

Sustainable agriculture and forestry in Lithuania: constraints and opportunities

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ABSTRACT

This paper discusses the social, economic, and political aspects of agricultural and forestry sustainability in Lithuania and the world. It addresses the question of what types of rural economic structures may facilitate the development of sustainable rural communities.

The paper also examines relationship between agricultural sustainability and industrialization, farm size, family farming, land use, the role of subsidies in agriculture and forestry. It addresses the aspects of sustainability of rural communities, the interplay of societies and ecosystems, and the natural mechanisms regulating densities and health of populations.

Key words: sustainable development, agriculture, forestry, farming, ecosystem, landscape.

INTRODUCTION

Sustainability in human activities is understood as human actions maintaining both the richness of the diversity of species as well as the proportional composition of this diversity. Sustainable human activities should also lead to the equity in the society, as well as a mutual trust between individual social groups and individual members of these groups.

The concept of sustainable development has been coined by the world leaders in the Rio Summit in 1992. Since then, sustainable development has become a main long-term development ideology for the society. The action

programme Agenda 21 was also adopted in the Rio Summit.

Concepts of sustainable development in agriculture and forestry in Lithuania were formulated only during the recent years as a response to the modern management based on developed technologies, which due to the intensive use of resources continue causing degradation of natural resources.

The present day farming is increasingly perceived not only as a technological management of land or silvicultural processes, but also as a combination of social, cultural, political, and economic processes in the nature and society.

Unfortunately, it must be admitted that still in Lithuania, and the world, sustainable development by many is understood as mainly an act of balancing between the economic and the ecological functions, disregarding the social aspects and forgetting spiritual and ethics issues in the modern society, which were not as important in the earlier years.

The early gatherer's and hunter's societies were completely dependent on the nature and changes in the ecosystems. The disrespect of the nature back then would have meant the starvation or death. Therefore, the primeval man has assigned to the nature a meaning of God. Such a perception in the spiritual world of the primeval man meant complete harmlessness to the surrounding ecosystems.

About 10 000 years ago, after a long and slow human evolution, the society has experienced revolutionary technological and social

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developments. After learning to use clay for making dishes, domesticating animals, and crafting first agricultural equipment, primeval gatherer's and hunter's societies have transformed into agriculturalists.

If a man-gatherer was able to sustain on 500 ha of land, man-hunter was dependent on even larger territories. However, after settling and starting farming, man was able to sustain himself and a family on 1 ha piece of land [7].

All this revolutionary technological development could not have been without consequences to the spiritual and ethical world of a man. The humans started perceiving themselves as the rulers of the world, enable to unlimited use of the natural resources. The man has also created Gods similar to himself. Such a perception of the world lead to changes in the ethical values.

The agriculturalists society has continued developing the production capacities and was able to sustain a continually increasing population of the planet. It is argued that at the start of the agricultural development, population of approximately 4 million was inhabited the world, however, one thousand years later, the planet was already hosting 265 million people [22].

However, relatively primitive technologies of agriculturalists societies have not caused major changes in the ecosystems and allowed maintaining evolutionary balanced proportions of species, sustaining these conditions to the future generations of the humanity.

Ten thousand years later, after forming the agriculturalists societies, at about 1800, the evolution of humanity has led to new technological developments – industrialisation. The basis of industrial societies was an industry sustained by mining of mineral fuels; the ideological basis was an unlimited increasing industrial production and intensive use of natural resources. The principles of functioning of the ecosystems were largely ignored.

This has consequently led to the emergence of new values in society. The protestant ethics and capitalist spirit (according to Max Weber) provided for the ethical values of a man, his view of the surrounding world and the material environment.

Human development, based on these values, causes man to believe that all issues, including ecological problems, may be addressed through the new technologies and economic development. Such an individual of the industrial society usually also does not need God – he himself becomes a god of the nature and society, making both serve his/her needs.

SUSTAINABILITY OF RURAL COMMUNITIES

Even still in the agriculturalists societies, some individuals already were able to understand that the balance in the society and between the human being and his natural environment is stroke when: there is a strong middle class in the society, all individuals gain equal right of the access to natural resources, the remarkable economic inequality is avoided, and serfdom is abandoned.

This viewpoint is confirmed by the believe of Zygimantas Augustas, the King of the Grand Duchy of Lithuania and Poland, who thought that the work of a peasant on his own farm is significantly more productive than work on the land of the king, duke or a noble. The king was convinced that such work accomplishes a better collection of agricultural products, which results in a better collection of taxes, stronger state and happier societies.

Therefore, the “Zygimantas Augustas land reform” law has been issued in 1557 serving as a basis to distribute the land of the dukes and nobles to the peasants by 1 “valakas” (1 “valakas” equals to ~20 ha) per family. The objective was also to allocate this peace of land in a single location [1].

Forest guards, hunters and forest workers also were allocated with the land previously under their management. The literature sources indicate that hunters and their supporting staff were allocated with 2 “valakai”, and the guards (“sauliai”) – 1 “valakas” each [9].

The rationality of decisions of the Lithuanian rulers at that historical period of time deserves to be examined in the context of other European countries. It must be noted that at the beginning of the XXI century, the average size of the farm in

what presently are the EU member states, was also around 20 hectares. The distribution of the agricultural land in these countries was a result of a 50 years of a free market for land. For example in Sweden, as provided in Lithuanian encyclopedia [1], peasants started becoming independent from the nobles only from the second half of the 17th century, and only in the beginning of the 19th century the land was turned over to the ownership of peasants. In Denmark, the land reform was carried out only in 1851, which is 300 years later than in the Grand Duchy of Lithuania, allowing peasants to purchase their own land [1]. In Czech Republic, in 1766, peasants were allowed to purchase the land from their masters, only later, the similar possibilities were established in Austria.

If, on the one hand in Lithuania already in the XVI century orientation towards sustainable farming may be observed, on the other hand, in the western European countries only land reforms of the 19th and 20th century resulted in a formation of family farms, where work of family members prevailed, without using the hired labour [19].

Rural communities with a strong middle class were started to be formed in Europe. The middle class in these societies served as a basis for social tolerance, stability, personal security and stability of the state.

The farming, based on a family work, which was introduced in Europe at that time has remained to the present day and represents a traditional style of living in European rural areas, symbolising the communitarian way of living, mutual support, concentration, attachment of a man to the nature and harmony in the ecosystem.

At the end of the 18th century, after occupation of Lithuania by Russia, the differentiation in society has been enforced again; the large land-owners have become not only owners of the land, but also rulers of peasants-servants. Russia was the last country in Europe to abandon serfdom (in 1861). The pace of land reform after abandoning serfdom in imperial Russia and occupied Lithuania, and the other Baltic States, was very slow.

It was only in 1918, after Lithuania, Latvia, Estonia, and Finland gained an independence, that

land reform was accelerated. The land reforms were mostly completed by 1940, by the time that new Russian occupation started.

Right after restoration of the Lithuanian independence in 1919, temporary government of Lithuania in its declaration announced that the main objective of the government was to carry out a land reform and that the land will be allocated to those who owned very little or no agricultural land. The land was to be taken from those who were not working it themselves.

Despite the fact that land expropriation was against the catholic norms and morale, under the rule of the christian democrats, the priest M. Krupavicius was carrying out one of the most rational, at that time, land reforms in Europe. The land from large farmers was expropriated into the state land fund, leaving under their ownership only up to 80 hectares of land [1].

The Land Reform Law has empowered expropriation of the individual land property from those who owned more than 80 hectares of agricultural and forest land, more than 27 hectares of peatland, marshes, permanent water pools [9]. It is indicated that during the land reform large areas of forests were expropriated, the boundaries between private and state forests were corrected [9].

In 1930, according to the national census data, Lithuania had 287 380 family farms, the average size of which was 15.03 ha (corresponding to the present day average size of farm in the Netherlands or Finland) [9].

Farms started emerging in Lithuania, which were not based on the hired labour and in which effective work of the owner was predominant. This resulted in a strong middle class in society and decreasing wealth differentiation. And again, a set back after the difficult progress was made by new Russian occupation in 1940.

An interesting coincidence: after Germany losing a World War II, only the occupational government has accomplished a reform to be carried out in Germany, during which large private farms were dissolved [1].

It only remains to regret that also all governments of Lithuania, after the restoration of

independence in 1991, tend to ignore the widely acknowledged as progressive ideas of the land reforms of 1919 and 1557 carried out in Lithuania, selecting a land management method not compatible with the principles of sustainable development.

According to the 2003 agricultural census data, 36.4% of agricultural cropland was in the hands of 1 449 farms in which only cropland occupied an area of over 100 hectares; 11.4% of the land was under the management of 89 farms, the area of cropland of which was exceeding 1 000 hectares [13]. At the same time, croplands of less than 5 hectares were under management of 233 117 farms, which covered in total only 23.6% of cropland area.

The Lithuanian National sustainable development strategy of 2003 indicates that the conceptual foundation of sustainable development is made up of the three equal components – environmental protection, economic and social development [16].

Despite the fact that, in the Law Amending the Temporary Law on Obtaining the Agricultural Land of the Republic of Lithuania, adopted on 2004, it is foreseen that the natural persons can obtain up to 300 ha of the land, and legal persons – up to 2 000 ha, there are no restrictions whatsoever defined under the Law for the allowable size of the holding obtained before the enforcement of this Law [2]. The legislation of the majority of EU countries (like Denmark, France, and other) apply substantially smaller land ownership limitations in comparison to Lithuania.

The restitution of forest ownership rights has not been yet completed in Lithuania. As for January 1st 2005, about half of the total forest land was state-owned forest. Private forest land area increased up to 698.063 thousand ha and made up 33.4% of the total forest coverage. The area of forest land still reserved for restitution of ownership rights makes about 17.5% from the total forest land. The processes of forest land ownership restitution further increases the number of private forest owners. During the last year, the number of owners has grown by 23.0 thousand, up to 239.9 thousand. The average size of a private forest holding has slightly increased and is 4.6 ha [14].

On the one hand, such a small average private forest holding causes problems for sustainable forest management because of diverse interests of the owners, their different financial capabilities and differing levels of understanding about the sustainable forest management principles. In this context, the support by the state can be very significant, especially for forest holding consolidation, encouragement of forest owner co-operation. There is one more phenomenon that causes concern in relation to the private forest sector – private forests are bought up on a large scale, taking an advantage of the low levels of economic development in rural areas. Forest land is being purchased not only using the national capital, but foreign capital is used for this purpose as well, joint Lithuanian-foreign ventures are being established and developed. It may be anticipated that the new land and forest owners will be less interested in continuing traditional land management activities and silvicultural practices. If the forest holdings tend to increase in size in the future, farmsteads located nearby forest outskirts or in forests will soon disappear and only the Soviet-heritage type of settlements will remain. That will change the traditional Lithuanian landscape.

Regrettably, the present Lithuanian legislative system does not contain any limitations for the size of a private forest holding. Based on the data provided by the State Forest Survey Service, forest holdings of over 2 000 ha already exist [14]. At present, the Lithuanian forestry is being developed upon the so-called Latin American “latifundia” type of forestry principles – with very wealthy owners from one side and a big number of landless hired forest workers from the other side.

Not only theoretical assumptions exist that private Lithuanian forests may become a property of a handful of very wealthy forest owners, moreover that this handful of very wealthy owners may use the capital of foreign countries, the approach of which towards the statehood of Lithuania cannot always be described as positive.

It is obvious that the present Lithuanian legislation creates pre-conditions for formation of landlord and landless social castes, which consequently will contribute to the increase of the social differentiation in the society, economically

non-efficient hired labour in agriculture and forestry, a non-constrained establishment of foreign capital, forcing the increase of the Lithuanian emigration, immigration of foreigners to Lithuania, threats of terrorism and instability in the state.

A statement that a large agrarian enterprise is more efficient than a farm managed by a farmer became an non-disputable issue of the socialist doctrine after the First International Congress of 1864 [20].

Even after the collapse of the Soviet empire, that was created upon the basis of this doctrine, with predomination of large-size agrarian enterprises, the doctrine itself still has many supporters, and especially - in the older generation of the post-Communist countries, including Lithuania.

It may be argued that the farming in Lithuania up to the present day has been predetermined by a strong „heritage“ of the socialist ideology merging with the Latin American “latifundia“ farming ideology. In both cases, family-based farming is being eliminated, the middle class in society disappears, the society becomes divided into very poor hired workers and wealthy landlords class. Such social differentiation causes instability (unsustainability, incoherence) in the society and in the state with all related consequences.

The lack of coherence in society predetermines a way of farming and management that contravenes with the proportions of species of an ecosystem formed in the process of evolution, induces the speed of extinction of life species.

INSTABILITY OF ECOSYSTEMS IS GOVERNED BY UNSUSTAINABLE SOCIETIES

“Latifundia” type of farming, irrespective of its ownership - by one person or an enterprise owned by several persons - not only causes the social differentiation of society and the lack of its sustainability, but also contravenes with the proportions of life species emerged in the process of evolution.

If only four decades ago the agricultural crops depended on the natural resources of soils, such as ability to accumulate the organic substances needed for plants, the biological control mechanism of the soil and the amount of precipitation into the soil, in the present decades the agricultural yields are determined by modern agricultural technologies, mechanisms, and chemicals.

Modern and powerful agricultural machinery and modern agricultural technologies created pre-conditions for the formation of large-scale monocultural croplands without animal-produced and animal-reproduced organic fertilizer, so necessary for the soil. Chemical fertilizer replacement organic fertilizer.

The monocultural lands under crops have neither forest strips, nor single trees, nor swamps, nor any other natural water sources interposing them, nor other niches of ecosystems that were formed during the process of evolution.

In such farms, where in large areas of the agricultural or forest land monocultures are sown/planted, and in other areas – big domestic animal herds or domestic bird flocks are formed, the human artificially increases the density of one population of plants, trees, animals, or birds in the ecosystem against the others.

Moreover, it often happens that such big plots of agricultural and/or forest land, sown/planted with monocultures, destroy cultural heritage objects – archaeological monuments, roads to old cemeteries are often simply ploughed through, and even old cemeteries being destroyed – there already was such a case in the western part of Lithuania (Zemaitija). This could have happened for a simple reason – the new owners did not have anything valued in the newly obtained territories, nothing to connect them to these places - everything is measured by one and single criterion – to receive a maximum profit.

The ecologists have already proved the perfection of nature-created population density self-regulating mechanism. Parasites and disease agents, that are usually not harmful in the nature, generate disease under certain conditions of the ecosystem – e.g. an overpopulation of one species

of plants or animals that become vulnerable to such agents.

All this explains the massive spread of pests in the "latifundia" gardens when such gardens then need to be sprayed even 20 times with pesticides during the vegetative period whereas in other gardens only 1-2 sprays are sufficient or no sprays are needed at all.

In the scientific literature, there is an abundance of examples about the invasions of pests and parasites in the forest monocultures created by the human being, or invasions of fish pests in aquacultures.

The avian flue, that is life-threatening disease to the human being, started in the south-eastern part of Asia, BSE (bovine spongiform encephalopathy) – in the United Kingdom, AIDS – in Africa and in the poor parts of big cities with the highest densities of domestic birds, domestic cattle, and humans.

The nature "protects" itself by employing its own measures for re-establishing the evolution-ballanced proportions of life species in ecosystems. The agents of the bird flue or any other disease, or a tree pest – all are equally important forms of life to the ecosystem, just like any other form of life, like any species of any animal, plant, tree, and Homo sapiens himself/herself.

Each creation of the nature or each creature of the God (whatever is the preference) is equally needed and vitally important for the sustainable functioning of ecosystems.

The exact number of life types or species living in our planet is not known and opinions of biologists differ quite significantly on this matter. Up till now, about 1.5 million of species have been recorded and there is a general opinion that there are about 10 million of various species and types of life on our planet, where parasites and pests make up half of that number [7].

The humans use massive amounts of antibiotics, pesticides, and other chemicals in the artificially-created areas of monocultures which further complicates the interrelations in the nature and results in the appearance of new diseases and related ecological, social, economical problems [10].

Scientists maintain that there is nothing more dramatic in the ecosystems than a cruel fight of the human being against the self-regulating measures and mechanisms of ecosystems using the power of chemical substances [10]. This most commonly damages not the life species the human being seeks to eliminate – on the opposite – other species suffer and, at the end, it returns as a boomerang to the Homo Sapiens.

Scientists also maintain that process of extinction of life species is by 100 – 1 000 times faster than the natural species extinction process determined by evolution, moreover, this process is induced by a limitless use of chemical that misbalances the self-regulating mechanisms of ecosystems in the "latifundia" types of land under crops, garden and forest monocultures, giant animal and domestic bird/poultry farms.

Even in the European Community countries, where sustainable and costly environment protection programmes were started and where the environmental protection, based on the Single European Act of 1986, became an integral part of the majority of other Community policies – from industry and energy to the agricultural policy, so far there is no success in stopping the extinction process of animal and plant species.

On February 2004, the Directorate General for the Environment of the European Commission declared that 42% of mammal species, 52% of freshwater fish species, 45% of reptile species, 15% of bird species, 30% of amphibian species, and 45% of butterfly species are under a threat of extinction. Stopping this process is still unsuccessful despite the fact that 3 000 special protected territories have been established only for preservation of bird species - these territories cover 7% of the whole territory of the European Union. In the program "Natura 2000" it is foreseen to make the number of special protected territories (habitats) to reach 18 000, and these territories will cover 17% of the whole EU territory [11].

It is now maintained that biodiversity is both an ecological and social phenomenon [15]. Biodiversity and its relation to the richness of the ecosystem creates cultural, intellectual, esthetical and spiritual values of the human society [3].

A variety of agricultural and forestry development strategies are employed for the re-establishment of biodiversity - a significant role is ascribed to the rotation of agricultural cultures, sowing/planting of fields with policultures, tree planting in crop monoculture areas, growing of animals and birds in large monocultural areas.

It is regretful that biologists still have to state the fact of a further disappearance of natural resources, and, primarily, the process of impoverishment of biodiversity. Dramatic changes in ecosystems result not only in negative impacts to the physical health of the human beings as an integral part of ecosystems. Humans, by ignoring the consistencies of the biosphere, impoverish their own cultural, aesthetic and spiritual values.

As we see from the above, the property-related disharmony and increasing social gaps cause disharmonies in ecosystems and, at the end, the source of these phenomenon suffers most of all, i.e. humans with their misbalanced activities in their societies and ecosystems.

SUBSIDIES: FOR SUSTAINABLE AND NON-SUSTAINABLE DEVELOPMENT?

Intensive use of chemicals and powerful machinery in agriculture and forestry first of all damages the ecosystem of soil that was formed during the evolution process. When the number of micro organisms and other species decreases in soil – the process of soil degradation (deterioration) starts. When the number of macro- and micro-organism species and ratio decreases substantially or when such organisms become extinct, soils turn into deserts.

On the global level, 120 million ha of cultivated agricultural land turned into deserts only in 20 recent years, and degradation processes are ongoing in 60% of the global land area [21].

Researchers maintain that all of the cultivated agricultural land and the greater part of pastures is under degradation due to intensive farming, use of chemical materials and heavy agricultural machinery, and essentially such areas become deserts [5].

At present, in European Union member countries, the areas of such land under degradation make up 52 million of hectares. In Greece, 57%, in Italy - 36.5%, and in other ten new EU member countries - 35% of the agricultural lands are under degradation [6].

The State of the Environment Report 2002, published by the Lithuanian Ministry of Environment, indicates that the natural soil cover in Lithuania is deteriorating due to the human activities. Erosion, caused by water and wind also could add to the destruction of soil - 15% of the Lithuanian agricultural lands are under a permanent impact of erosion. Flat and slightly hilly regions suffer from an annual wash-off of 20-25 t/ha of soil, highly-hilly regions – up to 120 t/ha. In total, the area of the agricultural land under erosion makes up 360 000 ha in Lithuania [12]. Bearing in mind that the recovery of destroyed soil layer takes hundreds of years, the natural resource shortage problems, from which people suffer, are not difficult to envisage.

The amount of renewable natural resources per capita, such as area of cultivated land, cropland area, and forest area, is decreasing. Fish catches are also decreasing. These tendencies are reflected in the information provided in Table 1.

All the funds in the world allocated for the agricultural subsidising are used for the development of such human activities that are against the sustainable development concept.

It has been estimated that 627 billion of USD was spent on subsidising of agriculture, forestry and fisheries in 2001, and in the Earth Summit of Rio de Janeiro, only 600 billion of USD was foreseen annually for the sustainable development.

It has been estimated that an average USA tax payer pays 2 000 USD per year in taxes for the subsidies that are environmentally and economically harmful and only 1 000 USD per year for the compensating the damage to the environment [17].

Politicians of the world-leading countries already understood the need for reduction of environmentally and economically harmful subsidies and they demonstrate a political will by abandoning such subsidies or reducing them

Table 1. Humanity and renewable natural resources [18]

	Year 1990	Year 2010	Change, in%	Change per capita, in%
Number of people (in millions)	5 290	7 030	33	
Fish caught (millions of tones)	85	102	20	- 10
Land under grain crops (millions of ha)	1 444	1 516	5	- 21
Meadows and pastures (millions of ha)	3 402	3 165	4	- 22
Irrigated land areas (millions of ha)	237	277	17	- 12
Forest areas (millions of ha)	3 413	3 165	- 7	- 30

substantially. For example, in New Zealand, i.e. in the country which economy is largely dependant on agriculture, subsidies for agricultural production have been fully abandoned.

Subsidizing of the agricultural production is a serious failure in the context of strive towards sustainability as farmers are encouraged to reach a maximum productivity by using big amounts of fertilizers and chemicals against plant, tree, and animal disease agents.

It has been estimated that about 80 per cent of the EU funds allocated for agriculture go to 20 per cent of big farms. In Lithuania, this proportion, using the EU SAPARD funds and the funds of the Lithuanian budget, is even greater than in the other EU countries.

The European Union, by the Amsterdam Treaty in 1997, undertook to implement sustainable development policies. Based on that objective it was foreseen to prepare a strategy for sustainable development of the EU. In 1999, the European Commission proposed the plan of measures titled "Guidelines for the Sustainable Development of Agriculture" which became an integral part of the EU CAP (Common Agricultural Policy) reform "Agenda 2000".

From 2005, the European Union member countries agreed to start a fundamental reform of the CAP that introduces substantial changes into the elements of the European Union financial support for agriculture. Based on that reform, farmers will have a single payment instead of many and numerous small payments, such as: for cattle, well-maintained crop land and pasture land (per hectare), for agricultural production (per tone), and etc.

This single payment will be paid to the farmers depending on how they observe the requirements of the standards for environment protection, animal and plant health, animal welfare and food safety [4].

The CAP reform targets the solutions of such problems, like the social differentiation caused by the financial support, measures will be taken to strengthen the middle social class of the rural communities of the European Union. For this purpose, the support to the farmers from the European Union budget that exceeds 5 000 EUR per year, will be reduced by 5 per cent each year till 2013, and the support for the farmers receiving below 5 000 EUR per year, will not be decreased.

It is obvious that such a reform of the CAP will inevitably result in positive changes of long-term European Union and Lithuanian sustainable development policies and practices.

After Lithuania has joined the European Union, forests were not forgotten. The main forestry-related objectives of the European Union are: protection of natural environment and forest heritage, preservation of biodiversity, forest regeneration, preservation of forests as a natural element performing soil and water protection, air improvement, climate change mitigation. Many projects related to these objectives are being implemented. As one of the biggest and most important projects of the recent years a joint Lithuanian-Swedish effort „Inventory of Key Habitats in Lithuanian Forests“ (2002-2005) can be mentioned here. The major goal of this project was to carry out the overall stocktaking of the key forest habitats in Lithuania thus contributing to preservation of biodiversity of Lithuanian forests.

There are many more smaller-scale, but not less important projects related to forests and preservation of their biological diversity.

The EU support is also provided for planting of new forests. As defined under the Rural Development Plan for 2004-2006, this support is provided for afforestation of privately-owned agricultural lands. The main objective of this support is to facilitate afforestation of the agricultural lands as an alternative way of land use thus reducing the dependence of the rural population from the agricultural activities. It also increases the forest area of a country in general. It has been foreseen to allocate about 92 million LTL for this purpose in Lithuania, including the co-financing of the Lithuanian Government. If these funds are used, it will be possible to afforest about 12 thousand hectares of privately-owned land, and at the same time to increase the total forest area of the country and enrich biodiversity. However, it seems that due to various organizational problems, or, in some cases, probably even intentionally, this opportunity will not be taken up - in 2004, only 164 agreements with the beneficiaries have been concluded and only 1.66 million LTL were paid, planting 787 ha of forests. In 2005, the National Paying Agency registered 419 applications for 6.1 million LTL only. It becomes apparent that all the funds allocated for this purpose will not be used during the year 2006. It is regretful that some of the state institutions have not realised that this was a unique opportunity to plant forests in fertile lands - and it is mainly these lands where forest planting is most necessary. It is also obvious that this was a unique opportunity to re-establish what has been destroyed during the Soviet times - to plant shelterbelts and other establish other green infrastructures, so necessary for protection and preservation of biodiversity and the natural carcass.

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