this juridical practice in Ukraine.

Positive: newspaper "Donbass" (June 20,2001) reported:

'Private Agrofirm "Shakhter" introduced contour land-improvement technology to prevent continuous land degradation. Some parts of arable land (eroded and located at hillside) were turned into pastures. As a result grain yield reached 27 centers/ha, instead of yield of 17 centers/ha in other firms. Agricultural firm reached milk yield about 3.5 to 3.6 thousand kg per cow, more than 35-50% higher than in neighboring farms.'

- What have been specific problem areas (e.g. liability for industrial sites, land contamination)? Have specific incidents of human health/environmental impacts been reported? Are these primarily urban or agricultural?

Ukraine has a lot of specific problem areas both urban and agricultural. Some of them deal with land contamination. Main sources of land contamination in Ukraine are industrial production, agricultural activity and transportation.

The main specific problem area is the Chernobyl Exclusion Zone, covering about 58 thousand hectares. After the accident in 1986 this territory is out of operation (no population, no agricultural or other activity). The problem is that not only the Chernobyl Exclusion Zone is contaminated with radionuclides, but other territories are also contaminated (See Appendix 3). According to National Report on Ecological Situation in Ukraine the total area contaminated with radionuclides is about 6.7 million hectares. The Autonomous Republic of Crimea, Volyn Oblast, Chernivtsi Oblast, and Zakarpattia Oblast are heavy contaminated with pesticides (See Appendix 4). High population mortality risk is observed in the eastern part of Ukraine (Donetsk

Oblast, Luhansk Oblast, Zaporizhzhia Oblast, Kharkiv Oblast, Dnipropetrovsk Oblast), caused by high levels of industrial development (see Appendix 5).

Besides contaminated areas Ukraine has problems with land degradation. 57.4% of Ukrainian territory is subject to erosion (32% - wind erosion, 22% - water erosion and 3.4% - both types of erosion). High threat of wind erosion is characteristic for Donetsk, Zaporizhya, Kharkiv, Lyhansk, Mykolaiv, Dnipropetrovsk, and Crimea. Total area of agricultural lands eroded by water is 13.4 million hectares. In Donetsk, Lyhansk, Kirovograd and Odessa Regions 68-86% of arable lands suffer from water erosion. At least 5 million hectares of agricultural lands are low-yield and degraded and need conservation.

There are also local problem sites in Ukraine, like Boleslaschik area in Mykolaivs'ka Oblast. Population of this area suffered from an unknown disease of unknown etiology. The first idea of origin of this situation was leakage of missile fuel from site of missile grave. In 2000 ULRMC joined its efforts with the U.S. Environmental Protection Agency (EPA), the U.S. Centers for Disease Control and Prevention (CDC), and U.S. Agency for International Development (USAID) to evaluate the ecological situation in the ecological emergency zone Boleslavchik in the Pervomays'k District of the Mykolaivs'ka Oblast.

Total area of salinity is 3,986.2 thousand hectares, waterlogged land 364.7 thousand hectares. No specific areas arising as consequences of land privatization were reported yet. But there is a need to conduct a special survey on environmental baseline development to compare ecological situation at the same test sites in the future.

- How have these problems been addressed? Is there a process by which polluted sites have been/are being remediated? Have agricultural lands identified as being contaminated been taken out of production as a result of the "privatization" process, either by individuals, communities, associations, or other interested parties?

Government of Ukraine understands the importance of land remediation. Agricultural lands identified as contaminated are not included into areas for land share. Nevertheless there is no significant effort for land remediation in Ukraine due to lack of money. For example, before 1990 gypsum was added to saline lands on territory of about 180 thousand hectares yearly. In 2000 gypsum additions were conducted on territory of only about 5.1 thousand hectares. Land recultivation was conducted only on 3,600 hectares.

By the efforts of specialists on land-utilization the draft of the law on land conservation was prepared. It is expected that up to 5-6 million hectares of degraded lands will be taken out of agricultural operation. From our point of view it was unreasonable to start the land share process without making decisions regarding land conservation and taking out degraded and low-productivity lands from shared land calculations.

- What kinds of lands, have been excluded from privatization (forests, wetlands, contaminated properties, riparian zones, biologically rich lands)? (Please provide definitions used by the government in characterizing any lands that have been excluded.)

Article 84. "Land ownership rights of the state" states:

- All lands of Ukraine, save those in communal and private ownership, are state-owned.
- The state ownership right to land is acquired and exercised by the State, represented by the Cabinet of Ministers of Ukraine, the Council of Ministers of the Crimean Autonomous Republic, and the oblast, the city of Kyiv and Sevastopol, and rayon state administrations, in accordance with the law.

- State-owned lands that cannot be transferred to communal ownership:
  a) lands related to nuclear power system and space[-research] system;
  b) lands related to the National Defense System, save those under objects of social-cultural, industrial and residential purpose;
  c) lands under nature reserves and objects of historic-cultural value and of national and state-level significance;
  d) lands under Water Fund objects of state-level significance;
  e) land plots used to support the activity of the Verkhovna Rada of Ukraine, the President of Ukraine, the Cabinet of Ministers of Ukraine, and other state power bodies, National Academy of Sciences of Ukraine, state sectorial academies of science;
  f) land plots of exclusion and unconditional (compulsory) resettlement zones, which suffered from radioactive contamination as a result of the Chernobyl catastrophe.

- State-owned lands that cannot be transferred to private ownership:
  a) lands related to nuclear power system and space[-research] system;
  b) lands under railroads and automobile highways, state-owned objects of air and pipeline transportation;
  c) lands related to the National Defense System;
  d) lands under nature reserves and other lands designated for nature protection, as well as state-owned territories and objects that have a special environmental, health improving, scientific, esthetic, and objects of historic-cultural value and of national and state-level significance , unless otherwise stipulated by law;
  e) Forest Fund lands, except for cases envisaged by this Code*;
  f) Water Fund lands, except for cases envisaged by this Code**;
  g) land plots used to support the activity of the Verkhovna Rada of Ukraine, the President of Ukraine, the Cabinet of Ministers of Ukraine, and other state power bodies, National Academy of Sciences of Ukraine, state sectorial academies of science;
  h) land plots of exclusion and unconditional (compulsory) resettlement zones, which suffered from radioactive contamination as a result of the Chernobyl catastrophe.

According to State Land Cadastre (January 1, 2001) individuals own and operate 22.6 thousand hectares of forested land (of them 15.2 thousand hectares – forests and 7.4 thousand hectares – shrubbery). Bearing in mind that one plot of forested area under private ownership could not exceed 5 ha, about 4,500 transfers actually took place. Unfortunately, no data is available on how this land is managed.

Definition of lands of the Forest Fund (Article 55 of LCU)

- Lands of the Forest Fund are lands covered with forest vegetation as well as those not covered with forest vegetation, non-forest lands, which have been granted and used for the needs of forestry.
- Lands of the Forest Fund do not include lands covered by:
- Green plantations within the boundaries of settled areas that have not been categorized as forests;
- field protection strips, protection plantations of trees along railroad rights-of-way, automobile highways or the verges of canals, hydro-technical constructions and bodies of water;
- isolated trees and groups of trees, thickets/shrubs on agricultural lands, estates, household, dacha and garden plots.

Unfortunately we could not provide data regarding how many forest areas are not included into Forest Fund in view of above definitions.

* Upon the decision of local self-governing bodies and executive power bodies the citizens and legal entities may obtain– free-of-charge or for fee – the ownership of closed land plots from the Forest Fund of the size of up to five hectares as part of the lands of [personal] peasant, individual and other farms. (LCU, Art.56, point 2)
**Citizens and legal entities, upon the decision of executive power bodies local or self-government bodies, may receive into their ownership the closed natural bodies of water (up to three hectares of total area). The land-owners can create fishery, anti-erosion and other artificial water basins according to the established order. (LCU Art. 59, point 2)

Please describe other environmental impacts not specified above.

Negative: because of long history of invisible privatization of 2-km coastal zone lands the local authorities could not protect these lands despite the Water Code requirements. This is a conflict in legislation.

The environmental pollution results from human activity: garbage, toilets, car washing, pets, grazing, washing. Woodcutting and illegal building (garages) takes place too. Overfishing (and conservative fishing) takes place simultaneously.

Negative: Local populations of cleaner regions continue to destroy numerous woodland belts for firewood, to initiate irregular burning of pastures.

Negative: Because of lack of gas or other economic reasons, numerous farmers prefer to use near-home slope lands instead of more remote farmlands. This practice could happen with or without wood cutting. The risks are that steep slope cultivation (4-15^0) provokes serious local land erosion. On state-owned "forest fund" lands in the mountains, it rarely happens.

Negative: Some indirect impacts to forests take place in the Donbas region due to activity of private wood-firms, which provoke forest burning incidents (http://www.elvisti.com/2000/06/13/ecology.shtml).

Positive: Privatization of forest could improve a situation.

Without doubt, this type of "privatization" could help to provide positive development of the forest environment (but maybe in mountain areas peopled with indigenous peoples, and with good historical traditions – Zakarpattia Region, for example). The well-being of these people strongly depends on the forest condition. Some reports said that development of local wood-factories in Zakarpattia areas is a need of high priority. Perhaps some of these new factories (firms) could be privatized in the future. At the moment there are no official documents (even in preparation) devoted to prospects of privatization of local forests.

Positive: Casual protection of lands by new owners works as an alternative when there is a lack of a law on protection of ecological net lands/unused lands.

We prefer to estimate this trend as "fifty-fifty." Some owners are acting as pioneers in their areas, but they prefer to continue their current lifestyle in a new situation. Some others are playing with privatization and have strong commercially-targeted purposes. The owners with that kind of environmental mindset are numerous in Western Ukraine, which is well known as a

territory with deep historical traditions. There are islands of that mindset in some other areas in Ukraine occupied by representatives of former repatriated nations with good agricultural roots (Crimea, Volyn, etc.)

3. Environmental Impacts by Sector

3.1 Agricultural Land

Please describe major trends in agricultural production with regard to privatization of agricultural lands. Where possible consider:

Has there been an increase, a decrease, or no change in agricultural production on privatized land? Does it appear that these changes are related to changes in land tenure or are they the result of some other factors?

In 1999 ULRMC conducted an agricultural statistical survey to compare agricultural production in restructured and non-restructured farms in Lviv Oblast (RONCO Project) and we did not find significant difference. The main explanation of this phenomenon was the lack of credit resources in both types of farms. Nevertheless, if we compare agricultural production of different types of operators (state, private and households), then production of private farms is 15-30% higher and costs of manufacture is smaller.

The survival of private and household operators depends on the level of their efforts. They cannot neglect their work. Also, they are interested in obtaining ecologically friendly products. The best advertisement for agricultural products is "grown at household plot." The demand for these products is higher in the market. As a whole the increased productivity goes hand in hand with the better environmental practice.

We have some recent examples of new owners finding new commercial reasons for their productions. In Western Ukraine (Kalina village) a new farmer organized a firm, which produced commercially sound ice-cream based on local milk production. People started to understand difference between ecologically sound food and polluted food. You also can find some examples of better agricultural practices or more access to irrigation water in case of private agricultural operators, but these are isolated instances.

Has pesticide use on private land increased or decreased? What have been the primary causes for this?

As a whole the use of herbicides in Ukraine decreased. In 2000, 13.5 thousand tons of pesticides were applied to a territory of 12.9 million hectares, whereas in 1990 108 thousand tons pesticides were applied to 28.4 million hectares. The only one reason for pesticide use decrease is lack of credit resources (no money to buy pesticides). On the other hand, we know of examples when private agricultural firms or private farmers that have no problems with credits increased pesticides use.

Have there been changes in irrigation practices? If so, describe any positive or negative environmental impacts. (Positive impacts might include an increased focus on water conservation by local farmers while negative impacts might include increases in soil salinization or increases in the amount of irrigation water per unit area.) Have there been other significant beneficial or negative environmental impacts reported as a result of changes in land tenure?

Irrigated lands occupy 2,440.5 thousand hectares in Ukraine. As a result of economic crisis the volume of irrigated lands decreased (since 1990 total area of irrigated lands decrease 1,150 thousand hectares). Because of bad water quality (high mineralization) primary and secondary salinization of land occurred on 9-10% of irrigated lands. In the steppe zone of Ukraine there is water deficiency. Private farmers of this zone started to use some elements of precision farming technology: with the help of special sensors they determine local problems within separate field and irrigate crops only where and when they need to be irrigated, thus decreasing total water expenditure. You can find this type of irrigation very seldom.

What have been the trends regarding grazing lands (public and private grazing rights) and what have been the broader trends regarding livestock numbers? Environmental impacts of grazing (soil degradation, water pollution, etc)

The general trend regarding total livestock number in Ukraine is decreasing, while for privately owned cattle the trend is increasing (See table below).

Year	Cattle, thousand head		
	Total	Ag enterprises	Private
1981	25,367.6	21,485.9	3,881.7
1982	25,413.5	21,525.2	3,888.3
1983	25,464.4	21,504.1	3,960.3
1984	26,043.8	22,071.5	3,972.3
1985	26,668.8	22,766.8	3,902
1986	26,638	22,796.9	3,841.1
1987	26,724.5	23,092.9	3,631.6
1988	25,968.7	22,368.9	3,599.8
1989	25,620.8	22,004.2	3,616.6
1990	25,194.8	21,664.5	3,530.3
1991	24,623.4	21,083.3	3,540.1
1992	23,727.6	20,190.4	3,537.2
1993	22,456.8	18,813.8	3,643
1994	21,607.3	17,738.6	3,868.7
1995	19,624.3	15,768.8	3,855.5
1996	17,557.3	13,701.4	3,855.9
1997	15,313.2	11,570.6	3,742.6
1998	12,758.5	8,994.7	3,763.8
1999	11,721.6	7,882.3	3,839.3
2000	10,626.5	6,705.6	3,920.9
2001	9,423.7	5,037.3	4,386.4

In 1999 ULRMC conducted an agricultural statistical survey and obtained results showing that the number of privately owned livestock is 30-40% higher then official data indicates. Owners hide cattle to avoid taxes. Usage of so-called "reserved lands" for grazing is an ordinary situation in Ukraine. According to Land Code in force: (LCU, Art. 34. Lands for hayfields and pastures)

- Citizens can lease land plots for hay-making and grazing cattle.

- Executive power bodies and local self-governing bodies can create public grazing grounds and hayfields from among the state-owned lands and lands owned by state or by territorial community, communally-owned hay-fields and pastures.

Negative: Some local examples of overgrazing visible from space takes place (Kalinovsky Regional Landscape Park).

Negative: Irregular burning of pastures everywhere in Ukraine (could be detected by remote sensing means).

Negative: Some water pollution caused by neighboring former collective farms activity influenced formerly clean regions (Polissya

In the former USSR some huge farms were built near rivers or lakes. Ecologically healthy regions have not prevented this very slow but continuing pollution of neighboring water areas from non-functioning farms or parts of those farms. For example, the source of pollution could be improper storage of out-of-date (or prohibited at the moment) chemicals. We have seen some examples in Kherson Oblast and Volyn Oblast. The agricultural production is decreasing in Ukraine since 1992, so pollution caused by agricultural activity also decreases. What we observe is rather residual pollution.

Other examples:
The private agrarian firm Provalske protests against enlargement of steppe-protected area "Provalsky Stepe," since 522 hectares have been used for sheep breeding.

3.2 Forest Land

Please discuss privatization in the context of forest lands and forest management.

Definition of lands of the Forest Fund

- Lands of the Forest Fund are lands covered with forest vegetation as well as those not covered with forest vegetation, non-forest lands, which have been granted and used for the needs of forestry.
- Lands of the Forest Fund do not include lands covered by:
    1. Green plantations within the boundaries of settled areas that have not been categorized as forests;
    2. Field protection strips, protection plantations of trees along railroad rights-of-way, automobile highways or the verges of canals, hydro-technical constructions and bodies of water;
    3. Isolated trees and groups of trees, thickets/shrubs on agricultural lands, estates, household, dacha and garden plots.

It is obvious that there is discrepancy between some legislative Acts in Ukraine. For example, according to Forest Code of Ukraine (paragraphs 4 and 6) all forests of Ukraine belong to the State but according to Article 56 (point 1) of LCU "Lands of the Forest Fund may be state-owned, communally owned and privately owned"

Nevertheless numerous organizations initiated transformation of temporary-ownership forest to a category of "permanent ownership." In effect, it is long-term leasing. But these firms and

organizations dream of turning leased forests into privately owned forests. They try to find a way to do it and lobby for preparation of corresponding legislative acts.

Has tree cutting increased, decreased, or not changed significantly on privatized land?

The general trend is decreasing of forested area in Ukraine, for example forested areas in Zakarpattia Region decreased from 95% to 51% since 1900 to 2000. State Forest Guard Service reported 4,269 events of illegal forest cutting in 2000. As a result 31 thousand m^3 of wood was eliminated. Mainly state-owned forest area suffer from tree cutting.

According to Article 56 (point 3) of LCU "Citizens and legal entities in the established manner may acquire in their ownership land plots of degraded and low productivity lands for afforestation."

This has lead to more afforestation efforts.

Positive: Tree cutting decreased in "Trakhtimvriv Regional Landscape Park," key owner of which is agrofirm "Trakhtemiriv," which rented the lands for a term of 25 years.

Compare forestry practices on private with practices on state held land.

There are no examples.

Describe specific localities where increases or decreases in tree cutting have occurred?

ULRMC remote sensing observations showed a balance between cutting (0.4%) and afforestation (also about 0.4%) during the last 11 years in Crimea. In Zakarpattia Oblast illegal tree cutting increased during past 10 years (See also Appendices 6 and 7).

Describe specific environmental impacts: soil erosion and river sedimentation? have large blocks of relatively uncut forestland been fragmented? impacts on old-growth forests? Impacts on habitats?

Almost all forests in Ukraine are State-owned (see above). This provokes numerous examples of illegal "non-owner" cutting of trees for different purposes (woodland belts for firewood, New Year's tree for selling). State cutting was stopped several years ago. Nevertheless, small pieces of forest are working as "pre-private", when located near private buildings of nearby firms.

"Pre-private" means that owners are waiting for some new legislation that will allow them to be an owner. We have not any examples of this new future legislation. May be it is simply a hope to have something for the future. Sometimes this mentality could help. We know about some unique examples in Mykolaiv District when a huge factory declared that some lands are their piece of a factory ("agrarian workshop"). This is an example of the indirect pre-privatization of lands or forests for the future.

There are numerous examples of public forests near cities being negatively impacted by private building owners. They used the forest belts illegally as dumps (territories of Syretsky Forest, Holosiyeyeve Forest, Pheophany Forests, Svyatoshin Forestry Plant Territory).

Has tree planting increased? Where and on which lands (state, public, private)?

According to the National Report on Ecological Situation in Ukraine, in year 2000 forested areas in Ukraine increased by 10.3 thousand hectares (state owned forest areas). At the same time we know that tree planting also increase on private lands; some farmers try to develop forest shelter-belt around their fields to prevent wind erosion. Also, tree planting increased on household, dacha and garden plots (isolated trees and groups of trees).

3.3. Wetlands

Has there been significant draining of privatized wetlands? If so, what area of wetlands has been drained? What were the circumstances that allowed or encouraged the draining of the wetlands and why did it occur?

Total area of privatized wetlands is small in Ukraine. We don't know examples of significant draining of privatized wetlands.

Are there any cases of private owners (including communities, associations, individuals) restoring or participating in the restoration of wetlands? If this is the case, approximately what area of wetlands had been restored?

We don't know any cases of private owners (including communities, associations, individuals) restoring or participating in the restoration of wetlands.

Three NGOs (Pryrodna Spadschina, UTOP, Mama-86) protested against construction of a new road, which will cross a wetland of international importance, the Dniester Reed Bad Massive, and stopped the process. Bird Life International protested against drainage construction crossed an area near Prypiat River. The National Ecological Centre protested against the creation of an artificial reservoir (future wetland) for purpose of building of Tashlitska Nuclear Power Plant. The Ukrainian Society for Bird Research initiated a process on rehabilitation of forest wetlands near Koncha Zaspa. One initiator in Volyn Oblast is developing artificial cranberry spots on peat-bog areas of the region.

Have there been other beneficial or negative environmental impacts reported?

Positive: In 2002, Bird Life International restored several drainage channels and 6 lakes near Herojsky village in Holopristansky raion of Kherson oblast.

Has there been any encroachment into public wetlands?

Yes. These not numerous examples take place as a result of enlargement of some suburban areas (Chodosovske Bog near Kyiv) started before land reform.

3.4. Current public lands

Describe pressures on currently publicly held lands. Has there been any encroachment into public lands, claiming of public lands for private uses, (including forests, wetlands, beaches, green spaces in urban areas, etc.)? Describe management challenges for public lands.

Negative: There are no direct mass encroachments. Nevertheless, some informal fighting takes place for future lands of tourist's importance (filling station, trails, pubs, etc.)

Negative: There are some conflicts taking place between local hunting societies' members, which use "hunting lands of public importance," and farmers, who use "private agricultural lands," which can be a part of historical "hunting lands of public importance."

Negative: There is a conflict between protected areas and neighboring farms during migratory times, especially in the Southern Ukraine. The local people in Holopristansky raion of Kherson Oblast are against pelicans, whose numbers increased after the creation of a protected wetland - Regional Landscape Park Kinburska Spit – because of fishing prohibition needed for this park. The pelicans migrate to the park from the neighboring Chernomorskiy reserve. There are cases when local populations set the park's forest on fire, as a matter of protest. The local people of the Prypit-Stokhid protected area (Lybeshivsky raion of Volyn District) are against stopping a traditional practice of building small wood barriers on wetlands for fishing purposes. (It is a negative impact because these small water dams work as a barrier for normal function of streams.)

4.15 Uzbekistan

Author: Raisa Taryannikova

Background

The evaluation of land privatization impact on environment is based on official data of various Departments and organizations of the Republic of Uzbekistan and on information of WB, EU projects, etc., with special attention to the State Institutional structure and to the lessons obtained from land re-structuring in Uzbekistan.

To review the current condition of land privatization the official information of Ministry of Macroeconomic and Statistic, State Committee of Land, Ministry of Agriculture and Water Resources, is used as well as evaluation and conclusions on the following projects:

- Project of WB "Rehabilitation of Karshi cascade of pump stations" Institutional and Ecological components (Project KCPS, 2000-2002).
- Project of WB "Strategy of irrigation and drainage development in Uzbekistan", 2000
- Project "Land tenure at conditions of economic changes in Uzbekistan (the Netherlands) etc.
- The Report on Privatization of Irrigation. The Project of DFID, UK, 2002

Some outcomes of institutional and social evaluation on the Project of WB "Rehabilitation of Karshi cascade of pump stations" (2001) are quoted in frameworks.

Introduction

Uzbekistan is the largest State in Central Asia, with the population more than 24.5 mln people, 61.3% of which is rural population. It is a key country of the region because of its dimension, location, leadership and natural resources and, at the same time, it is the country most seriously suffering from shortage of water resources.

The agriculture is a base of the Uzbekistan's economics making 26% of GDP, 60% of the proceeds in a foreign exchange, and 45% of employment. In 2000, GDP of agriculture is 373,5 billion sums. In the rural areas, irrigated agriculture and processing of agricultural production is the most important source of employment and incomes of the population.

In the Republic there is a rich potential of human and natural resources. Unfortunately, in current conditions the general resources created in agriculture are not used in full measures.

Before the proclamation of independence in Uzbekistan practically all commodity production of main agricultural production was concentrated in State farms (sovkhoz) and collective farms (kolkhoz). All irrigated territory was distributed between 1100 State farms and 900 collective farms. These enterprises had many similar features in a structure of planning and management, realization of agricultural production; material support, water using and other economic components and all of them were under the State monopoly in planning and realization of the agricultural programs.

1. Overview Of Privatization

Since Uzbekistan becomes an independent Republic the significant modifications in lands tenure and re-structuring were happened. Up to now land is a State ownership. It is protected by the State and is not an object to be sold and purchased, exchanged, feofmented, pawned, except for cases established by the laws (the Land Code, article 16).

Transition to the market reforms has started from realization of the land re-structuring program to develop the multi-structural agricultural production. During the years of reforms in Uzbekistan the structure of the agriculture, as well as land management methods have been changed. Since 1992 the most of the State farms (sovkhoz) and collective farms (kolkhoz) (FSC) have been transformed into various economy categories, the main of which today are the following:

- Large co-operative farms – shirkats - (1000-2000 ha) based on the rental form of agricultural production;
- Private farms / farming (10-60 ha) also based on the rent of lands (for the term of 10-50 years);
- Numerous dekhkan farms on small family (dehkan) plots of land which are given to dekhkans in life inherited possession, but those plots are not an object to be sold and purchased, pawned, feofmented and exchanged.
- Quantity of State agricultural enterprises has decreased from 1061 in 1992 up to 47 by the beginning of 2001. Mainly seed-growing and experimental farms requiring constant financial support of the State remained in the State ownership.

Since the beginning of re-structuring of former State farms (sovkhoz) and collective farms (kolkhoz) the public sector in agriculture has been reduced to 1,2-1,3%. However, the most part of lands (97%) is assigned to collective farms (shirkats) based on the family contract. Though the number of private farms has been recently increased, the reforms in agricultural branch pass slowly. Development of dekhkan and private farms is slow down because of shortage of small-size machinery, construction materials, concentrated fodder, water supply and other. There are no approaches to post-privatization support of farms.

"Thus, now the private farms receive water from shirkat on the same way as in the past. Besides, there are family farms working on their land mostly as far as they worked before in collective farms. However, all land continues to belong to the State".

Source: Report IQ on the Project KCPS, 2001

The farms can specialize in agriculture, cattle breeding or have the mixed structure. After becoming the farmers many of them increased sown areas under vegetables, melons, corn, but undoubtedly, the most important cultures are **cotton** and **grain**, production of which (or one of them) **entrust** to farms by the local authorities. Getting the lands farmer engages to provide a crop capacity (in average annual calculation during 3 years) not less than in land cadastre assessment and not to change the producing specificity during 10 years.

The farmer says:

" ...In my opinion, this transition to the private farming had to take place earlier, when farms had not been yet reduced to such pitiable condition".

The chairman of farmer association:

"I think, that the future belongs to farms. In two-three years all farms in the region will become private farms – there is no another way, although many officials do not understand this".

The State gives the loan (at the rate to 300 minimum salaries) to the farmers for forming of the initial capital. The main term to get a credit is returning of interests within 12 months, and returning of the credit value is prolonged up to 18-24 months. According to the agreement signed between the farmers and the storage enterprises the State makes an advance payment

at the rate of 40% of agricultural products cost. At that, the cost of production is calculated in accordance with State procurement prices. The legislative and political aspects connected to land tenure are briefly stated in Annex 1.

Amount of farms and lands by types of property

Lands distribution by types of property (co-operatives, private farms, economic associations, etc.) and amount of all agricultural enterprises by 2000 is indicated in Table 1.

Table 1 – Lands Of Uzbekistan By Categories In 2000, Thous. Ha

	All agricultural lands	Including		
		Arable land	Hayfields	Pastures
All agricultural enterprises	17680.1	3151.7	152.7	13759.2
Cooperatives	17157.3	2814.5	112.2	13621.9
Economic associations	471.6	302.6	40.2	123.3
Private farms	12.9	8.6	0.2	3.3
State farms	38.3	26.0	0.1	10.7

Source: *State Department of Statistics of the Republic of Uzbekistan, 2001*

Table 2 Amounts Of The Agricultural Farms In 1999

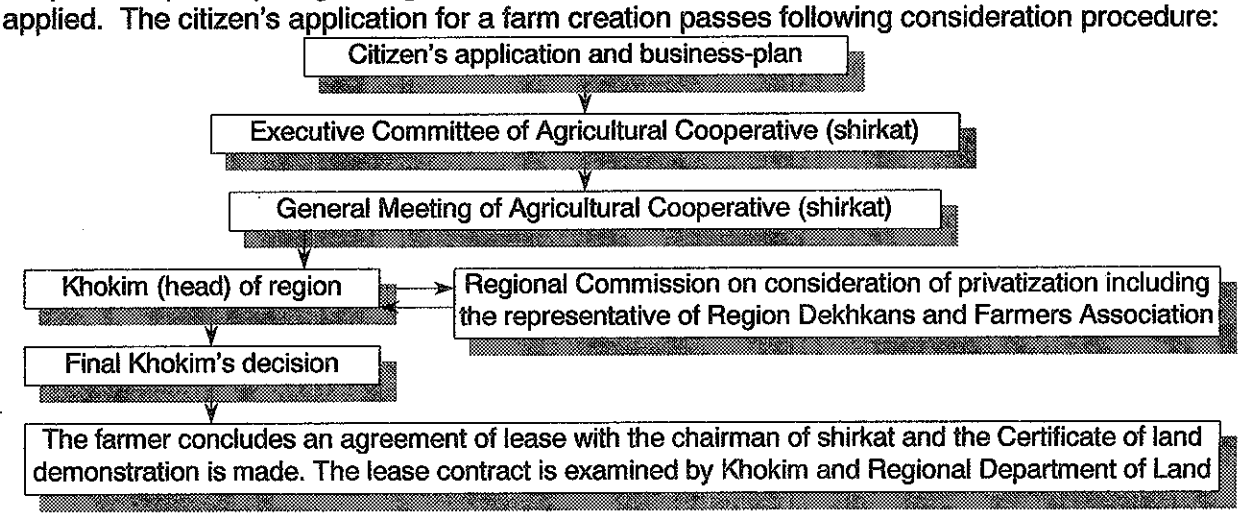
	All agricultural enterprises	Including			
		Cooperatives	Economic associations	Private farms	State farms
Uzbekistan	3090	1990	739	313	48

Source: *State Department of Statistics of the Republic of Uzbekistan, 2001*

Agricultural cooperatives (shirkats) and other enterprises and organizations receive lands in permanent possession for agricultural production according to the resolution of khokim (chief of local executive) of region. After that, the State Certificate (act) on the right of possession by land is given.

The order of getting land for farming

The citizens planning to farm give the application to Executive Committee of agricultural cooperative (shirkat) on granting the land to lease (rent). To the application the business-plan is applied. The citizen's application for a farm creation passes following consideration procedure:



The terms of passing of the privatization procedure are regulated. In case of refusal citizen can address to the court. The citizens living on the shirkat's area have priority rights in getting the land. Land dimensions are determined by General Meeting of the shirkat's members and khokim of region taking into account the concrete conditions and specialization of a farm. Lands for farming are given to the citizens from: reserve lands; lands of special republican fund; lands of farms with insufficient manpower; lands on new irrigation areas; lands of unprofitable or not sufficiently profitable agricultural enterprises. Lands of research institutions, higher educational schools, academic lyceums, professional colleges and comprehensive schools for educational, experimental, quality testing purposes, and the grounds of water fund are not to be given to farms.

Current Privatization Activities

The former State farms (sovkhoz) and collective farms (kolkhoz) (BSK) are in a condition of continuous transformations. Many of them are still the mixture of collective cooperatives (shirkats), private farms (10-100 ha), dekhkan farms (to 0,3 ha), but some already consist only of private and dekhkan farms. Today the following activities are carried out:

- Transformation of collective farms (kolkhoz) into co-operative farms (shirkats) based on shares (Close Joint-Stock Company). In 1998 the first 65 agricultural cooperatives (shirkats) with a share fund of 25,7 billion sums were created. By the beginning of 2000 the number of functioning agricultural cooperatives (shirkats) has achieved 963 and other 836 shirkats are being planned.
- Creation of shirkats for agricultural production, processing and operation service.
- Support of private farmers.
- Reorganization unpromising, unprofitable and not sufficiently profitable agricultural enterprises into the farms on a competitive basis, in correspondence with the proposals of a Governmental Commission on readjustment.
- Organization of infrastructure objects (storage for realization of petroleum products, fertilizers and pesticides, consulting firms, micro-banks, zoological stations, etc.).
- The realization of the Project "Support of agricultural enterprises" has started in five regions of Uzbekistan (loan IBD).

The tasks of the Project are:

(i) Rehabilitation of the irrigation and drainage system;
(ii) Purchasing of agricultural machinery, fertilizers, seeds;
(iii) Credit lines; approbation of the new methods for organization of producing and agricultural production marketing. By way of experiment in regions taking place in Project: since 2002 instead of entrusting to produce cotton and grain-crops the State has fixed the purchasing prices for these cultures. Farmers at agreed prices may sell all extra production.

Land Privatization Efforts

In 1990, 940 collective farms (kolkhoz), 1108 State farms (sovkhoz), 1200 State cattle-breeding farms were functioning in the Republic.

The economic reform in agriculture has started from the creation of legislative base for reforming and has passed some stages. During the period of 1990-1999 more than 10 laws on the problems of agricultural reform in Uzbekistan were passed.

1990 – Governmental Decree "About further development of personal subsidiary farms of the collective farmers, State farms workers, citizens for individual building" provides the extension of

personal subsidiary farms (since 1998 they are called "dekhkan farms") up to 0,24 ha; 500.000 ha of lands were allotted for this purpose during the period of 1991-1994. In 1992 the law "About a dekhkan farm" was passed.

1994 – By Government Decrees:

- Realization of the gardens and vineyards located on small plots in private property (51% of gardens and 47,5 % vineyards were sold) started;
- The annual ground tax taking into account quality, location and water supply of the land entered;
- The objects of trade and services sector together with the plots on which they are located in private prosperity were allowed to sale on the auction basis.

By Decree of the President:

- The land plots (up to 0,06 hectares) for the personal subsidiary farms were allowed to realize on an auction basis;
- tentatively in Karakalpakstan there has been started selling of lands that are not used in national economy and also lands belonging to unprofitable and not sufficiently profitable agricultural enterprises (5 ha - in irrigation area, and up to 15 ha - in dry area) on an auction and competitive basis in life inherited possession.

Perfecting of the land relations in an earlier stage of reforms promoted preservation and extension of irrigated lands.

1997 – By Decree of the President was provided:

- Realization of inventory of land given to the citizens for personal subsidiary and dekhkan farms with the purpose to define their rational use;
- Encouragement of the best agricultural producers, rationally and effectively using their lands, by increasing their land slots from 0,25 to 0,35 ha in irrigation area and from 0,5 to 1 ha - in dry area;
- Warning of the mismanagement facts in land tenure;
- Creation of Association of personal subsidiary and deckhand farms holders.

Unfortunately, the farms were formed without the clear developing program and frequently have had undeveloped character. There was no organizational training of the farmers for working in conditions of the market economics, and, as a result, many farmers did not pass testing by time. In 1997, 790 farms stopped the activity.

1998 - Beginning of a new stage in development of farmer movement. "State Special Program for Deepening of Economic Reforms on period 1998-2000 years" was approved. That document was done with account of existing experience and according to new tasks on further reforming of agricultural sector The new projects of the Laws "About a Private Farm", "About an Agricultural Cooperative (Shirkat)", "About a Dekhkan Farm" were accepted as well. The Special Republican Commission was organized prepared the number of significant documents indicated the way of transforming from collective farms (kolkhoz) into agricultural cooperatives (shirkats), their further development and perfection.

These measures have been the essential for farmer movement.

Table 3 Trends of farms formation

Private Farms	Years						
	1990	1991	1992	1995	1996	1999	2000
Amount of farms	1358	1868	4378	18085	19828	31090	43759
Areas, thous. Ha	9.1	13,7	35,6	264,6	308,2	665,7	889,7
Average size of land, ha	6,7	7,3	8.1	-	-	21.4	20,3

2. Overview of environmental impact

Nowadays, the short time and the small experience of privatization does not allow to give an objective and unequivocal evaluation of privatization role in improvement of natural resources management, including agricultural lands. Special survey was not conducted. Therefore, the approach of such evaluations is one of the major priorities.

Besides, it is necessary to take into consideration that the market relations in agricultural sector of Uzbekistan actually are just being originated. So, in my opinion, it is premature to expect considerable improving of natural resources management as a result of privatization.

> "During the last fifteen years the farm was both the state farm and shirkat, but now here it has become – private farm. It did not lead to improving yet, everything remains as before. Certainly, we hope it will become better - though, if water will not be – no farming will rescue". *Inhabitant of the farm, aged-man (aksakal).*

Nevertheless, some observations and evaluations are possible.

As a positive example of resource management efficiency increasing, it is possible to consider the growth of foodstuffs production in Uzbekistan. According to the official statistical information the share of import foodstuffs to the Republic has reduced up to 16-18% for the last 10 years, the consumer market shows it as well. For example, now there is no import meat on the counters of shops.

For the period of 1993-1999 the quantity of cattle (cows) was increased by 3.2 %. At the same time the quantity of cattle (cows) in collective farms was reduced twice, in dekhkan farms has increased by 12.9 %, in private farms – by 16.8 %.

The total number of the unprofitable agricultural enterprises was in 1996 – 60.9 %, in 1997 – 42.8%, in 1998 – 31.2%, in 1999 - 10%.

Evident positive ecological effect in connection with privatization is observed in the cattle breeding. The cattle-breeding waste accumulating in settling pits played significant role in contamination of environment. More than 70% of almost 1000 settling pits in the Republic were constructed without antifiltrational covering. Annual volume of cattle-breeding wastes was about 20 mln.m^3. Many accumulators (of liquid scraps) make the potential threat of flooding the surround areas or coming the toxic scraps in water reservoir. After privatization the large cattle-breeding complexes practically are destroyed and the small-sized private farms use the rigid scraps as organic fertilizers and liquid scraps are distributed all along the large territory.

Issues of Water Management

In the region where economics strongly depends on irrigated agriculture the water shortage and problems of water resources are predominant.

According to evaluations of WB main problems currently threatening to productivity and stability of agriculture of the Republic of Uzbekistan are: (i) lack of impellent factors for farmers to improve production and productivity; (ii) deterioration of irrigation and drainage infrastructures; (iii) salinity and bad drainage.

Due to these factors, the irrigation systems are out of the acceptable standards and there is no essential restoring and development of irrigation and drainage infrastructures. As a result there is extreme losses of water, low efficiency of irrigation, bogging and salinity of lands and decreasing of crop.

Transformation of former collective and State farms into various producing farms and old-fashioned system of water distributing and planning contradict to each other and have created numerous problems in a water-supply of the existing farms.

"There is a propagated perception of the State as formal owner of land which will not make investments in irrigation of land. Social questioning has shown that 100 % of the respondents consider that their houses and land round the houses; including areas of dekhkan farms belong to them. Even farmers who rent (or lease) lands consider that they have the sufficient formal right of "land tenure" to put money in improving. The problem is that available land is irrigated insufficiently, the drainage is inadequate to requirements and the water distribution is not always fair and objective. Shirkats and farms based on the family contract, and also the private farmers put own money in operation of irrigation and drainage structures".

Source: The Report SQ on Project KCPS, 2001

Issues of Farm-Irrigation Water Management

The problems of water supply are clearly observed in interaction between the rest of collective and State farms (shirkats) and new private farms. Now shirkats are **primary water-users**, and private farms organized on the boundaries of shirkats are **secondary water-users** and in process of water apportioning the farmers are in unequal conditions.

The shortage of water under the existing management and distribution leads to conflicts between the water-users in head and tail of channels. A regional water organization as well as shirkats cannot guarantee in-time water-supply and are not responsible for loses of farms in connection with shortage of water.

"Today the clearly developed policy for transfer of irrigation and drainage systems management from State organizations to the others is non-existent yet"

"Considering, that the experience of Water Users Association (WUA) in Uzbekistan is insufficient it is necessary to define the alternate organizational approaches and to test them on social and technical feasibility"

"The first step of Uzbekistan to transfer the irrigation management was the WUA on the voluntary bases by territorial principle and its Statement by khokim of the region. Obviously, this small experience of activity of recently created WUA in Khorazm, Fergana Valley, etc. and the obtained knowledge are extremely important for all groups of stakeholders and further development of irrigation management in Uzbekistan"

Source: The Report on Privatization of Irrigation. The Project of DFID, UK, 2002

"Step by step farmers get developed, be able to agree and restore jointly the former drainage system. But it is too early to speak about this. The farmers are plain people and they do not understand all importance of drainage. Now they are singing one song: "We need the water". But if there is no drainage we destroy the soil. What kind of land shall we keep for our children? At least once in some years it is necessary to clean the collector". - Chairman of farmer association.

The main problem zones of agriculture production are the areas of former airdromes of agricultural aircraft that were used earlier for pesticide and defoliant treatment of crops. At present there are 460 such airdromes in the territory of Uzbekistan. The content of OPs in soil of airdromes exceeds all reasonable limits. The majority of these lands are moved up into the category of reserving lands. Some of them are allowed to be used for cultivation of technical cultures. State Committee for Nature Protection fulfills the monitoring of quality of these lands.

There is an Instruction for use of these areas. It is the only type of land for privatization of which it is necessary to receive the sanction of State Committee for Nature Protection. The airdromes belong to shirkats on which territory they are located. These lands are fertile and located on irrigated areas so there is a large temptation to privatize and use them in agriculture. It is known a case of rice cultivating on such areas without the sanction of State Committee for Nature Protection. That rice was allowed to be used as seeds only.

Unfortunately, I could not find accessible information and official reports on cases of the polluted lands revealing result of privatization in agriculture. But I think there is little likelihood of such cases. At the time of giving lands to farmers in the agreement there is information about qualitative condition of lands "...based on the data of available soil maps, appraisal of soils and other materials of agricultural cooperatives (shirkats)". The information of soil contamination except salinity in soil maps is not present. Evaluations of soil contamination levels, for example, by pesticides, toxic metals, etc. at the time of giving lands to farmers are not conducted. The existing monitoring of soil contamination in Uzbekistan cannot supply each farmer with such information.

The agricultural lands which are not an object to be privatized (allot to lease, use, possession):

- Especially valuable productive arable lands;
- Lands occupied by especially protected territories;
- Lands of suburban and green zones of cities;
- Lands of experimental fields of research and educational institutions;
- Lands covered with wood vegetation;
- And lands of water fund.

Lands, which are not an object to pass into private property and realization on auctions in life, inherited possession:

- Lands of general use of cities and settlements (squares, streets, passages, roads, quays, parks, parkways, water-security zones, beaches and other).
- Lands of nature monuments, botanic gardens.
- Lands of improving and historic-cultural destination.
- Lands given for use and protection of the earth bowels.
- Lands infected by dangerous substances and subjected to biogenic infection.
- Lands stipulated by the general plans of cities development, by projects of a detail planning and by schemes of objects distribution, except for objects of trade and service.
- Lands bordering to highways.
- Lands allotted under electro-transfer lines, cable lines and substations, thermal, water and sewer lines, gas pipelines, nation communication lines and structures water structure. (Decree of Cabinet of the Ministers of RU, 1995).

3. Environmental impacts by sectors

3.1.1 Agricultural Land

During privatization and formation of various patterns of ownership in agricultural production it was observed the tendency of increasing in productive capacity of all agricultural cultures, though a level of 1990 have not been achieved yet, except in grain-crops.

Table 3.1 Crop Capacity (Centner/Ha) Of Basic In Various Categories Of Farms

Agricultural crop	Years	All categories of farms	Private farms	Dekhkan farms	Shirkats
Grain-crops	1996	21,0	18,9	31,9	12,5
	2000	25,9	23,9	39,5	21,5
Rice	1996	25,3	23,2	37,8	21,5
	2000	26,3	25,0	50,9	21
Vegetables	1996	174,1	144,8	176,3	120,5
	2000	178,0	164,1	186,3	-
Cotton	1996	-	-	-	-
	2000	20	18	-	21

The rates of productivity growth are different for various types of farms.

The greatest productivity growth is observed in dekhkan farms because they got the plots on fertile, well irrigated and conveniently located lands. As a rule, those are plots of land attached to a house and additional plots (0,25-0,35 ha), located close to the house (in outskirts of a settlement). Besides, dekhkan farms receive the lands in life-inherited possession and feel themselves as the real hosts. They are independent in choice of agriculture production and independently manage with the results of their work.

For example, in 1999 in total volume of agricultural production the share of the dekhkan farms has achieved: meat - 91%; milk - 93%; potatoes - 78%; vegetables - 71%.

The productivity of private farms is a bit lower, than of the dekhkan farms, but it is only a result of the restraining factors, which is independent on farmers. The farmers have received to lease poor lands. "The private farms receive reserve lands; lands of Special Republican Fund; lands of farms with insufficient manpower; lands on new irrigation areas. They are also may receive the lands of unprofitable or not sufficiently profitable agricultural enterprises". Besides, the private farms depend on Executive of Shirkat in choice of agricultural production, in getting of water, agricultural machinery, etc. Nevertheless, productivity of private farms is increased from year to year (see Table 3.1).

"Each farmer has his own form and stamp. The farmers began to feel an independence" – *The farmer*.

On the contrary, the agricultural productivity (except in cotton) is lower in shirkats. Probably one of the reasons is a insufficient motivating factor to work in collective farms (land belongs to shirkats and dekhkans can not manage with a results of the work).

Use of Pesticides

The total load of pesticides on environment has considerably decreased in Uzbekistan during the last 10 years. According to different assessments the amount of pesticides used in Uzbekistan have reduced almost in two times, and of high-toxic pesticides – in four times.

The reasons including the high price of pesticides is essential changing in pesticides policy and in strengthening of institutions. The pesticides of new generation with a high degree of efficiency/small doze, with minimum human health hazard and impact on environment are entered the market of Uzbekistan. It was created State Chemical Commission on chemicalization and plants protection. At the same time the Law "About an Agricultural Plants Protection from the Pests, Illnesses and Weeds" and a number of Standards regulating production, export, import and use of pesticides were also accepted.

The practice, methods and technology of pesticides usage in collective farms (shirkats) was not principally changed, as well as the ecological problems caused by necessity to use pesticides

and fertilizers. However, pesticides usage by individual dekhkan and private farms is new and actual ecological problem for region.

The dekhkans firstly faced with necessity to apply pesticides on their lands by themselves. They have not any experience and equipment (syringe, etc.), they do not know the methods and technology of pesticides usage and do not imagine an actual degree of human hazard and impact on ecosystem. Development of services considerably retards from the process of agricultural privatization and dekhkans often do not have an opportunity to get the assistance of specialists.

Moreover, the high prices of modern pesticides and availability of large quantity of obsolete, unwanted and banned pesticides remained in the warehouses create the prerequisites for "black marketing", where dekhkans can buy pesticides at the low prices but low-grade and dangerous pesticides including banned such as DDT and HCHs.

There are some cases of people poisoning (farmers and members of their families) by pesticides because of the storage conditions violation (in home condition) and non-observance of the pesticide usage technology. The content of POPs in arable lands of some regions (for example, Fergana Valley) has increased.

The State takes the measures. Recently, the network of small-sized warehouses for storage of pesticides and fertilizers is created. Every warehouse has shop to sale pesticides to farmers. It is planning to open more than 800 shops during the period of 2001-2003. The list of pesticides allowed to sale is determined. However, scanty knowledge and experience, shortage of equipment, limited opportunity to get the experts assistance are still the problems for today.

The Governmental policy aimed at maintenance of grain independence of Uzbekistan had an effect on expansion of sown areas intended by shirkat for wheat. However, sowing of other crops is still limited, as a result of government contractual work on the cotton and wheat, and because of water shortage. Sowing of mono-cultures and the small crop areas of lucerne and corn increases the load on soil, lead to its deterioration.

Incorrect and ineffective water management with unequal drainage cause heavy damage for the land productivity and for incomes of the farmers, and makes extreme threat of environmental contamination.

According to the recent preliminary data provided by the Ministry of Agriculture and Water Resources, about 27.6 million ha of agricultural land, of which 5.2 million ha is arable land, are affected by one or more damaging impacts. Among the main degradation processes in the irrigated lands, 2.111.600 ha are exposed with the human-induced (secondary) salinisation and 377.200 ha are gypsiferous soils, 46.500 ha are abandoned, and pesticides, etc pollute are about 54% of the surveyed area.

The current degradation of irrigated lands has caused the gradual, but steady reduction of the yields. For ten years the average cotton productivity in Uzbekistan has decreased from 2.8 t/ha (1990) up to 2.2 t/ha (2000). The average yield production raw of cotton as a result of soil salinity is estimated approximately 1 mln US $. On soil with mean level of salinity the yield is decreased by 30-40%. Average level of crop yield in the farms of Hunger, Jizak and Karshi steppes as well as in Pre Aral (Republic of Karakalpakstan) vary from 1.0-1.5 t/ha. Undoubtedly, this has resulted in low income for the farmers in the salt affected areas.

Many factors are responsible for this, including soil salinity caused by excessive use of water and poor drainage, deterioration of the operation and of maintenance system, etc. The exhaustion of the soil is due to insufficient crop rotation, and the increasing scarcity of inputs plus the low purchase price of cotton minimizes efforts to of improve yields. Shifting

responsibility for water supply from FKS to shirkats, which not responsible for the losses and do not have sufficient expertise to successful manage of the salt affected soils, causes serious damage to agriculture sector. Private and dekhkan farms are more vulnerable.

Issue of the day is the current condition of the collector-drainage system (CDS).

> "Irrigation is our trouble. The shirkat have no money to clean collectors. The soil is salted, and in case of heavy rains it can become unsuitable for an agriculture a all" *(The water engineer of shirkat).*

Farmers used to that irrigation and drainage system serviced by the State and as a result they have no experience of necessary construction and service of the drainage systems.

> "We have marred up the land ourselves... We have used for watering 5000-6000 m3/ha instead of 1200 m^3/ha" *(The chairman of shirkat).*

Source: The Report SQ under the Project KKNS, 2001

> Without construction of the collector-drainage system we won't be able to improve the land condition. Irrespective of the water volumes that we will receive, there won't be any results without developed drainage. Today our lands in a stage of seasonal salinity, but I'm afraid that saline layer will begin to open soon and then to take actions will be late". *(The chairman of shirkat).*

> "More and more illegal water intakes is done on main canals and inter-farming canals. It is denote on the fact that farmers have difficulties with watering of their fields from official irrigation network".

> "Consequently, the level of ground waters is increased up to high marks in many places. It results to extremely high mineralization of water, which the farmers could pump out from slits with manual pumps, when other water sources are inaccessible for watering of homestead land and maintenance of farmers hygienic needs".

Grazing lands

The grazing lands in Uzbekistan cover 83.3% of all farmlands. Among them 95% are desert grazing that is the main fodder base for sheep, goats, horses and camels. The major part of grazing lands belongs to shirkats. During last 20 years the productivity of grazing lands was reduced approximately in 20-25% because of the degradation process.

According to the ground and satellite data (Arushanov, etc., Glavgidromet of the Republic of Uzbekistan) for the last 10 years the increase in amount of degraded grazing lands (productivity is 0.5% and less) is continued in the North of Karakalpakstan and on tableland of Ustyurt. The main reasons leading to the grazing land degradation in this region are the expansion of the salted territory and over-pasture of cattle. Traditionally the denseness of cattle on grazing lands of Karakalpakstan (6-7 heads/ha) is above than in other regions (about 2 heads/ha on average in the Republic). After privatization the denseness of cattle on grazing lands practically was not changed. The productivity of desert grazing lands was reduced in some areas of Bukhara and Navoi regions.

3.2 Forest lands

The forest in Uzbekistan is under State ownership - national wealth, is the subject to rational use and is protected by the State (Law "About Forest", 1999). The forests mainly execute ecological (water-security, protective, sanitary-hygienic, improving, recreation), aesthetic and other functions and limited exploitation. It is allowed the felling mainly to improve the forest but industrial felling of a wood has stopped since 1980.

All forest lands make the State forest fund that consists of State significance forests, i.e. that are under the jurisdiction of State organs of forest (86% general lands and 81% of area covered with forest), and forests are in use of other departments and the legal persons (14%). The forestlands can be allotted to use, possession and lease. The forest usage is paid.

In the Republic the issues of transition to the market regulating in forest management and using are discussed. Last year the Government has requested both forestry chiefs and experts opinions on forestland privatization.

In 1998, the forest fund of Uzbekistan included 9.120.000 ha of land, it is approximately 20% of all territory of the Republic; among them the area covered with forest – 2.776.000 ha (6.2%). The forestlands in Uzbekistan are sharply differ from each other in natural conditions and are divided into (11% of the area covered with forest), deserted forest (87%), flood-lands forest (1%) and valley forest (1%). All forests are referred to the first group and are characterized by uniqueness of flora.

As a result of human activity in the Republic the area of forest was reduced in 4-5 times. Mountain and tugai forests located in flood-land of the rivers suffered especially rigid antropogeneous impact. In the past impassable tugai jungle occupying the area of 250.000 ha, tugai forests are saved on area of about 25.000 ha, generally as a consequence of pass the lands for agricultural needs and regulation of the rivers. There is a program for rehabilitation of tudai forests.

For years of independence and in connection with transition to market conditions of management the factors of impact to the forestlands were also changed. To the traditional reasons leading to the forest degradation and exhaustion of vegetative coverage such as deflation of soils, wood fires (30 fires during 1993-1996 have destroyed 7.500 ha of tugai forests), damage by the pests, etc. the economic factors were added or become the defining.

Unstable State maintenance and sharp rise in price for coal in conditions of economic crisis result to uncontrolled chopping of forests (especially the mountain forests of Western Tyan-Shan) by population.

Pasture of cattle on the lands of forest fund is considerably increased. In the mountain regions of Western Tyan-Shan pasture of cattle has exceeded the norm in 7-8 times (Khanazarov, etc. UzNII of Forest). "Now as before, despite on the significant fine sums made to forestry by the State Committee of Nature Protection the pasture regime on the lands of forest fund is infringed" (National report, Gaskompriroda, 1998).

There is conflict of various patterns of ownership - money interest of private farms, holders of cattle and absence of interest to save State grazing-lands from State forestry organs.

The forest lands of former collective farms (kolkhoz) and State farms (sovkhoz) after their privatization have become neglected. They need for protection from violations, fires, pests and illnesses but up to now there is no an elementary account of such forests.

- The National Strategy of Uzbekistan on increase of ecological and economic potential of forest resources provides:
- Rehabilitation of the forest areas of the Republic up to a level of years 60-70-s;

- Creation of industrial wood plantations for production of business wood and wood used as fuel (poplar tree and other high growth breed of trees);
- Providing of rational forest management;
- Perfecting of the forest restoring system.

3.3. Wetlands

The majority of Freshwater Lakes getting water from rivers has practically vanished on the lowlands after regulation of rivers. The Drain Lakes (using for disposal and evaporation of collector-drainage water which is formed in irrigation areas) have become predominant. The Drain Lakes are peculiar ecological oases (zones of biological balance maintenance). Moreover they have socioeconomic importance (they are used by the population for rest, fishing, the hunting) and undoubtedly need the serious study.

Almost all wetlands existing in Uzbekistan are used in fish industry. Many enterprises mainly belongs to the State Joint-Stock Company "Uzbalik" are allowed to use large fish-breeding wetlands (more than 25.000 ha) for commercial fishing. The smaller wetlands can be granted to the other legal organizations and persons. The wetlands are not placed at dekhkans and farmers private possession. The licence for using the wetland or part of wetland for commercial fishing is given by State Committee for Nature Protection with the local authorities approval. State Committee for Nature Protection realizes the monitoring of wetlands use and gives the fishing quotas. The use of wetlands is free of charge. The industrial function of wetlands has not been designated yet in policy of water resources management.

Wetlands in Uzbekistan can be divided into three groups according to the ecological problems:

Wetlands of Mouth of the Amudarya River

The fish-breeding and reclamation measures of the State under sponsoring of WB and the others generally coursed on the watering and water saving.

Up to 1960, the delta zone of the Amudarya River had its own extremely complex hydrographic network of channels and an extensive lake system with the rich natural fish resources. Since the middle of 1970s the flow of river waters in delta zone of the Amudarya has been reduced in 4-6 times, and in some low-water years the River does not reach the Aral Sea at all. The areas and levels of lakes began to reduce quickly and more than 80 lakes have ceased to exist. For stabilization of the ecological situation in a delta of the Amudarya river and for maintenance of the fishing industry in the Republic carried out works on the creation (diking, leading of channels, construction of low dams) of artificial reservoirs at the location of former Sea bay Ribachyi (Sarbas), Muinak, Jaltirbas, and also in the Mejdurechye.

The GEF Project "Restoring of Wetlands" directed on stabilization of ecological condition of the Sudochye Lakes system (according to the Ramsar Convention it if the natural object of mandatory preservation) is currently in final stage.

The low-water of last two years (2000-2001) has led to the crisis of delta ecosystem. As a result many of wetlands have dried up.

Wetlands of Average and Lower Stream of the Amudarya River.

In 1990, there were 269 lakes (total area of them is 739 km^3) on the territory of Karshi, Bukhara, Ellikalin and Chimbay irrigative regions. The satellite photos (1997) show that the number and areas of Drain Lakes increase. (Gorelkin etc. "Problems of deserts assimilation"). The ecological condition of those wetlands is insufficiently known and more or less available information exists

only for 9 large lakes. The average depth of reservoirs varies between 2 and 4 m, but there are some lakes with the depth of 9 m and more. The most of lakes are closed lakes; therefore, the salt accumulating in them leads to salinity of reservoirs and eventually to their transformation into saline lands. The mineralization of the flowing reservoirs has been stabilized, but the bogging processes are observed there. Neither reclamation projects nor monitoring is practically is fulfilled. The same situation is in majority of Drain Lakes but, in addition, there is not any clearly developed and coordinated program supporting the fishing that result the fish productivity is disastrously reduced in those lakes. Finally, the fishing falls into decay.

The Arnasay Lakes System is the ***Large Wetlands System*** located on the average current of the Syrdarya River is currently under the reclamation projects. The lake system itself was formed during a catastrophic flooding of 1969 as a result 21 km^3 of water release from the Chardara Reservoir. Over the next years there were not any discharges water to the Arnasay Lakes System. Since then the surface of this new sea has exceeded 3250 km^2 (mineralization is 2-4 g/l), and still growing, flooding about 20 thousands hectare of rangelands annually. After the reclamation work the productivity has been increased and the ecosystem has been stabilized.

However, since 1993-1994 the situation in the Naryn-Syrdarya Cascade of reservoirs has sharply changed because of moving up the Togtogul hydrosystem (Kirghizia) into the power operational mode; the flooding of water from Chardara reservoir had been recommenced. The water level has been sharply raised and made 7.6 m and total area of the reservoir had been extended in 1.5 times for the period 1993-2000. That sharp extension of wetlands has led to the deterioration of ecological situation; to modification of biovariety, water quality, productivity, flooding and salinity of farmland, etc. As predicted, the reclamation works (the dams construction, creation of the additional reservoir in desert) fulfilling by the State will allow relieving a stress on this area.

3.4. Current public lands

Current public lands are in direct administrated by local authorities (regional, municipal). The constructing on public lands is authorized only in correspondence to the specified purposes.

The plots from the public lands, except for roads and aryks are allowed to be granted to the juridical persons and citizens in temporary use based on the lease for lightly built (trade tents, kiosks, advertising structures etc.) according to the decision of the khokims (regional, municipal). Embankments and the coastal bands of reservoirs are mainly used for rest and sports.

Many public lands of improving, recreating and historic-cultural destination (parks, parkways, squares, lands of aryk networks, embankments etc.) have been transferred into the category of Especially Protected Natural Areas (EPNA). The economic activity and farming is limited on the EPNA, the special mode has been entered. The EPNA are the property of the State and protected by it.

The EPNA are administrated by local authorities (regional, municipal). The State Committee for Nature Protection realizes the monitoring of the EPNA. Since 1998 the State Cadastre has been entered.

Samples of pressures on currently publicly held lands

The Coastal bands of the rivers, channels and lakes are under the most cruel pressure. There is a numerous cases of the private residences and cottages building, cattle pastures, cut down of the trees, organizing of car-washings, dumps, creating of the kitchen gardens are summer residences etc.

The recreational zones becomes inaccessible for public use. For example, the most attractive areas surround the Charvak reservoir in densely populated zone not far from Tashkent-city is granted to banks, industrial enterprises and various small private firms.

State Program on Creation of Water-Saving Zones along the Rivers is currently in progress in Uzbekistan. The zones for four Rivers have been determined. According to the Decree of Government the Local Authorities should ensure the discontinuance of any activity threaten to the water quality and sanitary of reservoirs up to 2003.

Uzbekistan Annex 1

CURRENT STATE INSTITUTIONAL AND POLICY STRUCTURE

A.1. Legislative and political aspects connected to land tenure

The general agricultural strategy of the Republic of Uzbekistan is based on four laws aimed at run of "Program on strengthening of economic reforms in agriculture" (1998): I) Land Code of the Republic of Uzbekistan; ii) Law of RU "About agricultural cooperative (shirkat)"; iii) Law of RU "About private farm"; iv) Law of RU "About dekhkan farm".

According to Land Code of RU (Article 16) the lands is a state ownership – national wealth, is the subject to rational use, is protected by the state and is not subject to sale and purchase, exchange, feofment, pawn, except of cases established by the laws.

The laws of RU ("About agricultural cooperative (shirkat)", Article 28, "About private farm", Article 26 and "About dekhkan farm, Article 22) provide, that shirkat, dekhkan and private farms have the right voluntary to integrated and to enter in cooperative, companies, unions and other associations for production, purchases and sales of products, construction, material and technical supply, water, veterinary, agrichemical, consulting and other services.

A.2. Institutional structure of land tenure

National organizations

Institutions of Republican level

Institutional structure of land tenure in Uzbekistan is very complicated. The system is hardly centralized and the main decisions are accepted at the top level of political system: Cabinet of Ministers headed by President of the Republic. The Ministries in Uzbekistan are executive bodies of Cabinet of the Ministers.

Uzbek State Committee on Land and Ministry of Agriculture and Water Resources are responsible for land tenure. They have two levels of subordinate executive bodies: on regional and district levels.

Ministry of Agriculture and Water Resources includes a number of institutional subjects in the field of planning, designing, construction and researches, and also Scientific Agricultural Center connecting the network of research institutes of the Republic. Moreover, Ministry of Agriculture and Water Resources have a large educational institution (TIIIMSCh) for training of the irrigation engineers, mechanization expert and other specialists in irrigation and agriculture.

Uzbek State Committee on Land was created in 1999. The Committee includes the institutional subjects in the field of planning, designing and researches: Uzdaverloycha, Uzkadastr, etc.

Local Organizations

Local organizations are actually the executive bodies of Uzbek State Committee on Land and Ministry of Agriculture and Water Resources on regional and district levels. Therefore, organizations on regional level have the same structure, as on republican level.

Absolutely independently of the above mentioned establishments work the Regional Committee of Nature Protection subordinating to State Committee of Nature Protection (Goscompriroda of RU).

Uzbekistan Annex 2

Overview of land tenure in Uzbekistan

The total land fund of the Republic is 44.410 mln ha, from which 12.350 mln ha potentially suitable for irrigation (irrigation fund) and lands of current irrigation. Remaining 32.060 mln ha is deserted grazing lands, mountains, sand, outputs of radical breeds and other lands unsuitable for irrigation.

Agricultural lands consists of: *arable lands, long-term plantings, fallow lands, hayfields and grazing lands*. Correlation of lands by types is illustrated in Table B.1.

Table B.1 - Correlation Of Lands By Types In Uzbekistan, 2000 Ha

Arable lands	Long-term plantings	Fallow lands	Hayfields, Grazing lands	Total of agricultural lands	Homestead lands and Kitchen gardens	Lands is preparing for irrigation	Forest	Land unused for irrigation
4056,6	352,9	80,7	22263,4	26753,6	651,4	79,3	1511,9	15414,1

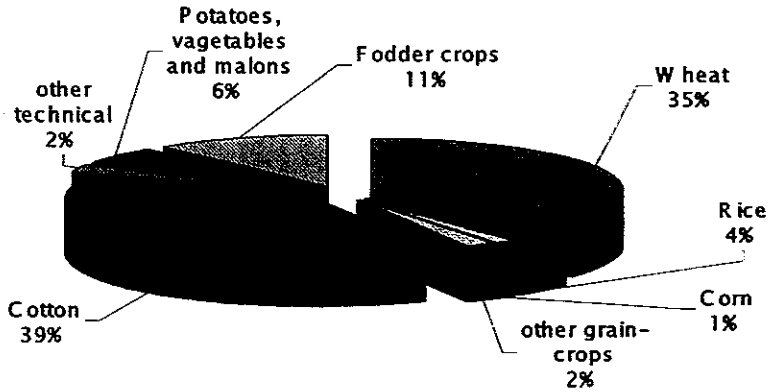
Source: Uzgi, 1992; Uzdaverloiykha, 2000.

***Table B.2* - Amount of cattle, thous. heads**

	Years			
	1992	*1999*	*2000*	*2001*
All cattle-breeding farms	***5112.6***	***5225.2***	***5281.8***	***5353.4***
Private farms		***171.2***	***174.8***	***198.1***
Dekhkan farms	***1906.6***	***4378.5***	***4487.1***	***4613.3***
Shirkats	***1624.1***	***675.5***	***619.9***	***542.0***

The structure of arable lands. Figure B.1.

Figure B.1. The structure of arable lands



More than 88,7 % of arable lands is irrigated arable lands (Figure B.2).

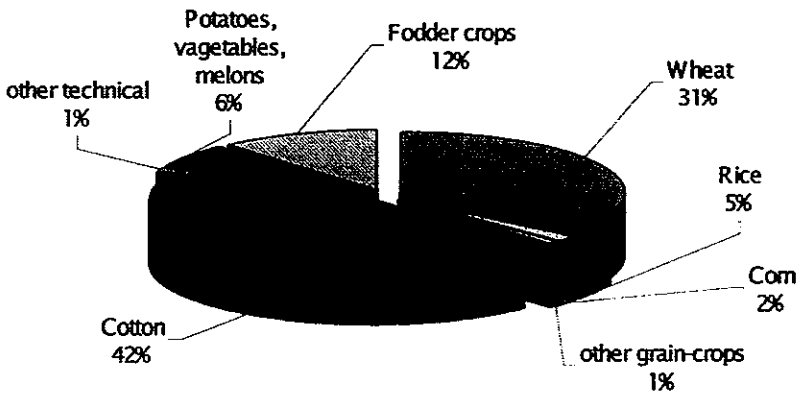



Figure B.2. The structure of irrigated arable lands