



Ministry of Natural Resources and Environmental Protection of the Republic of Belarus



UN
DP

Belarus

United Nations Development Programme



GEF

Global Environment Facility

**FINAL REPORT ON
NATIONAL CAPACITY SELF-ASSESSMENT
FOR GLOBAL ENVIRONMENTAL MANAGEMENT
IN BELARUS**

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ABBREVIATIONS

CLR	– Committee for Land Resources, Survey and Cartography under the Council of Ministers of Belarus
EIA	– Environmental Impact Assessment
GDP	– Gross Domestic Product
GEF	– Global Environment Facility
GHG	– Greenhouse gases
IUCN	– the World Conservation Union
KP	– Kyoto Protocol to the United Nations Framework Convention on Climate Change
MoAF	– Ministry of Agriculture and Food
MoNREP	– Ministry of Natural Resources and Environmental Protection
MoF	– Ministry of Forestry
MoH	– Ministry of Health
NASB	– National Academy of Sciences of Belarus
NEMS	– National Environmental Monitoring System
NGO	– Non-Governmental Organization
NIS	– National GHG Inventory System
SPA	– Specially Protected Area
SRDP	– State Research and Development Programme
UNCCD	– UN Convention to Combat Desertification
UNCBD	– UN Convention on Biological Diversity
UNDP	– United Nations Development Programme
UNFCCC	– UN Framework Convention on Climate Change
UNO	– United Nations Organization

FOREWORD

The National Capacity Self-Assessment for Global Environmental Management Project, supported by the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF), was implemented by the Ministry of Natural Resources and Environmental Protection of Belarus in 2003–2005.

The project was aimed at carrying out a national self-assessment exercise in Belarus to assess relevant needs and opportunities, as well as at setting appropriate priorities within required action identified for enhancing the country's existing capacity in view of its commitments under the three UN Conventions (on biodiversity, climate change and to combat desertification). The key project objectives included a 2005–2010 national priority action plan to enhance the implementation of the three conventions by Belarus in the cross-cutting areas, as well as linking it to the overall environmental policy and sustainable development strategy adopted in the country.

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Thematic assessments of the existing capacity to implement the UN Convention on Biological Diversity (UNCBD), the UN Framework Convention on Climate Change (UNFCCC), and the UN Convention to Combat Desertification (UNCCD) have been carried out by three thematic working groups (TWGs) composed as follows:

UNCBD Working Group

Pugachevsky A.I.	–	group leader
Maslovsky O.M.	–	plant registry
Nikiforov M.E.	–	sustainable biodiversity use
Kozulin A.V.	–	international co-operation
Roshchin V.E.	–	animal monitoring

UNFCCC Working Group

Martsul V.N.	–	group leader
Bely O.A.	–	integrated assessment of GHG sources
Selko A.S.	–	GHG inventory and emission factors
Lysukho N.A.	–	GHG inventory
Kotelnikov A.V.	–	data supply
Bambalov N.N.	–	biological GHG sinks

UNCCD Working Group

Yatsukhno V.M.	–	group leader
Dudko G.V.	–	land resource spatial organization
Meerovsky A.S.	–	use and protection of ameliorated land
Olshevskaya E.S.	–	land optimization
Pomelov A.S.	–	land resources management
Rakovich V.A.	–	sustainable use and protection of wetland ecosystems
Romanovich N.I.	–	land planning
Smeyan N.I.	–	soil erosion and preventive measures

The current national legislation in all thematic areas of the project was analyzed by Laevskaya E.V., education and awareness-raising – by Dorozhko S.V., NGO and mass media activities – by Vinchevsky A.E.

The NCSA team feels obligated to thank the focal points for the conventions in Belarus, and all the ministries, institutions, governmental and non-governmental organizations as well as individuals, who kindly provided advice and support that made preparing this report possible.

INTRODUCTION

By adopting in 2004 the National Strategy for Sustainable Development for the period to 2020, Belarus declared that its ultimate development goal is the balanced solution of socio-economic and environmental problems based on the optimal use of natural resources available and making its best to ensure the high quality of life for current and future generations. To attain the goal successfully, it is needed to address a number of basic issues, such as making industrial production environmentally safe and friendly, tackling the Chernobyl disaster consequences, improving the way natural resources are used and protected, taking forward environmental education and training, and ensuring wide public participation in environmental protection.

Belarus is a Party to a number of environmental conventions, as it is well aware of the need for consolidated efforts and coordinated action in addressing global environmental issues. To date, Belarus has acceded to 18 international environmental conventions and protocols, including the three UN Conventions.

Convention	Adoption	Original entry into force	For Belarus, date of:		
			signing (accession*)	ratification (approval*)	entry into force
UNCBD	5 June 1992	29 December 1993	11 June 1992	10 June 1993	29 December 1993
UNFCCC	9 May 1992	21 March 1994	12 June 1992	10 April 2000*	9 August 2000
UNCCD	17 June 1994	26 December 1996	17 July 2001*		27 November 2001

As the Parties to the above conventions were implementing their provisions, it became clear that there were some common issues, including ones pertaining to improving legal frameworks, developing national strategies, programmes, plans, raising awareness, conducting research, monitoring, coordinating sectors of economy, NGOs and the public.

Despite the fact that each convention is a stand-alone treaty and has its own specific objectives and commitments, they are nonetheless interlinked and interdependent. These links and interdependence stem from the closely related and entwined processes and phenomena that are characteristic of the “climate – biota – land/soil” triad.

The key “external” impact is generated by climate change, a process that can be seen in more frequent, longer and more profound climatic abnormalities. An additional “internal” factor is human activities that give rise to land degradation, changes in vegetation cover and local climate changes. As a result of these there is a higher risk of desertification and climate change which lead to the exhaustion of plant, soil and water resources. Under such conditions there is an increased role for the earth surface thermal regulation mechanism which leads to more areas subjected to aridization. This issue is an important one in Belarus where unsustainable and vulnerable ecosystems prevail. Conservation of natural plant communities allows to a great extent mitigating effects of climate change and preventing land/soil degradation.

All this helps prove that in each of the three conventions there are cross-cutting priorities in enhancing capacity in environmental protection with due regard to specific needs and tasks of biodiversity conservation, climate change and combating land degradation. Therefore the task of analyzing these links and finding ways to coordinate and harmonize effort on implementing the conventions becomes very important to ensure efficient environmental management at national, regional and local levels.

The overall objective of the UNDP–GEF NCSA project is a comprehensive assessment of the existing capacity and identification of needs and constraints Belarus has in meeting its commitments under the three UN Conventions. In doing so, the focus was on existing deficiencies and constraints in the way of implementing the conventions, as well as the identification of the necessary implementation needs. Other key project objectives included exploring the so-called “cross-cutting” areas where two or all three of the conventions meet, paving the road for synergetic tackling of convention-related issues.

To attain the said overall objective the following actions have been undertaken:

- thematic assessments and thorough analysis of problems in each convention's subject area to assess the capacity existing in Belarus to implement them;
- key causes and constraints identified for Belarus to successfully meet its commitments under UNCBD, UNFCCC and UNCCD;
- priorities identified and proposals made as to how to improve mechanisms for more efficient implementation of the three conventions in Belarus;
- general cross-cutting issues identified, so as to enhance the capacity in the area of:
 - a) legal framework;
 - b) national policy, strategy, programmes and development plans;
 - c) institutional framework and stakeholder involvement;
 - d) research and information management for the purposes of the three conventions;
 - e) education and training;
 - f) raising awareness in the public and authorities about action taken to meet commitments under the conventions;
 - g) existing opportunities within and between the conventions which facilitate prompt and efficient implementation;
 - h) financial and economic mechanisms;
 - i) involving non-governmental organizations and general public to work towards the conventions' objectives.

The main outputs of the NCSA project have been as follows:

- National Report on Needs and Opportunities in Belarus for the purposes of efficient environmental management in the context of the three UN Conventions prepared;
- 2005–2010 National Priority Action Plan for Enhancing Capacity to Implement the UN Conventions in Belarus prepared and endorsed;
- pilot project implemented at the regional level, dedicated to sustainable land management in view of the three conventions' requirements and to identifying synergies among the conventions (using as a model Luninets District, Brest Oblast – an area in the Belarus Polesie);
- training materials on the environmental conventions for secondary school students prepared;
- guidelines on data collection for GHG inventories and on the procedure for developing and updating the national GHG emission and sink cadastre developed;
- proposals on national CO₂ sink factors developed;
- information on likely effects of climate change in some climate-sensitive economic sectors (agriculture, forest management, water management, energy, tourism and recreation) and some adaptation measures prepared;
- 2 websites, on UNFCCC (www.unfccc.minpriroda.by) and UNCCD (www.unccd.minpriroda.by) launched;
- 2 booklets published on “Land Degradation in Belarus” and “Global Environmental Conventions” (both in English and Russian); other promotional information materials were produced (a poster, booklet, pocket and throw-over calendars) to promote the three UN Conventions among the general public;
- amendments to the new version of the Belarusian Land Code produced;
- 3 nation-wide conferences dedicated to a review of the existing capacity to meet commitments under the three UN Conventions held in Minsk;
- 2 local-level workshops to discuss the results of the pilot study on land optimization and present training materials on the three conventions for schools held in Luninets District;
- proposals developed on the establishment of a special centre affiliated with the Ministry of Environment of Belarus to supervise the implementation of the three UN Conventions in the country.

CHAPTER 1. Assessment Methodologies and Approach

The capacity self-assessment exercise was made in strict conformity with a work plan approved by the Ministry of Environment, which is the government body responsible for implementing the conventions in Belarus.

To take into account, to the fullest extent possible, different opinions and positions on issues related to the conventions and action to implement these, stakeholders have been actively involved both at the stage of establishing working groups and that of reviewing achieved results upon completing specific stages of work (through workshops, mini-seminars, peer review of interim reports, etc.). In pinpointing stakeholders such things were taken into account as: having interests in the area at issue, being competent, participation in similar work in the past, any existing co-operation and coordination mechanisms shared by stakeholders.

Capacity assessment for each of the conventions was carried out article by article. Existing capacity was reviewed in the light of each article to identify constraints for meeting commitments, to make proposals so as to enhance the capacity at the individual, institutional and system level.

Collecting and reviewing information was performed by individual experts and groups of experts by means of document reviews, interviews, field missions (e.g. Luninets District), mini-seminars.

Specific work objectives in each area were set out in Expert Terms of Reference approved by the Ministry of Environment according to an agreed procedure.

SWOT analysis was used to identify strengths and weaknesses in selected areas of implementing the conventions.

To identify high priority issues in each area of a relevant convention, a priority-setting matrix was used. Evaluation criteria included the scale of a problem, its relevance and possibility to provide an adequate response. An important factor contributing to the relevance of a problem is its “cross-cutting” nature affecting the capacity to implement the three UN Conventions.

To identify constraints for building capacity needed to meet commitments under the three conventions and come up with possible solutions, an analysis of root causes was carried out using the problem tree analysis. Stages included: identification of a problem, evaluation of its relative significance, and identification of its possible causes. In carrying out such analysis primary focus was placed on the cross-cutting problems among the three conventions, rather than specific cases.

Drawing on the results of the capacity assessment exercise, the National Priority Action Plan on Enhancing Capacity to Implement Belarus’ Commitments under UNCBD, UNFCCC, UNCCD was developed. It includes a list of unresolved issues and constraints lying in the three conventions’ domain, sets out priority measures to overcome the constraints, contains a roster of responsibilities and a timeframe, as well as indicators to measure progress against.

A regional cross-cutting assessment was made while carrying out the pilot study on sustainable land management in Luninets District, Brest Oblast (Polesie Area). Many specialists engaged in agriculture, education, public administration, non-governmental organizations, mass media and private businesses were involved in the exercise. Therefore NCSA experts had a chance to look at issues at hand from various points of view which is thought to have helped them to arrive at more accurate conclusions.

CHAPTER 2. Summary of Thematic Assessment of Capacity to Implement UN Convention on Biodiversity

In June 1992 in Rio-de-Janeiro, the participants of the UN Conference on Environment and Development signed UNCBD in reaffirmation that governments and people of these countries strive to take action to conserve biological diversity. Belarus signed UNCBD on 11 June 1992. The Convention entered into force on 29 December 1993.

The overall objective of UNCBD is the conservation and sustainable use of biodiversity. To achieve this objective, the following national priority goals have been set:

- conservation of biodiversity at all levels of its organization;
- sustainable and non-exhaustive utilization of the most valuable components of biodiversity;
- ecological optimization of nature uses;
- improvement of the SPA system, development and establishment of the National Ecological Network, its integration into the European Ecological Network;
- integration of the biodiversity sustainability principles and priorities into all the areas and branches of economy;
- improvement and development of new programmes of environmental education and training.

A supplement to the Convention is the **Cartagena Protocol on Biosafety (2000)** designed to reduce any potential risk associated with transboundary movements of living, genetically modified organisms.

Policies, Programmes and Plans

The basis for building biodiversity-relevant legislation and strategies, plans and programmes in Belarus is the National Biodiversity Conservation Strategy and the Action Plan for the Conservation and Sustainable Use of Biodiversity (June 26, 1997 Decision No 789 of the Council of Ministers of Belarus).

The Action Plan has been fulfilled partly, but needs to be revised and updated. The same is true for the National Biodiversity Conservation Strategy, many articles of which need revision as unpractical.

The 2001–2005 National Action Plan on the Wise Use of Natural Resources and Environmental Protection (adopted by June 21, 2001 Decision of the Council of Ministers of Belarus No 912) containing a number of provisions regarding bio- and landscape diversity (chapter 3.5), nature use information system (chapter 5.2), monitoring system (chapter 5.4) has been largely implemented. The President of Belarus issued Edict No 302 on 5 May 2006 approving the 2006–2010 National Action Plan on the Wise Use of Natural Resources and Environmental Protection. Many proposals developed along this project have been incorporated in that Edict.

Pursuant to the National Sustainable Socio-Economic Development Strategy of Belarus until 2020, the main objectives in the conservation and sustainable use of biodiversity are defined as follows:

- conservation, multiplication and sustainable use of renewable (biological) natural resources;
- creation of conditions for the conservation, self-reproduction and continued development of non-exploitable biodiversity resources;
- ecologization of all sectors of economy for the reduction of adverse impacts on biodiversity and attainment of the objectives of sustainable and environmentally sound socio-economic development.

Strategic forest management documents (Concept of Sustainable Forest Development in Belarus until 2015 [1996], Strategic Forest Development Action Plan of Belarus [1997], Programme for Forest Restoration and Reproduction in Belarus until 2015 [1998]) propose to address forest-related environmental and biodiversity issues. However there has been only limited progress in implementing the Strategic Forest Development Action Plan of Belarus where it concerns Forest Ecology and Environment.

A review of the “Measures to Ensure the Implementation of the 2001–2005 Socio-Economic Development Programme of Belarus in Agriculture” has shown that it has no chapter on biodiversity protection in this important sector of economy.

Legal Framework and its Compliance with Provisions of UNCBD

Legal relations in the field of biodiversity conservation and use are regulated by a wide range of legal and regulatory documents:

- those regulating biodiversity conservation in general (Environmental Protection Law, Protection and Use of Animals Law, Plant Law, etc.);
- legal acts designed to protect selected ecosystems (SPA Law, etc.) and natural sites (Forest Code, Water Code, Land Code, etc.);
- legal acts defining mechanisms to ensure the proper use of natural resources and environmental protection (State Environmental Expert Review Law, etc.).

Another set of documents are international treaties which Belarus has acceded:

- UNCBD proper,
- Convention Concerning the Protection of the World Cultural and Natural Heritage,
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention),
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES),
- Convention on the Protection of Animal Migrants,
- Agreements between the CIS States on co-operation in the field of ecology and environmental protection,
- other international treaties.

Legal tools supportive of UNCBD implementation include:

- developing state policies and respective implementation mechanisms for environmental resources management;
- allocation of roles and responsibilities between central and local governmental authorities in the field of use of natural resources and environmental protection;
- developing international mechanisms to prevent transboundary environmental damage and to manage natural resources located in the territory of two and more states;
- legal acts that regulate:
 - establishment and functioning of SPAs;
 - developing a set of measures aimed at conserving certain species of animals and plants, primarily those listed in the Red Data Book of Belarus;
 - creating and maintaining cadastres of natural resources;
 - carrying out EIA for all proposed projects;
 - establishing legal instruments for implementing the concept of environmental insurance;
 - setting up a monitoring system;
 - environmental audit;
 - controlling activities that may have delayed or unexplored effects on the environment;
 - liability for environmental damage.

The Belarusian legislation is generally consistent with the UNCBD requirements. However, a lot remains to be desired from the point of view of law enforcement and shifting from declarative vows to practical steps in comprehensive biodiversity conservation.

Recommendations for Improving Policies, Strategies, Programmes, Plans and Regulatory Framework

Proposed measures aimed at improving policies, strategies, programmes, plans and regulatory framework in the area of biodiversity conservation include:

- develop a system of incentives designed to stimulate tenants and land users to adopt biodiversity conservation measures;
- establish legal institutions of environmental audit and insurance, including arrangements to insure against damage done as a result of pollution or other adverse impact on the environment;
- update legal provisions for and procedure of the environmental review and EIA of proposed projects, ensure public participation in the process;
- develop forest legislation that allows and even obligates to conserve biodiversity components during all kinds of tree felling;

- provide a legal basis for using selective harvest felling on a broader scale;
- develop standards of natural recovery of clearances, fire-sites, other unforested areas, lands formerly in agricultural use transferred for forestation and explore ways of enhancing biodiversity resources on such lands;
- introduce amendments to the Plant Law to properly regulate issues related to exacting damages for harm done to plants and their habitats, maintaining a plant cadastre, etc., drawing upon early experiences of enforcing this law;
- improve legislation as concerns in-situ protection of endangered species and populations;
- ensure ex-situ protection for biodiversity by giving a legal status to species and groups of organisms to which artificial restoration measures may be applied, and conditions under which such measures must be taken without fail, and rules to be observed in doing so.

To effectively perform tasks envisaged by the biodiversity conventions, there is a felt need to enhance the current protected area strategy in Belarus. Required action includes:

- develop a new national SPA Network Concept consistent with contemporary scientific approaches, a changed context, international commitments under environmental conventions, best international practices, changed social and economic conditions;
- develop and implement a next stage of Specially Protected Area Spatial Plan based on a revision of the existing special protected area (SPA) system (introduction of new types of SPAs) and in conformity with the new SPA Network Concept;
- certify SPAs in line with international standards and establish their international conservation status;
- develop a legal mechanism for preparing SPA management plans, as well as for developing infrastructure for implementing MPs in the most valuable SPAs;
- make provisions in the Law on Specially Protected Areas for a proper legal status of protected areas of international importance (biosphere reserve, etc.);
- develop a guideline on water protection zones and near-water areas for rivers and water reservoirs within urban areas.

As the plans are nearing their deadline and new issues keep rising, it is needed to develop a new national strategy and action plan on the conservation and sustainable use of biodiversity in accordance with national priorities and international commitments.

Assessment of Institutional Capacity

The institutional framework in Belarus for the implementation of UNCBD is well-developed, diverse, and it relies on both state control bodies and a large army of civil servants, specialists, researchers, NGOs.

The UNCBD institutional framework includes the following government bodies:

- Ministries of Natural Resources and Environmental Protection, Architecture and Construction, Industry, Agriculture and Food, Forestry, Energy, Housing and Utilities, Transport and Communications, Health, Foreign Affairs, Emergencies, Defence, Education, Sports and Tourism;
- Office of the Presidential Affairs;
- State Committee on Science and Technology under the Council of Ministers of Belarus;
- Committee for Land Resources, Survey and Cartography under the Council of Ministers of Belarus;
- State Inspectorate for Animals and Plants under the President of Belarus;
- National Academy of Sciences of Belarus;
- regional and Minsk City Executive Committees.

Companies and organizations that are the essential users of biological resources in the country are controlled by:

- Belarusian Production & Trade Concern of Timber, Wood-Processing and Pulp and Paper Industries (Bellesbumprom) – mainly timber;
- Belarusian State Food Industry Concern (Belgospishcheprom) – fodder and food resources of animal or plant origin;
- Belarusian State Pharmaceutical and Microbiological Products Concern (Belbiopharm) – medicinal plants, and some animals of medicinal value.

Non-governmental organizations Belarusian Military Hunting Society and Belarusian Hunter and Angler Society are responsible for amateur angling and hunting.

Each of the bodies above has its own area of competence and interests, more or less compliant with UNCBD objectives.

Despite the ramified and heavy UNCBD institutional framework existing in Belarus, it has a number of serious operational setbacks:

- the establishment of the State Inspectorate for the Protection of Animals and Plants under the President of Belarus did strengthen the system to control the protection and use of animals used for hunting or fishing and of plants of economic value, but concomitantly created a situation where its functions came to overlap with those of the Ministry of Environment and the Ministry of Forestry;
- competencies of the above government bodies (except for the Ministry of Environment and NASB), companies, organizations and individuals in the field of meeting UNCBD commitments remain to be defined, as do respective powers and responsibilities vested in them. For this reason many of state control bodies perform functions related to the use of biological resources or the control over impacts on animals and plants, but do not engage, or only nominally, in taking actions aimed at the implementation of the articles of UNCBD;
- there is poor coordination between the various elements of the institutional framework. The National Biodiversity Commission is hardly operational, and needs drastic reorganization.

Most of the sectors in the Belarusian economy are to one degree or another connected with biodiversity resources.

The forestry sector uses forest resources (mainly timber), which leads to disturbed forest ecosystems and biodiversity losses due to forest harvesting.

Food industries use edible plants (berries, mushrooms) cause limited harm to selected components of biodiversity in the process of harvesting.

Pharmaceutical industry relies to some extent on medicinal raw materials of animal or plant origin.

It is plant resources of pastures and hayfields that are mainly used in **agriculture**. Disturbance or loss of natural communities takes place during drainage, regressing, transformation of hayfields into arable land and pastures. The pattern of agricultural land taking over 40 % of the country's total area does not match the natural landscape pattern. Some fields are too large in area, often have erosion-prone sloped sections. Such a pattern prevents species settlement and migration, creates obstacles for lesser biotopes to develop, brings down the ecotone effect. Large-size fields are vulnerable to wind and water erosion. A decrease in manure application has led to increased humus losses from the soil, overall reduction of soil quality, and an increased risk of losses in soil flora and fauna. Heavy agricultural machinery causes over-compaction of soil and losses in agronomically valued soil aggregates, affects soil water infiltration and aeration as well as losses in soil flora and fauna populations.

The fact that 54 % of wetlands were drained in the last century has led to some catastrophic losses in bird species, endangered globally and recorded in the IUCN Red List, and wetland plant species, 11 of which were driven to extinction, while the occurrence of another 115 species has dramatically fallen down. These include 33 from the globally endangered species list and the European Red List (SPEC).

Machine-mowing on meadows without following the rules for protecting biodiversity caused populations of meadow birds to decline. On the other hand, discontinued haymaking at fen mires and floodplain meadows led to their overgrowth with scrub and degradation of habitats of some rare fauna and flora.

Fisheries overexploit some components of fish resources while harvesting commercially or through amateur fishing, and unwise fishing practices (excessive catch, lack of protection and reproduction measures, poaching, stocking bodies of water with alien species, etc.) has led to losses in fish resources and undesirable changes in species diversity.

Forestries help protect biodiversity by protecting forests, taking forest restoration measures. However, ecologically inadequate forest practices sometimes lead to the disturbance of forest ecosystem integrity and losses of biodiversity.

Considerable concern is caused by a growing death rate in tree-stand due to climate change. Forest management problems have been aggravated by the recent domination of monoculture, policy to grow same-age, homogenous tree-stands, inefficient monitoring systems. There has been a reduction in the area of broad-leaved forests and fir forests. The age structure of forests is far from optimum. The most valued old-age mature and over-mature stands take up 7.9 % of forest-covered land and are concentrated within SPAs.

Felling methods used have almost no regard for the need to take care of the elements of the forest environment important for maintaining biodiversity. Forest husbandry and economic design only in part takes into account the need to conserve most valuable sites and elements of the forest important for biodiversity support.

Fires in mires and floodplain meadows, spring fires lead to milder scrub and reed overgrowth thereby improving habitats of a number of rare and endangered flora and fauna species. But more often than not fires produce an extremely negative impact on natural ecosystems. The fire problem is particularly alarming at drained and exhausted peatlands.

Measures to protect these species are often lacking, because forest units do not have data on such species or sometimes there are no appropriate guidelines for such measures.

Hunting management aims to use game resources on a sustainable basis through taking special measures, such as population control in predator and invasive species. There is a negative trend of introducing alien animal species (mammals and birds) to replace indigenous ones. Improper hunting practices (overkill, insufficient hunting control measures, poaching) have led to a decline in populations of some game and rare protected species.

Tourism and recreation use recreational resources, including biodiversity. In areas where recreation is especially intensive, biodiversity is under heavy pressures.

The transport sector impacts on biodiversity components in the areas influenced by large transport links (manifested by noise, pollution, vibration, etc.), causing their disruption or destruction in the process of building new roads; interrupting the seasonal or feed migration routes of land animals by transport links; road service agencies plant shelter forests along roads, but the application of deicing agents often leads to depression and even loss of tree plantations along highways.

The energy sector impacted, mainly in the past, on nature through destructing wetland ecosystems with all biodiversity components thereof, while extracting peat for fuel. Another major impact arising from the energy production sector is pollution affecting plants and animals in the areas close to energy production units.

Chemical industry affects biodiversity in such locations as oil extraction sites, as well as wherever there is technogenic pollution coming from chemical production.

Construction projects often lead to losses in plants in the vicinity of quarries, as well as at and near construction sites.

Public utilities sector is responsible for the management of green areas in built-up areas. Urban areas are a constant threat to biodiversity as sources of pollution, development, unauthorized recreation. Since the early 90's there has been a sharp increase in building rural summer houses by urban people at the cost of natural areas and agricultural land. Between 1992 and 2001, the total urban area has grown by 22,000 ha, and currently stands at 265,600 ha.

Wastewater discharged by municipal wastewater treatment plants affects the quality of water in natural bodies of water. The public services sector generates around 70 % of all wastewater. The latter speeds up the eutrophication of water ecosystems and causes changes in species composition. Eutrophication is accompanied by a rapid growth of blue-green algae, which cause the water to "bloom" – a scourge of most man-made water reservoirs and many natural bodies of still water. River sections downstream of large industrial cities experience changes in fish species.

Academic institutions which provide **training** to specialists that find employment in areas relevant to UNCBD implementation include: Belarusian State University, Belarusian State Pedagogical University, Belarusian Technology University, botany, zoology and ecology departments at the universities in the cities of Gomel, Grodno, Vitebsk, Mogilev, Brest, Mozyr, Polotsk, other agricultural academic institutions.

International co-operation in the area of UNCBD is under the aegis of the Ministry of Environment. However, a shortage of staff at the Ministry and a very high workload do not allow them to be in regular contact with international bodies involved in UNCBD implementation. Communication lacks consistency, which reduces their efficiency and use of international UNCBD-related implementation support sources.

Nevertheless, quite a lot has been done in the country to address biodiversity through international co-operation. Belarus maintains contacts with international organizations: United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), Economic Commission for Europe (ECE), World Bank, Organization for Economic Co-operation and Development (OECD), Interstate Ecological Council, bodies established for the implementation of environmental conventions and protocols thereto, etc.

Through international co-operation a number of projects have been carried out, e.g. on the development of the National Biodiversity Conservation Strategy and Action Plan, preparation of national reports on the implementation of UNCBD, establishment of information exchange mechanisms, as well as other initiatives aimed at the conservation and sustainable use of biodiversity. Ongoing UNDP–GEF project “Conservation of Globally Significant Biodiversity in the Pripyat River Floodplains Through Wetlands Management and Protection of Key Sites” addresses both UNCBD, UNCCD and Ramsar-related issues. The UNESCO General Assembly has approved and allocated funding for a project on the creation of the Polesie regional ecological network (launched in 2006). The Western Polesie Transboundary Biosphere Reserve has been established and funds for its development are currently being raised. There are discussions with UNEP on the possibilities of establishment of transboundary protected areas “Olmany Mires”, “Pripyat–Stokhod–Prostyr”, and “Shatsk Lakes”.

There is a centre for bird migration studies and ringing at the NASB Zoology Institute. IUCN funded the project on “Key Botanical Areas” implemented by the NASB Experimental Botany Institute, and further developments are funded by the Ministry of Environment.

Some protected areas in Belarus have been recognized as ones of global importance. For example, the Berezinsky Reserve is included in the global network of UNESCO biosphere reserves and has been awarded a special diploma. Part of the Belovezhskaya Pushcha has been included in the World Heritage List. Eight wetlands in Belarus have been designated as Ramsar sites.

There is ongoing work to develop the Important Bird Area (IBA) network: 32 have been identified while 14 have been recognized as internationally important. The Ministry of Environment, NASB Zoology Institute, NGO “APB-BirdLife Belarus” and the Royal Society for the Protection of Birds (UK) signed a memorandum of understanding to facilitate progress in 1999. Belarus was one of the first to start identification of key botanical areas; 10 such areas have been identified and surveyed.

SPAs. Near-natural sites in the country have been designated as SPAs. As of January 1, 2005, the SPA network of Belarus included 1,467 sites with a total area of 1,582,800 ha (7.6 % of the country’s area). The country has Berezinsky Biosphere Reserve, 4 national parks and 97 national zakazniks (reserves), 456 local zakazniks, 456 national and 572 local monuments of nature. The National Academy of Sciences of Belarus has developed an ecological network concept, and a draft protected areas spatial plan in the context of the ecological network, which are currently on the approval process.

The capacity of NGOs in Belarus. Environmental NGOs in Belarus work in complicated circumstances in view of economic difficulties, stringent tax policy, complicated registration procedure and the need for NGOs to go through re-registration regularly.

Nevertheless there were 65 environmental NGOs in Belarus in 2003. Some of them were involved in CBD-related projects, more still participated in biodiversity conservation activities.

Among nation-wide NGOs, engaged in UNCBD-related activities, the following need to be mentioned:

- APB-BirdLife Belarus – the largest environmental organization in the country (720 members, 9 staff, affiliates in Minsk, Brest, Grodno and Mogilev Oblasts, the official partner of the BirdLife International, active contacts with the Ministry of Environment, Education, Forestry, Communications);
- “Ecologicheskaya Initsiativa” NGO (Ecological Initiative);
- Belarusian Wildlife Environmental Information Centre;
- Belarusian Branch of the International Ecology Academy, most active under the Cartagena Protocol;
- Belarusian Chernobyl Socio-Environmental Union;
- “Raznye-Ravnye” Youth NGO;
- “Ecodom” NGO;
- Belarusian Ecology Academy, etc.

The following local NGOs are worth mentioning:

- “Zeleny Krai”, Brest Oblast, one of the strongest regional NGOs;
- “Nerush” (Brest);
- Baranovichi Environmental Union;
- Baranovichi Office of the Lutskevichi Brothers Fund;
- “Ecolog Club” (Vitebsk);
- “Zoomir” Animal Protection Organization, Gomel Oblast, publisher of the Animal World newspaper;
- “Green Cow” (Gomel) engaged in local SPA developments;
- “Ecological Agriculture” (Grodno) and “Clean Water” (Minsk);
- “Green Oak” youth history and environment tourist club, engaged in promoting ecotourism (Minsk);
- “Ecopravo” (Minsk) active in the area of environmental legislation.

The Public Steering Environmental Council established at the Ministry of Environment includes representatives of 16 NGOs and meets 3–4 times a year to contribute to decision-making, including that in the thematic area of UNCBD. However, the fact that the Council does not have a statute and formal status precludes it from making decisions that run counter to the Ministry of Environment’s position. Therefore the Council fails to be a coordinating body, but rather is an advisory one, not authorized to make binding decisions.

Recommendations for Raising Stakeholder Capacity

There are a number of areas in which proper action could help raise capacity for implementing UNCBD in the country:

- further development of the SPA system is an effective way but already almost exhausted as the total area of SPAs in country is close to its maximum;
- reducing negative impacts by introducing cleaner, more energy and resource saving technologies and by redistributing the loads over larger areas seems to be a promising way, but requires considerable investment;
- changing the structure of land uses taking into account environmental imperatives, the most important of which include the conservation of biodiversity by cessation of investment into loss-making agricultural lands, turning part of arable lands into meadows or hayfields, re-naturalization of unsuccessfully drained lands, etc. have sufficient potential, but they all have a lot of obstacles and require significant time for implementation;
- the most important area of action, which holds great opportunities, is “ecologizing” sectors of economy, and in the first place agriculture, forest and water management by introducing systems, methods and techniques allowing for increased reproduction of resources of biodiversity, while keeping the ecologic functions of natural ecosystems intact.

Measures to increase the capacity in international co-operation in the thematic area of UNCBD include:

- establishment of a special agency (Centre) designed to supervise international co-operation in the country in the UNCBD area;
- further development of the clearing-house mechanism to coordinate activities related to UNCBD implementation and provide information and scientific advice to decision-makers and the public;
- more active participation in global programmes under UNCBD and other environmental conventions;
- development of interstate coordination for the effective conservation of endangered migrating species, including the establishment of transboundary specially protected areas;
- development and implementation of an activity plan to meet commitments under the Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention);
- collaboration with Belarusian embassies in the countries which could be potential donors to fund projects related to UNCBD, as well as in countries which could be potential partners on joint projects in the thematic area of UNCBD;
- development of a portfolio of project proposals for implementation inside the country and in its border areas in the field of the conservation, sustainable use and study of biodiversity, and their presentation to embassies, international environmental organizations, funds, etc.;
- development of a system of bilingual websites focused on UNCBD;
- preparation of a series of information materials in English on nature and biodiversity in Belarus and related issues and ways to address them to be disseminated among relevant international organizations;
- setting up a special training course for specialists of the Ministry of Environment on UNCBD issues, including those of international co-operation.

To increase the efficiency of NGO activities, it is advisable to:

- establish a partnership made of governmental and non-governmental organizations, which are concerned with biodiversity problems similar to the way it is done in the UK;
- have registration procedure for grants aimed at UNCBD implementation simplified;
- Ministry of Environment and its regional agencies to set up tenders for NGOs to compete between themselves for UNCBD-related projects;
- award NGOs for the most successful biodiversity projects with prize funds allocated from the budget;
- better empower public steering committees at the Ministry of Environment and its regional and Minsk City committees and provide them with a proper status;
- consider joining for Belarus the Bioplatform for Europe Movement, that unites politicians involved in the conservation and sustainable use of biodiversity as well as researchers, businesspeople, NGOs, etc.

Funding Analysis of Use and Conservation of Biodiversity

Funding for actions aimed at the implementation of UNCBD comes from various sources, both national and international. Funding is required for:

- UNCBD mechanisms to function;
- development and amendment of relevant legislation;
- monitoring of biodiversity;
- development and functioning of the SPA system;
- development, publication and updating of the Red Data Book;
- development of national and sectoral strategies, programmes, action plans;
- functioning of botanical gardens, zoos, and valuable plant or animal collections;
- implementation of pilot projects on the sustainable use of biodiversity components;
- fundamental and applied research in the thematic area of UNCBD;
- functioning of a biosafety system in line with the Cartagena Protocol;
- training of high qualification specialists in the area of UNCBD;
- raising of public awareness, including through newspapers, magazines, radio and TV, video, etc.;
- preparation of national reports for submission to the Convention Secretariat;
- other.

The major sources of funding related to UNCBD implementation in Belarus include the national budget, nature protection funds, revenues from using SPAs, sector innovation funds.

The notable sources of international funding include the World Bank, Global Environment Facility, European governments, loans of international organizations, banks, research organizations, and grants (TACIS, NATO, McArthur Foundation, etc.).

Measures to Improve Financial and Economic Mechanisms

The National Sustainable Socio-Economic Development Strategy of Belarus until 2020 requires, inter alia, that biodiversity economic assessment techniques be either improved or introduced for optimum use of financial and economic mechanisms regulating the use and proper reproduction of biological resources.

It is needed to improve the methodologies for determining the size of fees to be imposed on polluters for emissions (discharges) into the environment, mainly as concerns diffuse pollution of bodies of water, which is known to be one of the key threats to biodiversity.

Information Management for Decision-Making for the Implementation of UNCBD

The tasks of information management for UNCBD-related decision-making include the inventory and assessment of biodiversity, forecasting of trends in biodiversity, development of recommendations and techniques for conservation, sustainable use and restoration of biodiversity. Information needed for making proper decisions consists of:

- state cadastre (forest, animals, plants) data, inventories of various kind;
- monitoring data;
- research data;
- reference literature.

The collection, storage and use of research data on biodiversity is done by NASB institutions, universities, Ministry of Environment agencies, research departments at national parks and nature reserves and some other organizations.

The quality and comprehensiveness of research data depends to a large extent on the qualification and availability of research staff. More than 600 specialists work in areas related to biodiversity studies. However, a large proportion of those are engaged in research which relates to UNCBD only indirectly. A larger group still is mainly involved in teaching.

Around 200 specialists are involved in studies of biodiversity at various scientific institutions in the country. There is, however, a clear lack of qualified personnel to conduct zoological studies. This applies, in particular, to mammalogy and herpetology. There are virtually no specialists in the area of systematization studies for most of invertebrate taxa. This causes problems in assessing diversity of the animal world, and, as a result, whole species may go extinct unnoticed. There is no single region in the country fully explored in the faunistic respect, including SPAs.

The number of specialists involved in the study of diversity of plants is over 400, however the number of specialists directly involved in addressing UNCBD-related issues is much smaller.

The Green Book of Belarus has not yet been created. A whole category of biodiversity components, i.e. plant communities, dropped out of the scope of plant protection. There is no record which communities are rare in Belarus and which are in need of protection measures.

There is a distinct shortage of personnel at scientific departments of nature reserves and national parks which have special responsibility for the conservation of the most valued diversity of flora and fauna.

The key research in the area of biodiversity studies is carried out within governmental programmes of fundamental or oriented fundamental research (Biological Diversity, 1996–2000; Biological Resources, 2001–2005), research and development programmes (Nature Uses and Environmental Protection, 1996–2000; Environmental Safety, 2001–2005; Belarus Forests, etc.), as well as individual projects using grants provided to research institutions, NGOs and individual researchers from national and foreign sources.

There is a clear lack of studies into the areas emphasized as important at various Conferences of the Parties to UNCBD: internal water ecosystems, biodiversity of agriculture, forests, arid and semiarid lands, global taxonomic initiative. Potential threats posed by genetically modified organisms, if released into the environment, have been explored poorly. Studies into this matter are just starting.

Animal and plant monitoring is done within the National Environmental Monitoring System of Belarus; there are some monitoring stations operating separately from the system. The NEMS was created by the April 20, 1993 Decision of the Council of Ministers of Belarus No 247 and is implemented within the 2000–2005 Governmental NEMS Programme.

Animal monitoring is a system of regular observations over the distribution, numbers and the state of the animal world as well as the quality of habitats. The surveys are made according to a uniform system and serve to timely identify, prevent or mitigate negative processes in order to protect and ensure the sustainable use of biodiversity.

There are the following areas of animal monitoring:

- a) monitoring of game species;
- b) monitoring of animals listed in the Red Data Book of Belarus;
- c) monitoring of habitats of game animals, and those listed in the Red Data Book of Belarus.

The NEMS project document sets out guidelines as to how operational animal monitoring should be organized within NEMS. Information flows are defined, as are software, types of and techniques for monitoring data processing. There is a map of locations and lines of reporting for information and analysis centres and monitoring stations in terms of animal monitoring of certain types. A list of databases required to be set up and regularly updated is provided.

Pursuant to the May 17, 2004 Decision No 576 of the Council of Ministers of Belarus, the Animal Monitoring Information and Analysis Centre is to be hosted by the Ministry of Environment. The Regulation on Animal Monitoring Information and Analysis Centre has been drafted.

A list of monitoring sites has been drawn up. The sites are included in the State Register of NEMS sites of Belarus. However, servicing the stations as well as staffing and equipping them remain a problem.

Animal monitoring beyond the boundaries of SPAs is organized poorly. There is a clear lack of modern equipment. Coordination between the subsections of NEMS "Animal Monitoring" and "Plant Monitoring" is very low.

Pursuant to the Plant Law of Belarus, plant monitoring is a system of observations of the status of plants and their surroundings, assessment and forecast of changes thereof for the purposes of the conservation of biodiversity, and providing scientific advice for the sustainable use of plants.

The following form the scope of plant monitoring:

- diversity of plants;
- populations of plant species under protection in accordance with international commitments, as well as those listed in the Red Data Book of Belarus;
- plant resources (fodder, edible for humans, medicinal and technical value plants);
- habitats of plant species.

Plant monitoring is the responsibility of the NASB. The head organization is the Institute of Experimental Botany of NASB. The Laboratory for Lake Studies at Belarusian State University is also involved.

The most significant problem pertaining to the implementation of the plant monitoring programme is the inconsistency of the approved monitoring technology with modern monitoring requirements. The NEMS Technical Document was primarily focused on the monitoring of the state of the environment, not biodiversity components, so that plants were monitored as long as they were indicative of the state of soil, air or water. On the other hand, lack of funds does not allow carrying out the monitoring programme at a full scale.

The 2006–2010 NEMS Development Programme approved by Presidential Edict No 251 dated April 18, 2006 envisages a substantial increase in the funding of plant (up to 735 million roubles for five years) and animal (up to 2.24 billion roubles for five years). In addition, 365 million roubles will be allocated for the purposes of SPA ecosystem monitoring.

Information regarding conservation and/or use of animal resources is located at different institutions, stored in different formats and not easily available to be used in research and analysis, which is a major setback in terms of information management. The concepts and procedures proposed for data collection, storage, processing and use within the State Animal Cadastre have never been implemented in practice. In consequence, the State Animal Cadastre is essentially not operational.

The fact that comprehensive updated information on plants in the country is not available reduces the objectivity of assessment in the field of wise nature use and the quality of proposed conservation interventions. The way to collect this information is by updating the State Plant Cadastre. The purpose of the cadastre is to provide governmental bodies and legal entities with standardized information in order to ensure sustainable use of plant resources, assess negative impacts thereon, etc.

The methodical recommendations for inventorying and mapping especially economically valued, rare and endangered species were developed and officially endorsed in 1998. The computer database FLORA, developed in 2000 within a project to take inventory and map the above plant populations, is the largest computer-based information system on plant diversity in Belarus.

Updating the State Plant Cadastre consists of measures to collect, systematize, store and analyze cadastre information about the spatial distribution, biologic state and numbers, intensity of use of plants, their communities etc., as well as key data on their habitats, biotechnical, protective and other action taken.

There are four levels of actions taken in operating the State Plant Cadastre: land users, Districts, Oblasts and country level. Drawing on a master stock-taking exercise (cadastral study) performed every 10 years, the Ministry of Environment prepares, jointly with NASB, cadastre documentation which is sent out to land users, ministries concerned, local or regional offices of the Ministry of Environment for them to take appropriate action.

The following categories of plant world items are entered in the State Plant Cadastre of Belarus:

- rare and endangered plant species, listed in the Red Data Book of Belarus, as well as those needed to be placed under protection in accordance with international commitments of Belarus;
- rare or endangered plant communities;
- economically valued species (medicinal, edible, melliferous, technical);
- invasive or introduced species posing a threat to indigenous species of Belarus flora and ecosystems, as well as species which populations need to be under control in accordance with international commitments of Belarus;
- especially valuable plant species and their associations of special scientific value;
- especially valuable green areas.

Ways to Improve Information Management for Decision-Making

It is needed to create within the NASB system a body responsible for coordinating research relevant to UNCBD and other biodiversity-focused conventions (CITES, the Ramsar, Bonn and Bern Conventions) whose duties would be to:

- coordinate convention-related research;
- draw up, in consultation with relevant convention bodies, research plans, programmes and projects;
- take part in the development of recommendations, forecasts and action plans of different levels;
- assist in raising funds for research projects on UNCBD or other biodiversity-focused conventions;
- review of convention-related documents and decisions of relevant international forums;
- maintain communication with convention bodies responsible for research and development;
- participate in the preparation of national strategies and action plans on conventions and national progress reports;
- arrange for know-how exchange relevant to the convention, search for and introduction of new ways and methodologies for the conservation and sustainable use of biodiversity;
- mobilize experts to work on issues being addressed in the thematic area of the convention.

To make information management for decision-making in the conservation and sustainable use of biological resources more efficient, it is necessary to:

- develop a network information system to exchange monitoring data;
- upgrade the Plant Monitoring, Animal Monitoring and Forest Monitoring sections in the NEMS, strengthening their equipment and methodology components, including development of a methodology for monitoring of rare, protected and resource plants and fungi and incorporate it in the plant monitoring subsystem within NEMS;
- set up a system to monitor SPA ecosystems designed to assess the efficiency of protection regimes and identify threats to SPA biodiversity.
- conduct an inventory of local forest monitoring systems to ensure sustainable operation of the most important of these, and integrate it with NEMS;
- develop forecasting methods drawing on monitoring information;
- develop the regulatory framework with regard to the State Plant Cadastre and Records and accomplish the similar work with regard to animals;
- organize special cadastre departments within relevant institutions of NASB and provide these with a steady flow of funds;
- integrate monitoring systems, cadastres and state records of animal and plants in a single eco-geographic information system;
- ensure easy access for users to information resources pertaining to animal and plant resources, through dissemination of appropriate materials, creation of websites and local eco-geographic information systems.

Recommendations on Improving UNCBD-related Education and Training Capacity

Insufficient level of environmental education and training in the public and officials is one of the reasons for inadequate decision-making in the area of biodiversity land uses, etc. This is caused by some deficiencies in the education and training system itself.

There are 126 schools, lyceums, etc. of environmental profile. 563 schools have classes specializing in chemistry and biology or natural sciences and geography. There are 45 nature museums, 37 microzakazniks, and 461 environmental paths. There are student scientific societies, school forestries, groups and clubs. Students engage in activities like bird protection campaigns, planting trees and flowers in school yards, etc.

Analysis of curricula in secondary schools shows that basic biology courses cover to some extent measures to protect biodiversity. Textbooks include coverage of environmental issues in line with relevant curriculum requirements, however information on UNCBD is generally lacking, except for the biology textbook for the 11th school grade where it is described briefly.

Extra-curricular education and awareness raising institutions take a special place in the environmental education system. There are 25 environmental centres in various regions across the country, and 2,218 student biological societies totalling 27,376 members. There are student scientific associations, the Belarusian Student Forest Academy; courses have been developed on applied entomology, microbiology, nature protection with elements of local history, native nature, household management, etc. Analysis of these programmes shows that they cover certain aspects of biodiversity conservation. There is, however, a clear shortage of methodology materials.

Mass media play an important part in environmental awareness raising in the public. There are publications dedicated to biodiversity and its uses: "Belaruskaya Lesnaya Gazeta" (forestry paper), "Okhotnik i Rybolov" (hunters and anglers), "Mir Zhyvotnykh" (animal world), "Rodnaya Priroda" magazine (home nature), "Lesnoye i Okhotnichee Khozjaistvo" (forestry and hunting), "Lesavik" magazine for children. Some private publications for hunters and fishermen ("Medvedz" newspaper, "Rybolov-Praktik", etc.) are quite popular but the biodiversity agenda is presented in them in sensational terms and the message is not always trustworthy. Some central and local newspapers have environmental columns. The rest of the Belarusian press covers environmental issues only occasionally.

There are only two programmes on the national radio dedicated to environment and biodiversity: "Environmental Monitoring" and "The Four and One Tail" for children. Directors of radio stations clearly ignore the environmental subject despite the fact that, according to polls, environmental issues and those of biodiversity are of great interest to the public. The same lack of focus on environmental issues applies to FM radio stations.

Starting April 2005, the Mir TV Channel launched an environmentally-themed project "A Million Questions About Nature". The once popular environmental programmes on central or regional channels are no longer on air.

With funding provided by the Ministry of Environment of Belarus, APB-BirdLife Belarus NGO, jointly with Belvideocentre Company, has produced 17 short video films featuring the Belarusian nature. The films are shown on the Belarusian TV. There are also numerous short videos about rare animal and plant species, unique ecosystems, rules of conduct while having a picnic in a forests, etc. regularly aired on each Belarusian channel.

Key Actions to Raise Capacity in Education, Training and Awareness Raising

Analysis of UNCBD-related education and training in the country has shown that it is needed to:

- include UNCBD-related issues, objectives and goals into the curricula of secondary and higher schools, vocational schools and universities, extra-curricular courses, etc.;
- put special emphasis on UNCBD issues in retraining courses for specialists and decision-makers; organize in-depth training on convention-related issues;
- organize lectures and workshops for teachers at secondary schools and universities, with in-depth coverage of environmental UN Conventions, including UNCBD.

To draw mass media's attention to UNCBD issues and increase their efficiency in providing proper coverage of biodiversity-related problems, incentives are required for reporters and editors, for the purpose of which:

- Ministry of Environment should organize competitions for the best publication, radio or TV programme dedicated to biodiversity and ecology;
- Ministry of Environment should regularly organize courses for reporters to raise their environmental competence;
- Ministry of Environment should organize competitions among NGOs, its subordinate bodies (staff members), for the largest number of environment-focused publications with awarding the best;

- Ministry of Environment and its regional bodies should produce press-releases, hold press-conferences on environmental protection dates or in commemoration of special events, ensuring coverage in mass-media and inviting representatives of NGOs, research bodies, etc.;
- develop an environmental programme on one of the national TV channels;
- start producing a youth magazine, similar to the once-popular “Young Naturalist”.

Biosafety Issues in Belarus. The Cartagena Protocol to UNCBD

The extraordinary meeting of the UNCBD Conference of the Parties in Montreal on 29 January 2000 adopted the Cartagena Biosafety Protocol to UNCBD. On 6 May 2002, Belarus passed a law “On the Accession to the Cartagena Protocol on Biosafety”.

Based on genetic engineering, biotechnology is designed to help resolve issues related to famine, diseases and some environmental problems in the world. On the other hand, as it is a relatively new area of human activity and there is very limited experience, a lot remains to be discovered regarding potential negative effects of biotechnology.

The potential threats associated with the release of genetically modified organisms (living modified organisms, LMO) into the environment are thought to include:

- destructive impact on biological communities and loss of bioresources as a result of contamination of local species with genes transferred from LMOs;
- appearance of new parasites and weeds and higher injuriousness of the existing ones, either based on LMO themselves, or as a result of the transfer of transgenes to other species;
- toxins produced by LMOs, etc.

Society is going to gain from biotechnology, provided it meets safety requirements while developing, applying, transferring biotechnology and exchanging it based on agreed risk assessment principles.

In order to regulate biotechnology developments in the country Law of Belarus “On the Safety of Genetic Engineering Activity” was developed and passed on 9 January 2006. The Law contains controls in relation to:

- biotechnology research in research laboratories;
- release of living modified organisms as a test on specially equipped scientific test grounds;
- use of obtained results for industrial purposes;
- transport of living modified organisms across the borders of Belarus.

Biotechnology research can only be conducted in Belarus if the following fundamental principles are met:

- safety precautions are followed;
- no threat to biodiversity in natural ecosystems;
- evidence-based, integrated and individual approach is used while assessing risks to human health and environmental safety;
- liability for breaking laws;
- public and NGOs are given access to information regarding biosafety;
- established international co-operation in the area of biosafety.

The said principles are achieved through:

- a) legislative acts;
- b) licensing biotechnology and registering living modified organisms;
- c) setting and observing safety rules;
- d) taking measures to ensure the safety of biotechnology;
- e) assessing the safety of living modified organisms and controlling biosafety;
- f) keeping records in the area of biosafety;
- g) establishing liability for violating biosafety requirements;
- h) taking other necessary measures.

Ministry of Environment, Ministry of Health, and Ministry of Agriculture are entitled to be in charge of government control over biotechnology pursuant to the July 5, 2002 Decision of the Council of Ministers of Belarus No 734. The National Biosafety Coordinating Centre has been set up to coordinate the work pursuant to the June 19, 1998 Decision of the Council of Ministers of Belarus No 963 as part of the NASB Institute of Genetics and Cytology.

CHAPTER 3. Summary of Thematic Assessment of the Capacity to Implement UN Framework Convention on Climate Change

Belarus signed UNFCCC on June 12, 1992 and became a full Party to the Convention on August 9, 2000. Bearing in mind that meeting commitments under UNFCCC and the Kyoto Protocol corresponds to the key objectives of socio-economic development in Belarus and to some of its priority goals (reducing GDP energy intensity and environmental impacts, improving environmental management mechanisms and enhancing environmental protection), pursuant to Presidential Edict No 370 of August 12, 2005, Belarus acceded to the Kyoto Protocol. Therefore, while assessing the existing capacity both UNFCCC and the Kyoto Protocol-related issues were taken into consideration.

Emphasis was placed on the existing capacity needs, constraints in key areas of action, with the aim of producing recommendations to enhance capacity at individual, institutional and system levels.

Existing Legal Framework to Enhance Capacity to Implement UNFCCC

The review of law enforcement practices in the thematic area of UNFCCC showed that the main points of application are air protection and energy saving (as far as the energy efficiency of industrial processes and alternative power sources are concerned).

The existing legislation generally allows meeting most of the commitments under UNFCCC. However, there are a number of constraints that are mainly due to deficiencies of the legal framework, which are as follows:

- no fundamental strategic document to promote institutional and legal aspects of the UNFCCC implementation has been developed;
- there is no legal definition of “climate” within the Belarusian legislation; and legislation in Belarus does not consider either climate or climatic system as objects susceptible to human impact and therefore in need of protection, nor has it provisions to control impacts on the climate;
- there is no proper concordance between procedure for monitoring and that for exercising state control over how industries perform environmentally, and that for certification of industries for the purpose of bringing down their GHG emissions;
- provisions of legal documents pertaining to climate change are largely of highly generic nature and need to be amended by adding concrete measures, to be formulated based on specific Belarus’ commitments under UNFCCC.

To ensure efficient implementation of Kyoto commitments, it is needed to develop as a matter of priority some legal tools which would provide for:

- timely development and making available to the Conference of the Parties of national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol (Art. 4.1 (a), UNFCCC);
- development of a legal framework for a national system for the estimation of anthropogenic emissions by sources and removals by sinks of greenhouse gases;
- development of legal instruments to make it possible for Belarus to trade emission allowances with other Parties of the Kyoto Protocol;
- identification of national stakeholders, their rights and responsibilities in trading GHG emission allowances.

Economic Planning Capacity Assessment in the Context of Climate Change

It must be noted that for last 20 years the system of economic planning and programming in the country has not operated at its full capacity. The regional-level planning has been largely neglected, notwithstanding its being the most useful type of planning in terms of facilitating implementation of the three conventions, including as far as the development of adaptation strategies (measures) is concerned. District development planning schemes and projects have mostly been lacking. Lack of attention for the regional planning creates certain obstacles in fulfilling

some UNFCCC requirements, achieving consensus and close coordination of efforts that various stakeholders undertake to implement the three conventions, makes it difficult to develop and take joint measures to adjust to climate change.

Key constraints that hold back the raising of capacity in economic planning and stakeholder involvement, including that of the general public, in developing adaptation measures, and joint measures to implement the three conventions include:

- lack of a common approach to the development and approval of programmes and plans of various levels, including those designed specifically to address environmental issues;
- absence of an impact assessment stage in programme and project development, including proper environmental impact assessment (SER);
- no clearly formulated EIA requirements, a fact which hinders proper environmental assessment of new projects and measures;
- system analysis, modelling etc. are virtually not used at all when developing programmes or plans, which leaves out some possible scenarios, options, comparisons.

Improving the planning system, including for the purposes of UNFCCC and KP, will allow addressing many issues of the implementation of the three conventions, closer stakeholder interaction and making more balanced decisions.

To advance planning system to assist the implementation of UNFCCC and the other two conventions, it is needed to:

- develop and adopt sectoral programmes on reducing GHG emissions and adaptation to climate change;
- produce a set of guidelines on how to develop, elaborate and approve sectoral and regional strategies, programmes and plans (involving stakeholders), and on what the environmental chapter therein should contain bearing in mind commitments under the global conventions;
- develop guidelines on environmental impact assessment for development plans and programmes, plans and measures on adjusting to climate change;
- develop a set of measures aimed at promoting spatial planning at district level to ensure closer interaction in implementing the three conventions;
- develop a programme of measures to promote research and find practical application of mathematical modelling in geo- and socio-ecological-economic system studies;
- develop a methodology for working out measures to adapt economic sectors to climate change, and to increase the sustainability of agriculture and forest management.

Policies, Programmes and Plans

In accordance with the National Sustainable Socio-Economic Development Strategy of Belarus until 2020, the country's GDP by 2010 is expected to exceed the 1990 level by 20–30 %, which will require taking special measures to reduce GHG emissions, increase the amounts of CO₂ absorbed by forests and bogs, as well as taking action to adapt the economy to changed climate.

There are concepts, programmes and projects in energy production, transport, industries, agriculture, forest and waste management, that cover developmental issues in relevant sectors, in Belarus. Despite the fact that they do not treat human impacts on climate as something serious or in need of priority action, they do consider environmental issues, including ones with regard to reducing emissions and enhancing sinks, and do contain specific measures and project ideas aimed at reducing GHG emissions and the protection of GHG sinks. However, none of the documents contain adaptation measures in view of changing climate. The reason for this is that to develop these one needs climate change scenarios.

To make sure the programmes and plans are properly interlinked, proper coordination between stakeholders is required in planning their action to implement the three conventions. This could be a responsibility of a Three Conventions Coordination and Analysis Centre, which should be granted relevant legal powers to develop programmes and plans and ensure their enforcement.

Stakeholder Analysis

An analysis of information on what is done in the country to ensure involvement of stakeholders in environmental activities of various kinds shows that at present there is ongoing work to develop and test relevant mechanisms at the national and regional level, while at the same time the estimated level of existing coordination between various stakeholders provides evidence that interaction, as of now, is inefficient.

The **first-level** stakeholders include those (institutions, organizations, local executive and administrative bodies, groups of persons, etc.) which are directly involved in UNFCCC implementation, chiefly in the planning field, as well as specially authorized government bodies that are responsible for assessing whether programmes, plans and project comply with existing environmental legislation, including international conventions.

An analysis of the existing practices in stakeholder coordination has revealed the following key constraints:

- lack of informed focus on UNFCCC implementation issues; lack of experts on climate change and, as a result, low motivation to take action aimed at meeting commitments under UNFCCC;
- lack of a smooth mechanism to ensure interaction and coordination between stakeholders involved in the development and approval of programmes and plans and their practical implementation.

The key areas for improving capacity of stakeholders at this level are:

- amendment of regulatory documents so that they contain procedures for developing and approving programmes and plans as far as stakeholders' participation in environmental decision-making (including on climate change, adaptation measures etc.) is concerned, which would facilitate improvements in stakeholder interaction;
- improvement of the education system (including post-graduate school) in its environmental section as far as issues of climate changes are concerned, so that it will hopefully increase the level of awareness in decision-makers, help build a foundation for training national experts on climate change and related issues.

The **second-level** stakeholders include mainly institutions, organizations and economic entities that do not generally partake in programming and planning, but whose decisions taken independently within their competence may affect the efforts taken to meet Belarus' commitments under UNFCCC. These stakeholders may take part in the planning process at the stage of discussing draft programme documents, etc. However, the analysis shows that the level of awareness concerning greenhouse gases and their emissions in the context of UNFCCC remains very low among economic entities concerned. As a consequence, the level of motivation in these "stakeholders" is clearly not sufficient to drive UNFCCC implementation forward.

It is a well-known fact that one of the most cost-efficient ways to reduce emissions of GHGs is fuel conservation technology or use of alternative sources of power. To fund such projects industries or institutions may use low-interest loans from the government's innovation funds, which are ample enough. However, recent experience has shown that real investments into energy-efficient projects are below government's expectations. In total, since the beginning of the 2nd National Energy Savings Programme (early 2005) around US\$ 320 million has been invested in energy savings projects, while the expected total of investments was US\$ 435 million. Key constraints for reducing fuel consumption or switching to alternative sources of energy are:

- lack of specialists who can identify and develop good business plans;
- the loaning system in the country requires improvements;
- lack of economic incentives for civil servants and managers of industries to go for energy savings technology; as well as, to a certain extent, the mechanism to use energy savings funds at industries themselves being in need for improvements.

Main ways to increase motivation in stakeholders of this level to partake in meeting UNFCCC commitments are as follows:

- increase the level of awareness about issues related to climate change, including practical ways to reduce the consumption of fossil fuels;
- set up an economic mechanism to motivate industries to move in this direction.

Environmental and forest certification may play a prominent role in addressing issues of controlling and limiting emissions and protecting GHG sinks.

In case Belarus participates in trading emission credits or joint implementation, a whole range of measures needs to be taken to motivate stakeholders of the first and second levels (industries) to this end. Key measures to be undertaken are:

- develop legal documents that set out a procedure to trade emission credits inside the country, and draw up a list of entities to be involved;
- develop a procedure to issue emission permits to entities involved in the trading of credits inside the country;
- develop standards of allowable levels of GHG emissions for companies that produce such emissions;
- draw up and approve a list of heat and power generators that are liable to priority environmental certification, develop methodologies for determining environmental aspects that take account of emissions of greenhouse gases, and EIA methodologies for their use in environmental and forest certification;
- develop legal documents that regulate the involvement of national organizations in international joint implementation projects, including a mechanism to distribute saved emissions credits among the partners in such projects;
- develop legal documents that allow the use of new-type contracts between investors and beneficiaries in joint implementation projects as well as set out rules for banks, credit organizations and energy supply companies in joint implementation projects.

The **third-level** stakeholders include those who are generally not involved in taking specific measures planned by the Government, but who are indeed concerned with progress in implementing UNFCCC. These include various non-governmental organizations, public unions, charity funds, and donor organizations, that are conscious of related environmental problems, climate adaptation, etc.

An analysis of NGO involvement in UNFCCC implementation shows that some of them have had experience of UNFCCC-related projects. NGOs seem to be less active in the area of UNFCCC implementation than in that of the other two conventions (with the exception of energy savings). The area in which NGOs could be instrumental is indeed public awareness in the area of climate change. To achieve maximum efficiency, awareness raising on climate change issues should go hand in hand with PR campaigns on the other two conventions.

Capacity in GHG Inventory

Capacity assessment, preparation and publication of national communications show that the national system of inventories of emissions and sinks is still in its formative stages. Key constraints include:

- a methodology to estimate and take account of emissions from non-point (diffuse) sources whose contribution into total emission is high is not properly developed;
- there is a need to make the National Environmental Monitoring System (NEMS) work in higher consistency with information management objectives of UNFCCC and the Kyoto Protocol;
- the absence of national emission rates, resulted in having to use the Intergovernmental Panel on Climate Change (IPCC) rates, while calculating total emissions, or some aggregated rates from elsewhere, which need verification;
- databases which will become the basis for a national greenhouse gas emission register need to be updated, and a final list of such databases needs to be worked out; a systematized list of nationally recognized methodologies to conduct inventories is lacking;
- national statistics services lack some data needed to carry out GHG inventories;
- lack of staff for carrying out work to estimate emissions and sinks of GHGs, and prepare national communications at both national and sectoral levels.

All this complicates the meeting of the requirements on data reliability and transparency.

To develop and ensure proper operation of a National GHG Inventory System (NIS), it is needed to:

- develop a NIS concept, work programme and structure;
- assign the Belarusian Scientific and Research Centre “Ecology” (BSRC “Ecology”) the status of NIS Information and Analysis Centre;
- develop guidelines (regulation) on providing information by governmental bodies, industries, local structures under the Ministry of Environment, NEMS agencies for the purposes of making inventories of emissions and removals of greenhouse gases;
- develop guidelines (regulation) on national registers of anthropogenic emissions by sources and removals by sinks;
- identify information gaps arising from commitments under UNFCCC to be addressed by NEMS;
- develop methodologies for determining indices of the status of sinks and reservoirs to be done within NEMS;
- develop proposals on adjusting the existing statistics reporting format;

- train experts in GHG inventories by sector (module);
- promote international co-operation on expertise in national systems for the estimation of emissions by sources and removals by sinks of GHGs, calculating uncertainties, training experts in national inventories, etc.;
- make an inventory and develop a register of all available methodologies for the estimation of specific emission rates for GHGs and identify a list of methodologies that need to be developed;
- conduct research on calculating national emission coefficients for various processes and production cycles, and non-point (diffuse) sources of emissions of GHGs;
- take measures to incorporate the national coefficients of CO₂ absorption by wetland ecosystems in the IPCC Guidelines.

National Capacity in Education, Training and Awareness Raising

While assessing capacity in the area of education and awareness raising it was noted that the country has an established and functioning system of environmental education and awareness raising, and informing the public about environmental issues. There is ongoing co-operation with environmental NGOs. This means there is capacity to meet commitments the country has under UNFCCC.

On the whole, it can be affirmed that the 2001–2005 National Programme of Environmental Education Improvement has been implemented.

Lessons drawn from the Programme show that there is a lack of attention to the following:

- raising awareness in the general public;
- mass media's participation in raising awareness as concerns the environment and sustainable development in the country;
- training journalists to cover the thematic areas of the three conventions;
- NGO involvement in raising environmental awareness in the general public;
- training specialists in environmental subjects;
- training top qualification personnel to be involved in meeting commitments under the three global conventions.

Personal initiative remains the key driver in organizing training in environmental disciplines. A downside is that interests of the State and sectoral needs are not always taken into full account. Bearing in mind the specific demand for specialists in certain (sometimes narrow enough) areas, it is recommended to:

- identify subject-matter areas and types of training for specialists in UNFCCC implementation, chiefly through post-graduate courses, apprenticeships, etc.;
- address problems related to training of top-qualification personnel to tackle issues of meeting commitments under UNFCCC.

The improvement of the system for education, specialist training and awareness raising on climate change is tightly linked with a new programme of action for 2006–2010 to improve education, specialist training and awareness raising, currently under development, which is supposed to be drawing on the previous similar programmes and take into account contemporary requirements in this field.

Belarus has a system to inform the public of the state of the environment and measures being taken to protect it. Environmental coverage is mainly provided by newspapers and magazines. There is a clear lack of environmental programmes on national TV and radio. The quality of the publications does not seem to meet contemporary standards either. The problem seems to be the inability to put across the message in a digestible form rather than lack of environmental information as such.

The problems in raising public awareness on UNFCCC-related issues are linked, **firstly**, to the lack of reliable and accessible information on climate change, including that in the country itself. **Secondly**, people of the press themselves do not seem to enjoy a high level of awareness in the area of UNFCCC.

Analysis of progress in meeting commitments under UNFCCC shows that increasing capacity at system, institutional and individual levels is only possible if there is close co-operation across the three conventions. There are cross-cutting issues that need more careful examination in order to identify root causes, prepare an extensive action plan, and identify needs in resources, including financial ones, to support major activities.

The assessment of the existing capacity in the area of UNFCCC shows that raising it will require addressing a set of interlinked issues that cut across all key areas of environmental protection known in the country.

CHAPTER 4. Summary of Thematic Assessment of the Capacity to Implement UN Convention to Combat Desertification

Belarus has been a full Party to the UN Convention to Combat Desertification since November 27, 2001 in accordance with Presidential Edict No 393 of July 17, 2001. The commitments Belarus has made by joining the convention fall within the provisions set out in Annex V of the above convention, entitled: “Annex on implementing the Convention at the regional level for the countries of Central and Eastern Europe”.

Policies, Programmes and Plans

Three documents, namely the National Sustainable Socio-Economic Development Strategy for the period to 2020 of the Republic of Belarus approved by the Government in June 2004, the Key Areas of Socio-Economic Development until 2010 and the 2006–2010 Programme for Socio-Economic Development set out strategic objectives and goals, basic principles and key policy priorities that should guide developments in Belarus in the near future.

A special chapter “Rational use of land resources and sustainable development of agriculture and rural areas” within the National Sustainable Socio-Economic Development Strategy has a focus on land problems in Belarus.

Priority areas of rational use and protection of lands under the sustainability policy in Belarus are improving their fertility and conserving their biosphere-regulating functions.

The 2006–2010 National Action Plan of Rational Use of Natural Resources and Environmental Protection, approved by Presidential Edict No 302 of May 5, 2006, sets out practical measures to be taken in the nearest future to make tangible progress in the strategic areas above. Apart from some priority policies the document focuses on mechanisms – organizational, economic, legal, etc. – to contain and/or reduce negative impacts on the environment, including land resources. In particular, the priority objectives include:

- providing for an integrated approach in spatial planning and land uses;
- creating legal and economic conditions conducive to the introduction of environment-friendly landscape-adaptive systems of agriculture as a set of adaptive measures to climate change and land degradation;
- taking low-productive and/or environmentally unsustainable lands out of agricultural use and changing the way to use them;
- revising arable systems on drained peatlands;
- mandatory introduction of erosion control measures on slopes;
- rehabilitation of degraded lands;
- develop and introduce methodologies and techniques in agriculture aimed at protecting flora, fauna and the environment;
- develop new and improve the existing economic mechanisms designed to minimize agricultural impacts on the environment;
- introduce low-waste or resource-saving technologies in agriculture;
- develop environmentally friendly ways to utilize waste produced by animal farms;
- mitigate consequences of the nuclear fallout on lands in Belarus as a result of the Chernobyl disaster.

To protect biological and landscape diversity in Belarus, the area of forested land is going to be increased in the nearest future at the expense of low-productive or agriculturally poor lands; as well as more shelter forests are going to be planted. The following issues remain topical – setting up new protected areas, establishing an eco-network in Belarus and integrating it into the European Ecological Network, protecting typical and unique landscapes.

Land protection would only benefit from having a Red Data Book of Soils of Belarus; some legal and institutional arrangements for it are already in place. The book would include key soils in Belarus primarily of environmental and scientific value.

A considerable portion of action to protect land and combat land degradation is taken within some 10 national and sectoral programmes, coordinated by the Ministry of Agriculture and Food, Ministry of Environment, Land Resources Committee, Ministry of Forestry and other state bodies.

Legal Framework and its Compliance with Provisions of UNCCD

The existing legislation in Belarus to some extent reflects the accumulated scientific evidence and practical experiences in relevance to the guidelines, key principles, and areas of application of measures to protect lands against degradation.

Legal documents relevant to this problem include laws, codes and government directives etc., as well as local authorities' decisions.

These documents could be divided into several groups:

- ones that bear a framework character and specify the most general principles and approaches to the problem (e.g., Law on Environmental Protection);
- ones that set out direct instructions on the rational use and protection of lands (e.g., Land Code of Belarus);
- ones that have indirect relevance to the problem (e.g., Law on Air Protection).

Land protection issues are addressed in more than 20 legislation acts of Belarus.

The key legal document that regulates arrangements and conditions pertaining to land as well as aims at the rational use and protection of lands in the country, is the Land Code of Belarus (a direct force legal act). The Code sets out:

- objectives and tasks of land protection that pertain to a system of legal instruments, organizational, economic and other measures, aimed at the rational use of, prevention of discontinuation of using lands in agriculture without good reason, protection of lands against negative human impacts, as well as at the reproduction and increasing of soil fertility and forest productivity;
- procedures for the protection of lands, including:
 - optimum spatial organization;
 - rehabilitation and enhancement of soil fertility and other useful properties of land;
 - protection of land against water and wind erosion, flooding, swamping, salinization, dehydration, compaction, contamination with industrial wastes, chemical and radioactive substances, and other degradation processes;
- measures for the protection of peatlands without discontinuing using them; the prevention of the processes of mineralization on peatlands or the decommissioning of degraded agricultural lands, if there is no other way to restore soil fertility in them;
- measures to restore exhausted peatlands;
- measures to re-cultivate disturbed lands and increase their productivity;
- measures on the removal, use and storage of the fertile soil layer while carrying out earth works, etc.

The Land Code of Belarus specifies the responsibilities of land users and landowners for taking action aimed at the protection and proper use of lands; the powers and responsibilities of local authorities in effecting changes in land uses; the rules and procedures pertaining to the state control over the use and protection of lands; it also contains provisions dealing with economic incentives for land protection; as well as imposes penalties for the violation of environmental legislation, including a clause on the reparation of environmental damages incurred in consequence of such violation.

The Code defines the term “land monitoring” as a system of observations of the status of lands that allows for timely registering and making assessment of any changes, preventing and mitigating consequences of adverse processes. The object of land monitoring is given a proper definition in the Code. The Code specifies what the State Land Cadastre should contain (including qualitative and quantitative parameters), as well as the tasks and objectives of spatial planning (defining it as a system of measures aimed at regulating legal arrangements pertaining to owning and using land, ensuring more efficient land uses and protection of lands, conservation and improvement of the environment).

Specially authorized land planning bodies with some functions of controlling the use and protection of lands include the Committee for Land Resources, Survey and Cartography under the Council of Ministers of Belarus and its offices at the regional and local levels.

The Land Committee is responsible for developing proposals into state policy on the use and protection of land resources, and conducts relevant research, controls the use and protection of lands within its competence and

takes measures to increase land management efficiency. The Land Committee controls the implementation of land planning projects, is responsible for land monitoring and keeping the land cadastre up to date, and runs the uniform state land resource database.

The state land records kept by the Land Committee include data on the areas of:

- disturbed lands (in ha), which include lands that have lost their natural and/or historical heritage value under human impacts and currently cause environmental concern (these are divided into subgroups by causes and type of damage, which may help identify the right ways to repair them);
- abandoned lands which, as a result of natural and/or human-induced processes, are currently unsuitable for usage for some functional purpose:
 - sands with no plant cover;
 - ravines and gullies;
 - burnt-out peatlands;
 - former agricultural lands contaminated with nuclear fallout;
 - other unused lands some of which can be treated as degraded.

The modern land legislation in Belarus considers the following as key measures to protect lands from degradation:

- identify lands either not in use or used not in a rational way (Regulation on the Procedure for Systematic Location of Unused or Not Rationally Used Lands and Creating a Special Land Resources Fund at Local Councils of People's Deputies, approved by the July 15, 1991 Decision No 277 of the Council of Ministers of BSSR);
- take land repair action (Regulation on the Repair of Lands Disturbed While Carrying Out Mining and Peat Excavation, Fossil Fuel Exploration, Construction or Other Works, approved by the April 25, 1997 Order No 22 of the State Committee for Land Resources, Survey and Cartography of Belarus);
- measures aimed at the preservation of fertile soil layer while carrying out construction or other work (Regulation on the Removal, Use and Preservation of Fertile Soil While Carrying Out Works Leading to the Disturbance of Land, approved by the May 24, 1999 Order of the State Committee for Land Resources, Survey and Cartography of Belarus).

The Land Code of Belarus provides for setting economic incentives for the subjects of legal relations concerned to stimulate their rational using and protecting lands by: providing funds from national or local budgets to support land repair action if damage is not inflicted through their actions; exempting them from paying rent for land undergoing repair; providing low-interest loans; partial compensation from the state budget for reduced profits due to part of lands having been damaged through no fault of theirs and currently "frozen"; bonuses for taking action aimed at improving the quality of land, increasing soil or forest productivity, ensuring clean production.

On the whole, there is a quite well-developed body of research into the processes of land/soil degradation in Belarus, as well as a set of many practical recommendations to prevent these. For example, there is good methodological and research support for soil protection action taken on eroded and contaminated lands, somewhat feebler back-up is secured for action on degraded lands of other types (conservation strips of land, territories around industrial enterprises, urban areas, etc.).

Key actions designed to improve state policies, strategies, plans, programmes and legislative framework in the area of land/soil degradation therefore include:

- carry out a combination of land and agrarian reforms (with the former having the lead), as addressing them separately is thought to be of little effect. It ensues that introducing the concept of land tenure is a key element of increasing the efficiency of land management in this country;
- develop and adopt a new governmental programme to combat land degradation which should follow up on the already implemented State Programme on the Protection and Rational Use of Lands of 1994;
- draw up a possibly full list of requirements and limitations that land users should meet, making these requirements available to land users by entering them in the State Land Cadastre;
- develop and approve a uniform classification system for environmental requirements in land management, including their exact definition, interpretation and enforcement procedure;
- make arrangements for initiating work to develop regional land resources utilization plans, land management

projects, etc., in which lands of environmental concern are to be identified, and substantiate the recommended regime of use for them. Areas in need of urgent measures to optimize the ways lands are used are the primary target for such land management initiatives;

- coordinate approval by the Government of a regulation on land/soil monitoring, which should include all details on organizing the monitoring of degraded lands;
- coordinate approval by the Government of a resolution on the use and protection of degraded agricultural lands and those contaminated by toxic and industrial wastes and nuclear fallout;
- grant local authorities broader powers to transfer lands from one use category to another independently and ultimately aimed at their more effective use and combating land degradation. This issue is addressed in the new version of the Land Code of Belarus;
- develop and adopt a special law on the wise use and protection of lands (in short, Law on Land Protection). It is proposed that the new law should set out provisions for an up-to-date system and procedures for land use planning to ensure proper soil protection. The law should also include some principles for optimum land uses in agriculture, so that focus be placed on potentially fertile soils with the less fertile ones being used more sparingly. A legal procedure should also be developed for freezing the use of degraded lands, as well as lands contaminated with chemical substances and nuclear fallout;
- develop a special legal act that would govern land use planning practices (spatial planning). Planning should embrace regions, separate administrative-territorial units and be conducted by means of projection-making, programme- and project-developing spatial planning documentation, including documentation on environmental protection measures;
- amendments are required into the provisional instruction on calculating damages resulted from land contamination, degradation or disturbance, so that approaches to estimating aggregate adverse impact on lands are incorporated;
- develop a special legal document on the optimization of land uses in agriculture as an additional tool to help increase economic efficiency of land farming, placing focus on its intensification on the best agricultural lands;
- develop a uniform system of environmental, sanitary, epidemiologic and other standards and norms pertaining to the state of lands, their quality, current uses and admissible human impacts on lands.

Stakeholder Analysis

When regarded as a natural resource, land is characterized to be multi-purpose. Land is a universal production force, it provides space for industries, built-up areas, infrastructure, etc., and it is also the key means of production in agriculture and forest management, etc. It also provides an arena for diverse human activities, such as recreation, tourism, etc., performs the function of a “reservoir of resources”, as well as habitat and protective functions in the biosphere.

In view of these versatile functions and roles that land performs, it is more or less all sectors of economy that have a stake in the use of land resources. However, it is primarily businesses that require large areas of land to operate that are in special need of land resources. On the other hand, land may be exposed to degradation of various forms and types in the course of its use by the said businesses.

The Land Committee, the Ministry of Environment and the Ministry of Agriculture are the key stakeholders in the development and implementation of government policy in land management. In implementing UNCCD the role of the Land Committee includes the following tasks:

- set priorities in the area of land relations, protection and wise land use;
- control, on behalf of the Government, the use and protection of lands;
- mobilize the development of national and regional programmes on wise use and protection of lands, and land management master plan of Belarus, and submit their results to the Council of Ministers of Belarus for consideration;
- organize land/soil monitoring within the National Environmental Monitoring System of Belarus;
- update State Land Cadastral records, establish a uniform database on land resources, changes in lands and their uses, and processes of transformation they undergo;
- organize the assessment of lands for quality and economic value.

All these areas of action are definitely important for ensuring proper land protection both in quantitative and qualitative terms. However, it is worth emphasizing the special role that the State Land Cadastre plays, as a directory containing data and documents that describe the conditions of lands in Belarus and ways they are used. For many years, the key function of the land cadastre has been to keep a record of the quantity of lands available in the country. However, now there is a growing need to also take account of environmental properties of land, and to assess its resource potential as a component of the natural environment. It is thought that, in this respect, the structure and functions of the land cadastre should be revised. Probably the most important improvement should be the elaboration of a mechanism that would ensure motivation towards land protection policies at all levels concerned. The State Land Cadastre has a section "Protection regime zones".

For the last five years the Land Committee has managed to take a step forward in exercising efficiently state control of the use and protection of lands. A special division has been created – the Department for State Control of Use and Protection of Lands.

Improving the mechanism whereby the government manages land resources and regulates land relations should include the creation of an economic and legal tool to increase the management efficiency of land users themselves. Creating conditions which would motivate land users to adopt more efficient approaches in using and protecting land is one of the crucial objectives within the government land policy.

Key land planning actions of the past five years have included projects on cadastral assessment of lands and on the optimization of land uses in agriculture, on filling the demand of different sectors of economy, industries and individuals in land, and on setting up land information systems at the district level. A priority task is cadastral assessment of lands in built-up areas as the data collected there is used for elaborating land tax rates, spatial planning, land market development needs, etc. A considerable amount of work remains to be done in land planning for collective farms. It is required that more attention be given to land use planning and such spatial arrangements so that more efficient land users would benefit.

For lands with soil cover vulnerable to human impacts, it is recommended that land assessment be done more frequently, especially this is true for agricultural lands.

Key documents include the "Regulation on State Controls over the Use and Protection of Lands" and the "Regulation on State Controls in Environmental Protection", with the Ministry of Environment responsible for taking relevant action. The documents include measures to ensure that land users and landowners comply with land legislation and a quite efficient mechanism for performing relevant control functions.

Both the Ministry of Agriculture and the Ministry of Forestry have a part to play in the system of state control over the use and protection of land. Lands used by collective farms and individuals should be effectively supervised and controlled by relevant authorities, as their total area amounts to 9,871,700 hectares (44.2 % of Belarus' total area). It should be stressed that since the Land Committee was established, the Ministry of Agriculture has largely given up the functions of keeping a record of lands and monitoring their condition. It is unacceptable, for land remains the key means of production in agriculture, whose efficiency largely depends on land quality.

As can be seen from the above, the issue of prudent use and protection of lands is of an integrated and intersectoral character, so it cannot be properly addressed by one government body on its own. Efforts by many stakeholders in Belarus are needed.

Important coordinating and controlling functions in the area in question are exercised by the Ministry of Environment. Pursuant to Council of Ministers' Decision No 1230 of August 16, 2001, the Ministry of Environment is designated as the government body that coordinates the actions to meet Belarus' commitments under UNCCD (UNCCD National Focal Point). To find integrated solutions in December 2001 the Ministry of Environment initiated the establishment of a standing interagency working group, comprising representatives of authorities concerned, research institutions and NGOs. The special Ministry of Environment Order No 55 of March 15, 2002 endorsed an action plan to implement the UNCCD in Belarus. The said action plan has an implementation period till 2005 and includes 44 major activities to implement the convention in Belarus. At present there is ongoing work on preparing a national action programme to combat land degradation, under the aegis of the Ministry of Environment and with the methodological assistance of the UNCCD Convention Secretariat.

The Ministry of Environment is responsible for coordinating the implementation of the December 30, 2003 Council of Ministers' Decision No 1714 "On Approving the 2004–2005 National Programme on Land and Landscape Improvement in the Countryside and Built-Up Areas", one of the key tasks within which is the mobilization of all land users to take practical measures to protect land against contamination and littering.

Stakeholders in the area in question include research institutions, farmers, non-governmental environmental organizations, etc. All of them can contribute tangibly to meeting commitments under the UNCCD.

As the experience in implementing projects funded by international donors shows, it is always beneficial to involve non-governmental organizations and thereby create opportunity for alternative approaches while addressing environmental issues in the country. At the same time, it is always useful to involve as many as possible experts, researchers, local communities, and land users. On the whole, the current state of international co-operation in the country corresponds to what is recommended by the UNCCD.

The Aarhus Convention on public access to environmental information and public participation in decision-making, signed by Belarus, opened a new window of opportunity for involving the general public in environmental action in the country. This fully applies to decision making related to land degradation. There is a successfully functioning public coordinating council at the Ministry of Environment which includes 16 national NGOs. An action plan for UNCCD implementation was developed in 2002, which identified some current problems in combating land degradation and tried to address them. The key ways for stakeholder participation in UNCCD implementation have been the development of a national action programme to combat land degradation, holding consultations, information exchange, workshops and other group work events. The most active stakeholders have been the Farmer Union of Belarus, Belarusian Geographic Society, Belarusian Soil Studies Society. As for more active involvement of land users in combating land degradation, their role increases since land is treated as real estate, which becomes a major incentive for land users to engage more actively in land protection action.

To further build stakeholders' capacity in implementing UNCCD it is needed to:

- seek coordination between ministries, institutions, research and planning organizations concerned, as well as local authorities in taking action to combat land degradation in the country. Strengthening such coordination is possible by establishing a special information & coordination body vested with appropriate powers and authority over the institutions involved;
- remove overlapping in functions of various authorities in exercising control over the use and protection of lands. This, in particular, applies to such bodies as the Ministry of Environment, the Land Committee, the Ministry of Agriculture, Ministry of Forestry, Ministry of Health, etc.;
- draw stakeholders' attention to the issues of land degradation by holding Parliamentary hearings, discussing them at various forums, including the annual nation-wide ECO-Forum; active involvement in the action to combat land degradation of the authorities, NGOs, land users concerned;
- law should forbid that funds allocated for land protection purposes, like enhancing soil fertility and other valued soil properties, offering incentives for land users to motivate them into taking appropriate action, etc. be spent for altogether different purposes.

Current Capacity of Financial and Economic Controls in Use and Protection of Lands

It should be noted that while a mechanism to enforce legal provisions pertaining to exacting damages and collecting fees for the use of nature can be considered reasonably well functioning, an incentive-setting mechanism is virtually non-existent (primarily, this concerns tax relieves).

For example, the Land Code of Belarus envisages the use of economic incentives to motivate landowners and land users into more rational management of lands, by, in particular:

- providing funds from the central or local budgets for the restoration of lands, disturbed through no fault of theirs;
- exempting them from paying rent for land, when action is being taken to improve them;
- providing soft loans;
- providing a partial compensation for reduced profits from land disturbed through no fault of theirs and therefore temporary withdrawn from use;
- paying bonuses in acknowledgement of projects, funded by them, to improve the quality of land, enhance soil fertility or raise forest land productivity, to have clean production, etc.

However, in practice these incentives are being applied to a very limited extent.

The Land Code requires mandatory reparations to be paid to land users or landowners in view of any losses incurred as a result of damage to their land caused by individuals or organizations, including expenses borne by them to repair land, or as a result of lost profits.

Apart from damage repair, there is a requirement that production losses linked to the deteriorated quality of land be compensated. This norm, in particular, is applied when a portion of land is designated as a sanitary protection zone around a polluting site. Funds paid as compensation can only be used for the acquisition of new lands, improvement of soil fertility, land planning and for other similar purposes.

It should be noted that all the above legal acts fail to use a proper definition of the terms “land degradation” and “degraded lands”, which are the key ones the convention deals with. Of the existing legal acts it is only the provisional guidelines on economic damage incurred through contamination, degradation or disturbance of lands, approved by the May 20, 1997 Decision of the Ministry of Environment No 112, that contains a definition of the term “land degradation”. While the instruction defines “land degradation” and “land disturbance” (as processes), it, however, fails to specify what “degraded lands” or “disturbed lands” are, thus lacking the definition of the very object, damage to which is being calculated. Neither this nor other legislation offer a legal classification of degraded lands. If the latter were available, it would allow building a system to govern legal relations in the field of protecting land from degradation dependent on its causes and forms it takes.

The rules for calculating damage caused to land by chemical contamination, degradation or disturbance, as well as the procedure for collecting the compensation and using it are set out in the mentioned provisional instruction that applies to all types of land. The document seems to be slightly outdated in the approaches it uses. The methodology allows calculating damage caused by disturbance or degradation by making it virtually equal to the costs of bringing the land back to its state prior to damage without taking account of possible economic losses resulting from unaccounted-for negative impacts on the rest of the environment. The main focus is on contamination: there is a methodological backup, technology and tools. Land degradation indicators used are quite arbitrary and haphazard.

The mentioned provisional instruction is currently outdated as it does not meet the current requirements in evaluating damages when adverse impact is a juxtaposition of several ones. There is also a clear lack of what are called technical-legal acts regarding levels of heavy metals in the soil.

To enhance capacity through more efficient use of financial and economic mechanisms in combating land degradation, it is needed to:

- reduce the number of grounds on which land users can be exempted from paying land tax and make those grounds more difficult to use;
- recovery of damage inflicted by economic activities leading to land/soil degradation;
- put in order the existing system of incentives for land users so that to make it a more efficient tool to promote efficient use and protection of lands.

Information and Analytic Backup for UNCCD Implementation

At present the collection, handling and storing of environmental information are linked, primarily, with such areas of activity as updating the cadastre of natural resources and pollution sources, doing environmental monitoring and that of public health.

The Council of Ministers' Decision No 784 of May 29, 2001 sets forth a list of information resources that have the status of state important information. These include: socio-hygienic monitoring data; state natural resource cadastres' data; state mining lease register's data; state register of hazardous sites; state register of nuclear materials and some other.

Pursuant to the Law on Environmental Protection, the duty to create and regularly update the State Database on the Environment and Adverse Impacts thereon lies with the Ministry of Environment.

The details on creating and updating the Database are set out in the Council of Ministers' Decision of December 22, 2001 "On the Approval of the Regulation on the State Database on the Environment and Adverse Impacts Thereon".

The appropriate operational regime, procedures and data formats are set out in the Technical Description of the National Environmental Monitoring System in Belarus, approved by Council of Ministers' Decision No 1344 of August 27, 1998.

In order to make information more easily available for stakeholders, the UNCCD focal point's website has been created recently which provides useful information on the state of land resources in the country, measures taken nation-wide and at the regional level, as well as investment project proposals, etc.

At the present time, data collection within NEMS is carried out in the following key areas:

- monitoring of land resources;
- agricultural soil monitoring (for reporting and research purposes);
- technogenic soil contamination monitoring.

First-hand data collection in specific subtypes of agricultural soil monitoring is done by Belgyprozem, Institute for Soils Studies and Agrochemistry of NASB (ISSA NASB), Belarusian State University and Hydromet. Then the information is passed on to the Land (Soils) Monitoring Information & Analysis Centre which should be located at the ISSA NASB according to the NEMS technical project.

The key function of the information and analysis centre is to collect, aggregate and pass on information to the Belarusian Scientific and Research Center "Ecology" and other users.

All the data collected through monitoring of lands/soils is published as a separate chapter in the annual reports of "National Environmental Monitoring System in Belarus".

Mainly, the data is used for preparing analytic reports on the state of the environment by the Ministry of Environment, as well as for preparing reports to be submitted to the UNCCD Secretariat and to the COPs.

Priority actions to improve information and analytic support for implementing UNCCD comprise:

- incorporate a set of data on land degradation, including quantitative and qualitative indicators of the status of land, and degraded land maps into the nation-wide database and information systems;
- ensure free exchange of data on degraded land between stakeholders;
- introduce a column "Protecting Land" into the "Zemlya Belarusi" (Land in Belarus) magazine, where the most topical issues, related to the state, protection and rational use of lands in Belarus should be addressed;
- publish a full-colour booklet on land degradation in Belarus under the Ministry of Environment's auspices;
- develop a information-reference system "Land Degradation and Measures to Combat it" for senior secondary school and university students;
- complete the preparation of "Regulation on Land/Soil Monitoring", whereby a data/information exchange mechanism should be defined.

Enhancement of National Capacity in Education, Training and Awareness Raising

At present the Concept of Environmental Education and the National Action Programme to Improve Environmental Education serve as the main guidelines for environmental education, training and awareness raising in the country. The former was approved by the Ministry of Education on April 21, 1999, the latter – by the Ministry of Environment on March 19, 1999.

In accordance with the national programme, the environmental education system should encompass all levels of formal school, extra-curricular education, as well as training, retraining and awareness raising. The review of the programme showed that environmental education is a priority area in the educational system in the country. The national action programme to improve environmental education properly envisages the use of principles of continuity and an integrated approach in education, the inclusion of environmental subjects in curricula at all levels of formal education, training and retraining of personnel and extra-curricular training. A review of the curricula shows there is good progress in implementing the national action programme to improve environmental education in the country. Issues pertaining to the land degradation problem and the assessment of soil and land resources in Belarus are covered by some curricula and training programmes at secondary, vocational and high schools. However, there is a clear lack of focus on the issues of international co-operation in environmental protection. This includes issues of sustainable development strategic planning, and the implementation of the UN environmental conventions, especially the one to combat desertification. It is recommended that issues thereof be included in relevant curricula at all levels.

University and college teaching aids pay inadequate attention to the UN conservation conventions and their linkages with regional environmental problems of Belarus. Therefore it would be useful to develop a guide book focused on global and national environmental problems in the light of the above conventions. The guide book should cover national and international legislation in this area, solution finding, international co-operation.

In order to enhance capacity in the area of education, training and retraining, it is needed to:

- while developing the next National Environmental Education Programme, introduce a chapter dedicated to learning issues pertaining to the environmental UN Conventions;
- develop and incorporate in environmental subjects issues of combating land degradation and mitigating its consequences;
- organize a workshop for teachers of higher, secondary and vocational schools on the UN Conventions, including that to combat desertification/land degradation;
- prepare a teacher's book focused on environmental issues of both global and national scale in the context of the three conventions. The book should cover matters of legal frameworks in the country and in the rest of the world in this area, discuss some solutions, international co-operation in the field.

CHAPTER 5. Review of Crosscutting Issues and Synergies between the UN Conventions

Analysis of information on existing capacity in Belarus to implement the UN Framework Convention on Climate Change, UN Convention on Biodiversity and UN Convention to Combat Desertification/Land Degradation made using the problem tree technique shows that there are several root problems that result in insufficient capacity to meet commitments under the conventions. Removing these problems would have a real effect not only in terms of more successful meeting commitments under the conventions, but would also ensure raising the efficiency of nature protection action in the country in all the relevant areas at the same time. Such root problems include:

- absence of special legal acts that regulate the ways lands are used or protected in various sectors of economy, and aimed at preventing their degradation (Law on Land/Soil Protection) as well as designed to regulate spatial planning and development, including planning for nature protection measures (Law on Spatial Planning);
- deficiencies in legal controls for the development, consideration, coordination and approval of national, sectoral and regional strategies, programmes, plans in terms of environmental protection, adaptation measures for climate change in the light of Belarus commitments under the global conventions, stakeholder participation including the general public;
- absence of a system of Strategic Environmental Assessment (SEA) for concepts, programmes, plans developed in the country, as well as lack of focus on specific convention-related tasks while doing Environmental Impact Assessment (EIA);
- absence of a classification system for environmental requirements and limitations in land uses, scientific evidence-based standards and rules that set allowable human loads on natural ecosystems in the context of implementing the UN Conventions;
- insufficient coordination of action taken by authorities and land users as well as clashes of interests of private sector and those of the public; poor public awareness; underdeveloped economic mechanisms that can promote taking measures to implement the UN Conventions;
- absence of regional action plans on biodiversity, climate change and combating land degradation and the resulting poor role and low capacity of regional and local authorities and public associations in taking practical action within the UN Conventions;
- research in the areas of the UN Conventions is not coordinated efficiently enough, and an integrated system of implementation indicators is lacking;
- deficiencies in financial and economic mechanisms to stimulate action on biodiversity, combating land degradation and reducing GHG emissions;
- deficiencies in the national education system and that for professional training leading to a lack of well-qualified specialists in the areas pertaining to the implementation of the UN Conventions;
- lack of a standing working body to provide technical and scientific backstopping to the Conventions and links to their Secretariats;
- poor involvement of NGOs and the general public in the process of implementing the three UN Conventions.

The priorities outlined above have been used as a basis while developing the National Priority Action Plan to Raise the Capacity to Implement the Three UN Conventions in Belarus (on biodiversity, climate change and to combat land degradation) (See Chapter 7).

Review of action taken in the country to implement the conventions shows that increasing the capacity at the systemic, institutional and individual levels is only possible if there is close interaction between the three UN Conventions.

The critically important measures in terms of making the best of any synergies existing among the conventions are as follows:

- enhance the legal framework and take more proactive measures to regulate the ways the commitments of Belarus under the three UN Conventions are met;
- monitor and protect GHG sinks; ensure that collected data on land uses, forest management and wetlands is accurate and reliable;
- create a uniform information and analytical database on the three UN Conventions;
- undertake spatial planning, develop climate change adaptation measures, procedures and methodologies for environmental assessment of programmes and plans involving stakeholders, including the public;

CHAPTER 5. Review of Crosscutting Issues and Synergies between the UN Conventions

- raise the existing capacity in the area of spatial and ecologic-economic system analysis to be able to develop measures to optimize land uses, protect GHG sinks and ensure biodiversity conservation at the regional level;
- improve education and training of all levels, including the higher school, in subjects related to the thematic areas of the three conventions; and improve information and methodology support for education and training relevant to the three conventions;
- establish a coordinating information and analysis centre which would, inter alia, ensure the coordination of research within regional and sectoral R&D programmes in the areas of the three conventions;
- ensure protection and monitoring of the state of GHG sinks (forest and wetland ecosystems), rehabilitation of wetland ecosystems, re-swamping of depleted peat deposit sites and inefficiently used drained peatlands;
- optimize land uses at the regional and local levels;
- mobilize stakeholders to involve more professionals in the area of the conservation of biodiversity, climate change, combating land degradation to work out mutually acceptable decisions and coordinated action in the area of planning for and achieving the objectives of the environmental UN Conventions.

Priority tasks to perform within this UNDP–GEF project included determining synergies among the three conventions to build up respective capacity. Synergies were determined based on the identification and review of cross-cutting provisions of the three UN conventions and respective implementation measures.

Such an approach will help identify some coordinated and agreed approaches to the successful implementation of the conventions at the national, regional and local levels, as well as allow avoiding overlapping and reduce relevant costs.

A list of specific opportunities for enhancing the capacity in each of the thematic areas by identifying synergetic solutions which address issues pertaining to the three environmental UN Conventions are presented in table 5.1. below.

Table 5.1

List of common and cross-cutting issues for enhancing capacity in the thematic areas of the three environmental conventions

Common and cross-cutting issues	UNCCD	UNCBD	UNFCCC	Capacity Enhancement Areas
Legal Framework Improvement				
Develop draft laws designed to help implement the provisions of the UN Conventions (on protecting lands/soils, on spatial planning, etc.)	X	X	X	Creating conditions conducive to the implementation of the three conventions in Belarus
Develop uniform requirements imposed on environmental and other programmes, including programmes on adaptation to climate change	X	X	X	Planning of economic and other activity with due regard to environmental requirements
Develop legal framework for protecting landscapes, plant communities, soils, as sites of natural and culture heritage	X	X	X	Coordination in meeting commitments under the UN Conventions
Introduce SEA for strategies, programmes and plans	X	X	X	Coordination in meeting commitments under the UN Conventions, stakeholder involvement
Create a national GHG inventory system for sources and sinks	X	X	X	Creation of a body responsible for the assessment of GHG emissions and removals. Training of experts
Develop indicators for land degradation and the state of GHG sinks	X	X	X	Raising the quality and accuracy of the assessment of the state of the environment
National policies, strategies, programmes and plans				
Develop and adopt national and regional strategies on adaptation to climate change, combating land degradation and conservation of biodiversity	X	X	X	Planning action to meet commitments under the UN Conventions. Coordination.

**CHAPTER 5. Review of Crosscutting Issues and Synergies between
the UN Conventions**

Common and cross-cutting issues	UNCCD	UNCBD	UNFCCC	Capacity Enhancement Areas
Raising the capacity of stakeholders				
Hold Parliamentary hearings on issues pertaining to the UN Conventions	X	X	X	Managing information to ensure action to meet commitments under the UN Conventions. Raising capacity at institutional and individual levels
Hold roundtables on the issues of land degradation, climate change and biodiversity	X	X	X	Managing information to ensure action to meet commitments under the UN Conventions
Annual progress reports for the UN Conventions in Belarus	X	X	X	Managing information to ensure action to meet commitments under the UN Conventions
Create a national inter-institutional commission to implement the UN Conventions in Belarus	X	X	-	Coordination for meeting commitments under the UN Conventions; stakeholder involvement
Create a specialized body at NASB to provide R&D backstop to UN Conventions	X	X	X	R&D backstopping for meeting commitments under the three conventions
Financial and economic mechanisms				
Develop methodologies for determining economic losses as a result of polluted or degraded lands or soils, or reduced quality of GHG sinks, damage or loss of plants	X	X	X	Creation of an economic mechanism to stimulate action on meeting commitments under the UN Conventions
Develop methodologies of assessment of efficiency of measures taken to reduce GHG emissions, protect biodiversity and prevent land degradation	X	X	X	Creation of an economic mechanism to stimulate action on meeting commitments under the UN Conventions
Information & Analytic Support				
Develop proposals on improving the monitoring systems to help implement the UN Conventions	X	X	X	Information support to action on the UN Conventions
Develop and make practical use of a methodology of appraisal of land resources in Belarus	X	X	X	Information support to action on the UN Conventions
Develop a system of indicators to annually assess progress of implementing the UN Conventions, and integrate it into the system of sustainable development indicators	X	X	X	Information support to action on the UN Conventions
Education, training and awareness raising				
Develop a new version of the national programme for environmental education, training and awareness raising	X	X	X	Raising public awareness on the issues of the UN Conventions. Training experts in the areas pertaining to the UN Conventions
Develop training materials, textbooks and alike, publish information for the general public on the issues of implementing the UN Conventions in Belarus	X	X	X	Raising public awareness on the issues of the UN Conventions. Training experts in the areas pertaining to the UN Conventions
Prepare and publish informational materials for the general public and youth (booklets, posters, video materials, etc.) covering the key objectives of the UN Conventions, including via mass media	X	X	X	Raising public awareness on the issues of the UN Conventions. Recruitment of new members in NGOs working in the thematic areas of the UN Conventions

CHAPTER 6. Summary of Conclusions of the Cross-cutting Assessment

The key provisions of the UNFCCC, UNCBD and UNCCD do not contradict the Constitution of Belarus and its laws and bylaws. The current national legislation generally allows working towards meeting most of the commitments under the three conventions.

However, it is not enough to work out energy saving incentives or put alternative sources of power to wider use at the level of legislative acts. There are a number of constraints at a system level which are linked with the fact that there is no legal term “climate” in the Belarusian legislation. Climate and the climate system are not considered to be objects being under human pressures and subject to protection. Provisions of legal documents pertaining to climate change bear too general a character and need to be complemented with direct force acts in line with Belarus’ key commitments under UNFCCC. In acceding to the Kyoto Protocol, it is necessary to develop a legal framework for operating a national register of GHG emissions and sinks, and conduct trading in emission reduction units.

Legal acts that regulate sustainable use and protection of lands are often too generic and some may not be of direct force. Some legal provisions have not been taken further in bylaws. At present, Belarusian legislation considers land to have the status of property and an item of market value. The issue of preventing the degradation of land as a natural resource and an important component of the environment is not addressed in its entirety. There are virtually no regulations on the use and protection of land under the conditions of global and regional climate change, biodiversity losses.

Close links between these factors necessitate placing some focus on them in legislation, that is by the development of special legal acts (laws on protecting land and on spatial planning). Passing the said laws will allow to introduce efficient procedures for the use and protection of lands and for optimal spatial planning in terms of nature uses taking into account the objectives of the UN Conventions.

This will provide legal opportunities to help enhance capacity in line with the conventions as well as generally raise the efficiency of action to protect and use natural resources in a sustainable way. At the same time it will allow to unify legal notions, terms and definitions, application of norm and rules while taking specific measures related to the UN Conventions and will help remove various barriers existing between stakeholders in this area.

An important stimulating aspect, aimed at raising the capacity for implementing the commitments under the three UN Conventions, is Belarus’ joining the European Convention on Landscapes in the nearest future. The said convention, opened for signature in 2000, ensures a balanced and integrated approach to sustainable development, management and protection of landscapes as valued features of nature and culture heritage that requires international effort. The convention is based on a very innovative concept of landscape that allows changing environmental and spatial planning policies, and ensures the protection of landscapes from negative human impacts and global environmental changes. In addition, the European Convention on Landscapes places the main focus on the involvement of the general public in the addressing of issues of their sustainable use and protection, exchange of experience and information. This fully corresponds to the objectives of the UN Conventions. Its “cross-cutting” nature is going to help raise the capacity to implement the said conventions.

The measures that assist to effectively implement the three UN Conventions include the creation of the Green Book of Belarus and the Red Book of Soils of Belarus. This will allow enhancing capacity within the legal framework aimed at the conservation of plant communities and their habitats, as well as will help protect associated soils. The synergetic character of these measures is in creating legal frameworks aimed at supporting biodiversity of ecosystems and mitigating the consequences of climate change.

An assessment of the existing system of national economic forecasting, planning and project development allows suggesting that for the last 20 years the system has not been functioning properly. It has been lacking almost fully the meso-territorial level that is the most productive in terms of synergies among the UN Conventions.

Refining the existing planning system will allow solving a number of issues related to meeting commitments under the three conventions, and building a basis for stakeholder interaction, and taking well-weighted decisions.

CHAPTER 6. Summary of Conclusions of the Cross-cutting Assessment

For achieving this goal in a cross-cutting context it is needed to:

- develop a set of documents that establish the rules for the development of sectoral and regional strategies, programmes and plans (with stakeholder involvement), and what the Environmental Protection chapter in these documents should contain, bearing in mind the commitments under the UN Conventions;
- develop guidelines for carrying out assessments of environmental effects while developing plans, programmes, biodiversity, climate change and land degradation action plans, programmes and measures;
- develop a set of measures aimed at stimulating spatial planning at a district level to ensure close coordination of action on the three environmental conventions;
- develop a methodology to provide evidence for measures to adapt to climate change, develop programmes of adaptation of sectors of economy to climate change, raising the sustainability of agriculture and forest management based on measures to protect biodiversity and prevent land/soil degradation.

Review of information on stakeholder involvement in environmental activities in all relevant areas shows that currently appropriate mechanisms are being developed and tested at the national and regional levels, although the way those are coordinated does not allow to say that stakeholder involvement is at its highest efficiency.

Review of the existing practice of stakeholder co-operation shows that there is an insufficient level of awareness regarding the issues pertaining to the UN Conventions, a lack of qualified experts and low motivation to do work aimed at meeting commitments under the UN Conventions. There is also lack of procedures to ensure co-operation and coordination between stakeholders in the process of the development, coordination and approval of programmes, plans and their practical implementation.

The main areas to raise stakeholder capacity are the improvement and incorporation into legislation of procedures to develop, coordinate and approve programmes and plans as concerns stakeholder involvement. A synergetic character of such procedures is quite evident and needed for developing measures to implement the UN Conventions. To increase motivation of stakeholders in decision-making, it is needed to enhance the education system (including post-graduate) in the field of the environment that will allow to increase the level of awareness, especially of decision-makers, and create a basis for training national experts in the domain of the three UN Conventions.

The key documents that determine the framework for environmental education are the Concept for Environmental Education and Training and the National Programme for Improving Environmental Education. Despite evident progress in implementing these programmes, a number of issues still need to be addressed:

- public awareness;
- involvement of mass media in environmental and sustainability education and training;
- training reporters working in the thematic areas of the three Conventions;
- involvement of NGOs in awareness raising;
- training specialists in ecological specialties;
- training highly qualified staff in the areas related to meeting commitments under the three UN Conventions.

CHAPTER 7. 2005–2010 National Priority Action Plan on Enhancing Capacity to Implement Belarus' Commitments under UNCBD, UNFCCC and UNCCD

The plan of priority actions, developed during the project, is aimed at solving the key tasks under the UN Conventions.

The implementation of the plan presupposes the involvement of all the stakeholders that are responsible for fulfilling international commitments of Belarus under the three conventions it has ratified, including the general public, which would help significantly improve the country's capacity for the three UN Conventions.

**Priority Measures Required to Successfully Implement UN Global Environmental Conventions
(on Biodiversity, on Climate Change and to Combat Desertification) in Belarus**

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
1. Improving Legislation and Regulatory Framework				
1.1 Legislation				
1.1.1. Provisions to set up a legal regime to regulate sustainable use and protection of lands in Belarus are spread across many legal acts, formulated in too generic terms, and, often, take no direct effect. The fact that there are too many unclearly defined terms leads to their ambiguous reading and use, and this reduces the efficacy of legal tools to regulate legal relations between land users and owners, and prevents land uses in Belarus to meet modern requirements	Draft law on the protection and sustainable use of lands/soils	Land Committee, Ministry of Environment, Ministry of Agriculture, NASB, National Law Development Centre at the President of Belarus	2006	Draft Law prepared
1.1.2. There is little coordination between stakeholders in land planning and spatial development priority-setting; numerous legal acts are involved in regulating these activities. Unclear place, role and functions of spatial planning at different levels, ambiguous reading of terms and definitions, sometimes contradicting each other, instructions, norms, rules in this area	Draft law on spatial planning	Ministry of Architecture, Land Committee, National Law Development Centre at the President of Belarus	2007	Draft Law prepared
1.2. Regulatory Framework (priority regulatory acts)				
1.2.1. Absence of a unified approach to the development of environmental programmes; insufficient incorporation of environment protection and Belarus' commitments under the three UN Conventions in various economic and social programmes	Develop guidelines on the content of environmental programmes, as well on requirements for environmental chapters in economic and social programmes	Ministry of Environment	2006	The guidelines prepared and endorsed
1.2.2. Landscape diversity, its protection and sustainable use are not fully taken into account while identifying key issues related to capacity raising for meeting commitments under the 3 conventions	Review current tasks in the sustainable use, protection and planning of landscapes according to principles and objectives of the European Convention on Landscapes and identify needs and benefits for Belarus to join it, including in the context of the 3 UN Conventions	Ministry of Environment, Ministry of Education	2006	A feasibility study report on the expediency of Belarus' accession to the European Convention on Landscapes

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
1.2.3. Lack of sufficient regulatory framework to protect threatened plant communities and protect soils as items of natural and cultural heritage, which hampers the taking of measures to conserve biodiversity in ecosystems and to combat land/soil degradation	Produce amendments to the Law on Environmental Protection. Develop a concept and regulation on a Green Book of Belarus	Ministry of Environment, NASB, Ministry of Forestry	2006–2007	Draft Law on Amendments and Additions to the Law of Belarus on Environmental Protection. Regulation on Green Book of Belarus developed
	Prepare a regulation on a Red Book of Soils of Belarus	Ministry of Environment, Land Committee, NASB	2007	Regulation on Red Book of Soils of Belarus developed
1.2.4. Procedure, whereby environmental certification of organizations and production sites in compliance with STB ISO 14001:2000, virtually does not take into account the environmental status of or likely impacts on the nature complexes located nearby	Develop amendments to the Technical Code of Belarus "Procedure for Certification of Environmental Management Systems. General Provisions"	Ministry of Environment, Belstandard	2006	Amendments
1.2.5. New strategies, plans and programmes are not subject to Strategic Environmental Assessment (SEA), which limits practical application of principles of sustainable development in Belarus	Amend the existing regulatory and legal framework to introduce SEA. Develop guidelines for SEA implementation in Belarus, including methodological recommendations to ensure public participation in SEA	Ministry of Environment, NASB, Ministry of Justice	2006–2007	Draft Law on Amendments and Additions to the Law of Belarus on State Environmental Expert Review. Guidelines on Procedure for Strategic Environmental Assessment in Belarus
1.2.6. Current Environment Impact Assessment procedure for planned activities does not allow to fully address issues pertaining to the UN environmental Conventions	Review the existing guidelines for Environmental Impact Assessment for planned and other activities in Belarus, to reflect issues pertaining to the implementation of the UN Conventions	Ministry of Environment, NASB	2006	Amendments to existing EIA Guidelines
1.2.7. Strategies, programmes and plans do not contain measures aimed at adaptation of economic sectors to climate change. Appropriate methodological and legal framework is lacking	Develop methodological recommendations on adaptation measures for some sectors of economy (including climate-dependent ones: agriculture and forestry, energy, public services, water management)	Ministry of Environment, NASB	2007	Methodological recommendations
	Develop scenarios of potential climatic changes and their environmental and economic consequences for Belarus	NASB, Ministry of Environment	Once in three years	Climate change scenarios
	Develop a concept, programme and structure of the national system of assessment of anthropogenic GHG emissions and their sinks	Ministry of Environment, NASB	2007	Draft resolution of the Council of Ministers on Establishment of the National System of Assessment of Anthropogenic GHG Emissions and their Sinks

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
1.2.8. Many issues pertaining to the national GHG emissions and sinks inventory system remain unresolved, no procedure in place to operate a GHG emissions register	Develop guidelines (regulation) on the National Cadastre of GHG Emissions and Sinks	Ministry of Environment, NASB	2005	Guidelines (regulation)
	Compile an annually updated index of national methodologies for estimating GHG emissions and sinks. Compile a list of methodologies to be developed	Ministry of Environment, NASB	2006	Lists of methodologies
	Develop guidelines (regulation) for state authorities, economic entities to submit data on GHG emission by sources and absorption by sinks	Ministry of Environment, NASB, Ministry of Statistics	2006	Guidelines developed
1.2.9. A significant constraint for sustainable land use in the country is the lack of regulatory framework in the area of environmental requirements and restrictions imposed on land uses, scientific evidence-supported and officially endorsed sanitary norms, rules that regulate admissible anthropogenic loads on lands/soils to ensure their long-term sustainable use	Develop a draft uniform classification system of environmental requirements and land use restrictions, including terms and definitions, and enforcement procedures	Land Committee, Ministry of Environment, NASB	2006	Draft classification system
	Develop guidelines for assessment of environmental standards for soil pollution	Ministry of Health, NASB, Ministry of Environment, Belstandard	2006–2007	Guidelines developed
	Determine environmental norms for soil pollution			
1.2.10. Absence of a universally accepted definition of “degraded lands”, which prevents their classification, establishment of a system to regulate legal relations in land/soil protection, development of recommendations for combating land degradation, which hampers record-keeping, diminishes the role of economic incentives in sustainable use and protection of lands by their users	Realign land degradation terminology used in statistical reporting and legislation. Substantiate and develop land/soil degradation indices for different functional areas of land use, and define required diagnostics parameters (genetic-morphologic, physical-chemical, biological, production-purposed) of soils	NASB, Ministry of Environment	2006	A system of land/soil degradation indices
1.2.11. Biodiversity conservation in forest management is not addressed sufficiently in legislation	Make amendments to the existing legislation on conservation of biodiversity in forest management practices	Ministry of Forestry, NASB	2006	Amendments to Forest Code of Belarus
	Introduce standards of sustainable forest management and procedure for forest certification according to national as well as international standards	Ministry of Forestry	2006	Standards of sustainable forest management

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
2. National policy, strategy, programmes and plans				
2.1. Strategies, programmes or plans do not contain adaptation measures to predicted climatic changes for different economic sectors	Develop and adopt national strategy of Belarus on adaptation of economy to climate change	Ministry of Economy, Ministry of Environment, Ministry of Education	2006–2007	National strategy
	Develop sector-specific programmes for adaptation to changing climate	Sectoral ministries	2006–2007	National programme
2.2. Government policy towards the Kyoto Protocol to UN Framework Convention on Climate Change has not been clarified	Work out state policy, strategic objectives and long-term effects of Belarus' accession to the Kyoto Protocol based on the assessment of economic benefits from Belarus' participation in emissions quota trading	Ministry of Economy, Ministry of Environment	2006	Strategic plan
2.3. Constraints for combating land degradation include lack of awareness and poor coordination among stakeholders and land users, clashes of interest between private and public sectors, lack of public awareness, underdeveloped legal and economic mechanisms to promote sustainable use and protection of lands	Develop national strategy and action plan to combat land degradation in Belarus	Ministry of Environment, Land Committee, Ministry of Economy, Ministry of Agriculture, NASB	2006–2007	National action plan
2.4. The National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity in Belarus of 1998 need to be revised and updated, focus on wider measures to support biodiversity at regional and local levels	Make adjustments to the National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity in Belarus	Ministry of Environment, NASB, Ministry of Education	2006	Revised strategy and action plan
2.5. Lack of regional action plans on biodiversity conservation, climate change and to combat land degradation compromises the role of and holds back the capacity of regional and local authorities and land users in addressing these issues, leads to poor involvement in the process of the local community	Develop regional action plans to combat land degradation, on the conservation and sustainable use of biodiversity and to take adaptation measures in view of changing climate	Regional and district executive committees	2005–2010	Regional action plans
2.6. The National Strategy and Action Plan on the Biodiversity Conservation contain few measures on plant protection and their habitats. Absence of a national strategy on plant protection in Belarus based on European approaches	Develop and execute a plan to implement the European Plant Protection Strategy in Belarus	NASB	2005–2010	Strategy and implementation plan

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
3. Raising stakeholder capacity				
3.1. Poor awareness in authorities, NGOs and local populations about environmental threats and economic losses caused by land/soil degradation as a result of unwise use of lands, climate changes, biodiversity losses	Hold parliamentary hearings on sustainable use of lands and combating land degradation in Belarus in the context of discussing the Land Code of Belarus and drafting a Law on Sustainable Use and Protection of Lands/Soils	House of Representatives of Belarusian Parliament, Land Committee, NASB, Ministry of Environment, Ministry of Agriculture, Ministry of Education	2005	Parliamentary hearings
	Hold round tables and meetings of Public Coordination Ecological Council at Ministry of Environment on links between land degradation, climate changes, and biodiversity	Ministry of Environment, environmental NGOs	Yearly	Round tables
	Regularly update a website on the three environmental UN Conventions	Ministry of Environment	2005–2010	Updated website
3.2. Insufficient measures to inform the public and specialists on meeting commitments of Belarus under the three environmental UN Conventions at environmental forums, exhibitions, conferences, symposia, mass-media, etc.	Annual presentation of results of meeting commitments under the three UN Conventions, including various information materials (booklets, maps, videos, etc.)	Ministry of Environment	2005–2010	Presentations
3.3. Lack of coordination of efforts taken by appropriate ministries and central authorities, as well as the National Academy of Sciences of Belarus, to implement the UN Conventions. Lack of an effective clearinghouse mechanism for implementation of the environmental UN Conventions	Submit to the Council of Ministers of Belarus a proposal on the establishment of a national inter-institutional commission on implementing the UN Conventions	Ministry of Environment	2005	Inter-institutional commission established
	Establish a UN Environmental Conventions Centre	Ministry of Environment	2005	Centre established
	Develop a strategy and content of a clearinghouse mechanism to serve the needs of the UN Conventions in Belarus	Ministry of Environment	2005	Strategy and substance of clearinghouse mechanism
	Hold press-conferences, radio- and TV interviews on land/soil degradation, biodiversity conservation and climate change on respective international dedicated dates	Ministry of Environment	2005–2010	Press-conferences, special radio- and TV programmes
3.4. Lack of coordinated research efforts covering issues pertaining to three UN Conventions and scientific evidence-based estimates of progress in their implementation	Establish a specialized research centre at NASB on scientific backstopping of environmental UN Conventions	NASB	2006	Centre's status, tasks and structure defined
3.5. Important sites and areas in Belarus, within which the UN Conventions can be addressed in an integrated and linked way have not been identified	Substantiate and coordinate with stakeholders a list of priority sites and areas having global importance for implementing the UN environmental conventions	Ministry of Environment	2006	Important sites and areas listed, classified and geographically referenced

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
4. Financial and economic mechanism				
4.1. Provisional methodology for determining damages resulting from pollution, land degradation, including as a result of cumulative negative impact, is out of date and does not meet modern standards	Develop a new version of methodology for determining economic damages caused as a result of pollution and land degradation	Ministry of Environment	2005	Methodology prepared and endorsed
4.2. Absence of tax breaks as an incentive to land users for sustainable use, protection and improvement of soils, taking remedial action on lands	Develop a system of tax breaks for land users, provided they take restorative actions and keep their lands in good shape	Land Committee, Ministry of Environment, Ministry of Finances	2006	Law on Land Fees (No 1314, 18/12/1991) amended
4.3. Existing ecological certification procedure does not take account of measures taken by organizations or industries being inspected to reduce emissions of GHGs, protect biodiversity and to combat land degradation	Develop amendments to the Technical Code of Belarus "Procedure for Certification of Environmental Management Systems. General Provisions". Introduce additions to STB ISO 14001-2004 (new version)	Ministry of Environment, Belstandard	2006	Amendments
4.4. Absence of methodology of environmental and economic assessment of protection and sustainable use of biodiversity in environment-dependent economic sectors (agriculture, forest management, recreation, water management, transportation and road construction)	Develop a methodology for environmental and economic assessment of protection and sustainable use of biodiversity	Ministry of Environment, NASB, Ministry of Education	2006	Methodology developed and approved
4.5. Financial requirements in implementation of national action programmes for combating land degradation, biodiversity conservation and climate change have not been identified, particularly as concerns leveraging international financial and technical assistance	Set priority areas and develop projects aimed at implementation of national action plans for the 3 UN Conventions, with international donor financing	Ministry of Environment	2005–2006	Project proposals prepared and submitted to international donors

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
5. Information management and analysis				
5.1. Lack of a programme and technical guidelines on monitoring of degraded lands; absence of a single monitoring network. Insufficient methodological support for monitoring of degradation-prone lands	Develop a regulation on land/soil monitoring	Land Committee	2005	A regulation on land/soil monitoring drafted
	Establish a spatial network of degraded land/soil monitoring	Land Committee, NASB, Ministry of Environment	2005–2007	Justification and map of locations of monitoring stations
	Develop technical guidelines for degraded land monitoring	Land Committee, Ministry of Environment, NASB	2005	Technical guidelines for degraded land monitoring developed and endorsed
5.2. National statistics framework lacks a system of accounts to track economic value of land resources, developed according to UN guidelines	Develop a national accounts system for land resources according to UN guidelines	Land Committee, Ministry of Environment, Ministry of Statistics	2006–2007	National accounts system (land resources) in place
5.3. Absence of a register of GHG units, according to Kyoto Protocol	Develop a register of GHGs in Belarus	Ministry of Environment	2006	Register of GHG emission reduction units in place
5.4. Lack of a system of national indicators to monitor the implementation of Belarus' commitments under the 3 UN Conventions	Develop a system of indicators to annually monitor progress in implementing the 3 UN Conventions and integrate it into the system of sustainable development indicators which must: <ul style="list-style-type: none"> • include MDG indicators; • be based on key indicators of sustainable socio-economic development of the country; • be compatible with indicators used within the National Environmental Monitoring System; • include an analytical part; • use clear indicators accessible to the general public; • provide annual reports to the authorities and general public on the issues related to the UN environmental conventions. 	Ministry of Environment	2005	List of indicators

Area/Issue	Proposed Measures	Responsible Agencies (ministries, institutions, organizations)	Timeframe	Indicators
6. Education, training and awareness raising				
6.1. National programme on education, training and awareness raising needs to be updated and improved to address global environmental challenges and in view of Belarus' commitments under the 3 UN Conventions	Develop a new version of the national programme on environmental education, training and awareness raising, including chapters dedicated to the environmental UN Conventions	Ministry of Environment, Ministry of Education	2005	National programme on environmental education, training and awareness raising developed
6.2. Lack of qualified experts in areas related to the implementation of the UN Conventions	Identify in-country needs for well-qualified specialists to conduct research in the UN Conventions-related areas until 2020 and submit appropriate proposals to the Government	Ministry of Environment, Ministry of Education, NASB, State Committee on Science and Technology	2005–2006	Workshops
	Develop chapters on the UN Conventions and include in curricula of environmental subjects	Ministry of Environment, Ministry of Education	2006	Curricula, textbooks
	Develop training courses and textbooks for secondary school to teach students issues pertaining to the implementation of global UN Conventions in Belarus	Ministry of Environment, Ministry of Education	2005–2007	Training courses, textbooks and materials developed
	Develop a textbook for extra-curricular education institutions on the UN Conventions	Ministry of Environment	2005	Training material
	Develop and publish appropriate information materials for the public and youth (booklets, posters, video films, etc.)	Ministry of Environment	2005–2006	Information materials developed
6.3. Curricula of advanced training for decision-makers cover insufficiently issues pertaining to the implementation of UN Conventions and respective capacity needs	Enhance curricula of advanced training for decision-makers, as well as of the Academy of Public Administration under the President of Belarus, to include topics dedicated to the UN Conventions and respective capacity needs	Ministry of Environment, Ministry of Education	2006–2007	Curricula enhanced

Annex 1

**to the Final Report on
“National Capacity Self-Assessment
for Global Environmental Management in Belarus”**

**REGULATION on
Data Collection for GHG Emission and Sink Inventory
(DRAFT)**

LETTER OF JUSTIFICATION

supporting the adoption of the Resolution of
the Ministry of Environment of Belarus
dated _____ 200__ No ____
“On the Approval of the Regulation on
Data Collection for GHG Emission and Sink Inventory”

Presidential Edict No 177 of April 10, 2000 “On the Approval of the UN Framework Convention on Climate Change” (National Register of Legal Acts, 2000, No 36, 1/1159) designated the Ministry of Environment as the government body responsible for the implementation of UNFCCC, including for the regulatory development in the Convention’s thematic area.

The current legislation of Belarus to a certain extent takes into account the provisions of the Convention.

For example, the Law on Environmental Protection of Belarus revised on July 17, 2002 (National Register of Legal Acts, 2002, No 85, 2/875):

defines responsibilities of companies and individuals engaged in economic and other activities related to GHG emissions into the air (art. 56);

defines the substance of climate impact regulation (art.57).

The last provision is also reflected in Art.43 of the Law on Air Protection dated April 15 1997.

However these provisions are of a generic nature and need to be supplemented with direct-effect norms based on the major commitments of Belarus under the Conventions.

One of the key commitments under the Convention is to develop, periodically update, publish and present to the COPs the National Cadastre of Emissions and Sinks of all GHGs not regulated by the Montreal Protocol (art.4.1a of the Convention).

Meeting this commitment is impossible without establishing a national GHG inventory system which would be based on emissions and sinks data by sector (energy, industrial processes, agriculture, land-use changes and forestry, etc.).

However so far the responsibilities of actors in data collection, the procedure, timeframes and requirements as to the contents of such data have not been established, which makes it impossible to receive and present verifiable and least uncertain data.

The development and implementation of the Regulation on Data Collection for GHG Emission and Sink Inventory will allow the formation of an effective mechanism of information management in support of the preparation of the national cadastre of anthropogenic emissions by sources and removals by sinks and ensure meeting Belarus’ commitments under the Convention dealing with public awareness raising about the problems of climate change.

Ministry of Natural Resources and Environmental Protection
Republic of Belarus

RESOLUTION

_____ 200_ No _____
Minsk

On Approving the Regulation
on Data Collection for GHG Emission and Sink Inventory

Pursuant to the 10 April 2000 Presidential Edict No 117 “On the Approval of the UN Framework Convention on Climate Change” (National Register of Legal Acts of Belarus, 2000, No 36, 1/1159), the Ministry of Natural Resources and Environmental Protection of Belarus RESOLVES that:

1. The attached Regulation on Data Collection for GHG Emission and Sink Inventory be hereby approved.
2. This Resolution shall enter into force as of _____ 200_.

Minister

Leonty Khoruzhik

APPROVED
Resolution of the
Ministry of Natural Resources and Environmental
Protection of Belarus
_____ 200_ No _____

**Regulation
on Data Collection for GHG Emission and Sink Inventory**

**Chapter 1
GENERAL PROVISIONS**

1. This Regulation on Data Collection for GHG Emission and Sink Inventory (hereinafter, the Regulation) sets out the responsibilities of various bodies involved in the process of collecting data, as well as procedural arrangements, deadlines and quality standards for data collection for the purposes of the GHG emission and sink inventory.

2. The following definitions are used in this Regulation:

“Greenhouse gases” means those gaseous components of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.

“Emissions” means the release of greenhouse gases and/or their precursors into the atmosphere.

“Sink” means any process, activity or mechanism that removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.

Intergovernmental Panel on Climate Change (IPCC) – a group of experts, established jointly by the World Meteorological Organization and the United Nations Environmental Programme in 1988.

3. Data collection, in the context of this Regulation, is for the purposes of:
conducting the inventory of GHG emissions and sinks;
establishing and maintaining the national GHG emission and sinks register; and
developing and taking measures aimed at the reduction of emissions of greenhouse gases and/or their precursors, whose buildup in the atmosphere may result in climate change.
4. Data collection for the GHG emission and sink inventory is made on a voluntary basis.

Chapter 2

PROCEDURAL ARRANGEMENTS AND DEADLINES FOR PROVIDING INFORMATION

5. The Belarusian Scientific and Research Center “Ecology” of the Ministry of Natural Resources and Environmental Protection of Belarus is responsible for collecting information for the GHG emission and sink inventory (hereinafter, the Recipient).

6. The national state control bodies, institutes of the National Academy of Sciences of Belarus, and the legal bodies listed in Annex 1 to this Regulation shall provide information for the GHG emission and sink inventory to the Recipient, according to Annexes 2 through 7 to this Regulation.

7. Local executive and administrative bodies that are in possession of information about GHG emissions and sinks, as well as legal persons and entrepreneurs who are GHG emitters, shall submit this information to district inspectorates and oblast and Minsk City committees of natural resources and environmental protection.

8. The Recipient has the right to request information needed for the GHG emission and sink inventory from bodies that are not listed in Paragraph 6 of this Regulation by a letter of request explaining the need for obtaining this information.

9. To ensure comparable, comprehensive and accurate data for the GHG inventory, the Recipient has the right, if there are good reasons for it, to request additional information through local inspectorates and oblast and Minsk City committees of natural resources and environmental protection from local executive and administrative bodies, legal entities and private businesses.

The written request for information shall contain specific details as to what kind of information is requested and in which format. Any information the use of which is restricted according to established procedure, may only be used by the Recipient under specific confidentiality conditions.

10. Information for the GHG emission and sink inventory for the previous year shall be provided by the bodies specified in paragraphs 6 and 7 of this Regulation to the Recipient not later than March 31st of the year following the one for which the GHG emission and sink inventory is conducted.

Chapter 3

THE STRUCTURE AND CONTENTS OF THE INFORMATION

11. The structure and content of the information shall be decided by the Recipient, in line with the IPCC Guidelines.

12. The Recipient shall integrate the received information about GHG emissions and sinks in accordance with the IPCC Guidelines in the six sectors: Energy, Industrial Processes, Solvents, Agriculture, Land-Use Changes and Forestry, and Waste.

13. The bodies listed in paragraphs 6 and 7 of this Regulation are responsible for the reliability, consistency and timely delivery of information in accordance with the Belarusian legislation.

14. The Recipient, based on the assessment of comparability, comprehensiveness and accurateness of the information provided, shall develop proposals on how to improve the format and methodologies of data collection methodologies, as may be required.

Annex 1

to the Regulation on Data Collection for
GHG Emission and Sink Inventory

**National State Control Bodies, Institutes of the National Academy of Sciences of Belarus,
and other legal entities providing information for the GHG emission and sink inventory**

1. The Ministry of Statistics and Analysis of Belarus (provides information according to forms 2.1, 2.2, 2.4, 2.5 and 2.6 in Annex 2, forms 3.1, 3.2, 3.3, 3.4, 3.5 in Annex 3, forms 4.1 and 4.2 in Annex 4, forms 5.1 and 5.2 in Annex 5, forms 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 in Annex 6, and forms 7.1 and 7.2 in Annex 7 to this Regulation).
2. The Ministry of Housing and Municipal Services (provides information in accordance with form 7.1 in Annex 7 of this Regulation).
3. The Ministry of Architecture and Construction (provides information in accordance with form 3.1 in Annex 3 of this Regulation).
4. The Ministry of Agriculture and Food (provides information in accordance with forms 5.1 and 5.2 in Annex 5 of this Regulation).
5. The Ministry of Health (provides information in accordance with form 4.3 in Annex 4 of this Regulation).
6. The Ministry of Forestry (provides information in accordance with forms 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 in Annex 6 of this Regulation).
7. The Ministry of Transport and Communications (provides information in accordance with form 2.8 in Annex 2 of this Regulation).
8. The Committee for Energy Efficiency under the Council of Ministers of Belarus (provides information in accordance with forms 2.2 and 2.3 in Annex 2 of this Regulation).
9. The Committee for Aviation at the Council of Ministers of Belarus (provides information in accordance with forms 2.6 and 2.7 in Annex 2 of this Regulation).
10. The Committee for Land Resources and Cartography under the Council of Ministers of Belarus (provides information in accordance with forms 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 in Annex 6 of this Regulation).
11. The Belarus State Oil and Chemistry Concern (provides information according to forms 2.4 and 2.5 in Annex 2, forms 3.2 and 3.3 in Annex 3, and forms 4.1 and 4.2 in Annex 4 to this Regulation).
12. BELAVTODOR Department of the Ministry of Transport and Communications (provides information in accordance with form 3.1 in Annex 3 of this Regulation).
13. The Forest Institute of the National Academy of Sciences of Belarus (provides information in accordance with forms 6.1, 6.2 and 6.3 in Annex 6 of this Regulation).
14. The Experimental Botany Institute of the National Academy of Sciences of Belarus (provides information in accordance with forms 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 in Annex 6 of this Regulation).
15. The Information Centre for Land Cadastre and Land Monitoring Data (provides information in accordance with forms 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 and 6.8 in Annex 6 of this Regulation).
16. Grodno AZOT Joint Stock Company (provides information in accordance with forms 3.2 in Annex 3 of this Regulation).

Annex 2to the Regulation on Data Collection for
GHG Emission and Sink Inventory**Energy**

2.1. Fuel Combustion Activities – Sectoral Approach

Сектор	Consumption, thousand tons (mln m ³)			
	Diesel Oil	Furnace Oil for Domestic Use	...	Other (please specify)
Combustion				
1. Energy				
Public Electricity and Heat Production				
Petroleum Refining				
Manufacture of Solid Fuels and Other Energy Industries				
2. Manufacturing Industries				
Iron and Steel				
Non-Ferrous Metals				
Chemical fibres				
Pulp, Paper and Print				
Food Processing, Beverages and Tobacco				
Other (please specify)				
3. Transport				
Civil Aviation				
Road Transportation				
Railways				
River Navigation				
Other Transportation (please specify)				
Other Sectors				
Commercial				
Residential				
Agriculture/Forestry/Fisheries				
Other (please specify)				
Stationary				
Mobile				
Energy Total				

2.2. Fuel Structure. Use of Fuel as Raw Material and other Non-energy Uses

Fuel	Unit	Produced	Import	Export	International Bunker	Reserve Changes	Actual Consumption	Use of Fuel as Raw Material and other Non-energy Uses
1	2	3	4	5	6	7	8	9
Liquid Fuels	Kt							
Diesel Oil	Kt							
Furnace Oil Domestic	Kt							
Diesel	Kt							
Liquefied Gas	Kt							
Gasoline	Kt							
Jet Kerosene	Kt							
Other Kerosene	Kt							
Jet Gasoline	Kt							
Bunker Oil	Kt							
Solid Fuels	Kt							
Coal	Kt							
Peat	Kt							
Peat Briquette	Kt							
Coke	Kt							
Gaseous Fuels	mln m ³							
Natural Gas	mln m ³							
Refinery Gas	mln m ³							
Biomass Fuels	Kt							
Fire Wood	Kt							
Wood Processing Residuals	Kt							
Other Wood Residuals	Kt							
Flax Boon	Kt							
Lignine	Kt							
Other Agricultural Residuals	Kt							
Other (please specify)	Kt							

2.3. Consumption of Sulphuric Fuels

Fuel	Sulphur Content	Unit	Likely Consumption
1	2	3	4
Coal	Low (below 1 %)	Kt	
	Medium (1–2 %)	Kt	
	High (above 2 %)	Kt	
Crude Oil	Low (below 0,5 %)	Kt	
	Medium (0,5–2 %)	Kt	
	High (above 2 %)	Kt	
Diesel	Below 0,005 %	Kt	
	0,005–0,035 %	Kt	
	Above 0,035 %	Kt	
Gasoline	(please specify sulphur content)	Kt	
Jet Fuel	(please specify sulphur content)	Kt	
Other liquid fuels, including residuals	(please specify sulphur content)	Kt	
Fuel Wood	(please specify sulphur content)	Kt	
Other fuels	(please specify sulphur content)	Kt	

2.4. Oil and Gas Systems

Category	Unit	Value
1	2	3
Oil: Exploration	Kt	
Production	Kt	
Transport	Kt	
Refining	Kt	
Storage	Kt	
Gas: Production	mln m ³	
Processing, transmission and storage	mln m ³	
Venting and flaring	mln m ³	

2.5. Stored amount of crude oil

Type of Storage	Amount of Stored Oil (Kt)
1	2
With secondary insulation layer	
With primary insulation layer	
Under stationary lid	

2.6. Information on International Bunkers (Aviation)

	Total Fuel Purchased for Aviation (Kt)	Total purchased for domestic aviation (Kt)	Total purchased for international aviation (Kt)
1	2	3	4
Purchased fuel			

2.7. Information on the number of landing-takeoff cycles – type of air vessels

No	Type of air vessel	Type of Engine	No of Engines	No of takeoff-landing cycles	Fuel Consumption (kg/takeoff-landing cycles)
1	2	3	4	5	6
Domestic					
International					

2.8. Information on International Bunkers (marine)

	Total Fuel Purchased for River and Marine Navigation (Kt)	Total Fuel Purchased for Domestic Navigation (Kt)	Total Fuel Purchased for International Navigation (Kt)
1	2	3	4
Fuel Purchased (specify type of fuel)			

Annex 3
to the Regulation on Data Collection for
GHG Emission and Sink Inventory

Industrial Processes

3.1. Production of Non-metal Materials – data sources

Type of Production	Unit	Value
1	2	3
Cement	Kt	
Clinker	Kt	
Lime	Kt	
Sheet glass	Kt	
Non-sheet glass	Kt	
Asphalt	Kt	

3.2. Ammonia and nitric acid

Type of Production	Unit	Value
1	2	3
Ammonia	Kt	
Nitric acid	Kt	

3.3. Other chemicals

Type of Production	Unit	Value
1	2	3
Sulphuric Acid	Kt	
Ethylene and Propylene	Kt	
Ethylene	Kt	
Caprolactam	Kt	
Polyethylene	Kt	
Phthalic anhydride	Kt	

3.4. Metals

Type of Production	Unit	Value
1	2	3
Electric Steel	Kt	
Black metals	Kt	
Cast iron and steel pipes	Kt	
Foundry iron	Kt	
Cast steel	Kt	
Cast nonferrous metals	Kt	

3.5. Foods and beverages

Type of Production	Unit	Value
1	2	3
Fish Foods (less tins)	Kt	
Meat (including 1-category subproducts)	Kt	
Granulated sugar	Kt	
Margarine	Kt	
Bread and bakery products	Kt	
Pastry	Kt	
Beer	Hectoliter (100 l)	
Brandy	Hectoliter	
Vodka and liquors	Hectoliter	
Grape wine (including derivatives)	Hectoliter	
Fruit or berry wine	Hectoliter	
Sparkling Wine	Hectoliter	

Annex 4
to the Regulation on Data Collection for
GHG Emission and Sink Inventory

Solvents

4.1. Use of Solvents in Chemical Production and Processing

Type of Production	Unit	Value продукции
1	2	3
Oil Refinery	t	
Xylols	t	
Benzol	t	
Varnishes on condensation tars	t	
Enamels, primers and fillings on condensation tars	t	
Enamels, primers and fillings on polymeric tars	t	
Caprolactam	t	
Dimethylterephthalic	t	
Glass fibre	t	
Tyres	t	
Rubber footwear	thou. pairs	
Rubber goods (formed and unformed)	t	

4.2. The Use of Solvents

Use of Solvents	Unit	Value
1	2	3
Paints and dyes	t	
Degreasing and dry cleaning	t	

4.3. Use of Nitrous Oxide for Medical Purposes

Uses of Nitrous oxide	Unit	Value
1	2	3
Use of nitrous oxide as an anesthetic	t	

Annex 5
to the Regulation on Data Collection for
GHG Emission and Sink Inventory

Agriculture

5.1. Animals

Animals by type	Number
1	2
1. Non-dairy cattle	
2. Dairy cattle	
3. Horses	
4. Goats	
5. Sheep	
6. Pigs	
7. Poultry	

5.2. Crops by Type

Crops	Amount, Kt
1	2
Crops	
1. Wheat	
2. Barley	
3. Oats	
4. Rye	
5. Potatoes	
6. Mangel	
7. Sugar Beets	
8. Buckwheat	
Legumes	
1. Peas	
2. Haricot	

Annex 6
to the Regulation on Data Collection for
GHG Emission and Sink Inventory

Land-use Changes and Forestry

6.1. Forest Ecosystems in Belarus

	Age Group	Area, Kha	
		200_	200_
1	2	3	4
Coniferous	Class 1 young trees		
	Class 2 young trees		
	Middle aged		
	Ripening		
	Ripe		
	Overripe		
Hard-leaved	Class 1 young trees		
	Class 2 young trees		
	Middle aged		
	Ripening		
	Ripe		
	Overripe		
Soft-wooded	Class 1 young trees		
	Class 2 young trees		
	Middle aged		
	Ripening		
	Ripe		
	Overripe		

6.2. Harvesting

Category	Harvested timber, thousand cubic meters of roundwood
1	2
Main Use	
Thinning and caring	

6.3. Forest biomass conversion

	Area, Kha	Biomass, dry, t /ha	
		before	after
1	2	3	4
Forest fires			
Main cuts			
Interim cuts			

6.4. Forest and Grass Land Conversion. Phasing Land Out

Year	Average area under conversion (for 10 years), Kha	Total area of abandoned and restored land (for 20 years), Kha	Area of abandoned land (over 20 years old), tonnes of dry mass/ha

6.5. Distribution of Land by Type of Use

Arable lands	Soil Type	Land area 20 years ago, Kha	Land area in the year of inventory, Kha
1	2	3	4
Arable Lands	Intensively used soils		
Forests and grassland	Soils not in heavy use		

6.6. Drained Peat Soils

Soil Type	Area, ha	
	200_	200_
1	2	3
Drained peat soils with a peat layer thicker than 1 m		
Drained peat soils with a peat layer thinner than 1 m		

6.7. Peatlands under extraction

Soil Type	Area, ha
1	2
Drained peaty soils on worked-out peatlands	
Changed peatlands used as bodies of water	
Changed peatlands, rehabilitated and put to use in agriculture	
Peat extraction sites	
Changed peatlands, grown by forest, shrubs etc.	
Changed peatlands, abandoned	

6.8. Marsh types

Type of marshes	Area, ha	
	200_	200_
1	2	3
Raised peat-bogs		
Fens and transitional mires		

Annex 7
to the Regulation on Data Collection for
GHG Emission and Sink Inventory

Waste

7.1. General information on waste

Requested information	Unit	Value
Waste landfills,		
including: municipal waste	thousand m ³	
industrial waste	thousand m ³	
Population, in oblasts	thousand people	
Protein per person rate	g/day	

7.2. Municipal waste composition

Requested information	Unit	Value
Municipal waste composition: paper, cardboard	%	
food	%	
textile	%	
leather, rubber	%	
wood	%	
park waste	%	
other	%	

Annex 2

**to the Final Report on
“National Capacity Self-Assessment
for Global Environmental Management in Belarus”**

**INFORMATION
for ministries and other institutions
on likely economic impact of the climate change
and mitigation measures**

**INFORMATION
FOR MINISTRIES AND OTHER INSTITUTIONS
ON LIKELY ECONOMIC IMPACT OF CLIMATE CHANGE AND
MITIGATION MEASURES**

This report contains information on possible impact of climate change on the core sectors of economy and measures to adapt them to climate change.

The information is drawn from studies conducted by Belarusian and foreign experts on climate change formulated in the following sources:

- IPCC Summary Report “Climate Change. 2001”;
- First National Communication following commitments of Belarus under the UNFCCC. – Minsk, 2003.;
- Climate Change Impact Assessment in the Territory of Belarus, as well as Vulnerability and Adaptation of Social Systems to Climate Change. – Minsk, 2002.;
- Loginov, V. et al. Climate Change of Belarus and its Impact / Institute of Problems of the Use of Natural Resources and Ecology. – Minsk: Tonpik, 2003.

The information is designed for national ministerial and institutional employees concerned with economic planning of relevant sectors.

Introduction

Climate change forecasts building upon several models indicate an increase of the surface average temperature globally within the range of 1.4 to 5.8 °C between 1990 and 2100. This is roughly 2–10 times as much as the average warming value observed throughout the 20th century, and a forecasted pace of warming may turn out to be the highest, at least over past 10,000 years (as per the third report of IPCC experts).

The forecasted climate change will affect ecological and socio-economic systems both positively and negatively. However the greater the scope and intensity of climate change are, the stronger the negative impact will be. Therefore experts tend to believe that those countries and economies that will have made proper adaptive preparations for quick environmental changes will benefit in the context of accelerated climate change.

Worldwide studies indicate that the key climate-dependent sectors of economy are agriculture, forestry, water management and social sector.

1. Agriculture

Rising air temperatures will be accompanied by longer frost-free periods and plant growing seasons (with the temperature above 5 °C). An increase of vegetative season by 5–8 days over a decade is favourable for agriculture. A relatively short vegetative season in Belarus worsens the quality of fieldwork and reduces the efficiency of machine use appreciably. Longer growing seasons improve the productivity of haymaking and pastures leading to better animal husbandry as fodder supplies grow and animal stabling period decreases.

Given said climate change, in 2–3 decades heat supply of agricultural crops in the cold zone in the northeast will exceed the heat supply level of the by far warmest area within the country. As for the southern areas, one should look 450–500 km to the south (modern forest-steppe region of the Ukraine) for their agro-climatic match in terms of heat supply in 20–30 years.

Heat supply growth next to generally good humidification of the area can be used to introduce more thermophilic varieties (hybrids) and agricultural crops, which are typically more productive. Specific calculations should be made to identify ways to expand planting areas of such valuable crops as sunflower, sugar beet, soybean as warming develops.

An analysis of modern Primary Biological Productivity assessments (PBP, total productivity of the dry above-ground biomass of agroecosystems over one year with the temperature above 5 °C) revealed the following trend which may have an important role to play for agriculture development: the productivity of arable land will increase in the climate warming context as crop farming highly intensifies, i.e. massive use of fertilizers and improvers. Conversely, the productivity of soil with low fertilizer content will decrease as it becomes warmer. PBP reduction with the low level of farming intensification will be quite considerable (down to 11 %). Thus, one could say that climate warming will increase efficiency of fertilizers in Belarus.

The above modifications of the key agroclimatic features require developing relevant consistent adaptive measures of agricultural production. These measures should focus on dedicated research supported by the state in one way or another (direct funding, grants, credits, etc.). It is necessary to develop an agricultural policy taking these new conditions into account. Research should cover agricultural production in its entirety, from identifying the best timing for land treatment to choosing and selecting optimal crop varieties corresponding to the new conditions.

Emerging opportunities as vegetative season gets longer and warmer:

- using more fertile late varieties of grain and vegetables;
- sowing spring crops earlier to take better advantage of moisture in the soil after spring thawing; it will lead to earlier ripening to increase possibilities of alternate system. However the risk of May frost should be taken into account, so crops should be frost-resistant;
- moving the planting area of thermophilic vegetables to the north – cucumbers and potatoes;
- expanding areas under spring rape.

Due to greater aridity, it is necessary to:

- enhance effort to develop new varieties of drought-resistant crops;
- expand areas of irrigated farming;

- widen the use of drought-resistant crops;
- further develop drought insurance system;
- effectively use higher protein content in wheat grains as a result of dry conditions;
- expand areas under maize.

Warm winters will create favourable conditions for pests and plant disease agents to overwinter, and weed growth, which requires developing new plant protection and pest control techniques.

In general, the following main areas of agricultural adaptation in Belarus can be identified:

- further agricultural intensification: use of greater doses of fertilizers and other chemical agents against the backdrop of deeper soil melioration bearing in mind that the climate warming increases efficiency of soil fertility enhancement measures;
- introduction of more slow-maturing varieties (hybrids), that will make better use of increasing heat resources of the area;
- increase of alternate planting with a view to exploiting additional heat resources;
- wider sowing of new (or cultivated currently on limited areas) highly effective crops meeting agro-meteorological conditions developed over the past decade, i.e. millet, maize, sunflower, soybean, sugar beet, etc.;
- selection of species and varieties for newly-laid garden plantations considering climate change tendencies (lower probability of tree frost damage, longer vegetative period, etc.).

2. Forestry

Based on climate change predictions, the following impact of the process is of economic relevance for forest management in the first half of the 21st century:

- the most dramatic temperature rises occur during winter months, which deteriorates plant wintering conditions, since it increases the risk of vegetation-provoking thaws;
- changes of heat supply of vegetative period for forest stand, namely such relevant climate indicators as total periods with the mean daily temperature above temperature limits of 5 and 10 °C and accumulated temperatures of the respective periods;
- there is greater risk of extreme drought-related phenomena, primarily during summer months, because precipitation will remain practically unchanged as temperatures rise during that period;
- depth and duration of winter frost penetration decrease to such an extent that in some years frost effect will be hardly pronounced;
- there is a slight increase in precipitation or it increases during the winter when it plays a small role as a source of moisture for next-year vegetation.

The following climate change impact of economic relevance can be identified:

- change of the current tree increase pattern as active temperatures rise and growing season increases. Breathing costs increase during vegetative season as a result of higher average nightly temperatures;
- different maturity timing of tree fruit and seeds due to earlier vegetation start;
- 10–15-day shift of the starting period of forest silvicultural season;
- longer fire risk periods, wider areas of fire-prone forests, general increase of fire danger in forests and peat mires;
- change of tree stand structure due to a shift of ranges of core forest-forming trees: spruce, hornbeam, speckled alder;
- greater probability of mass breeding of forest pests, both primary (gipsy moth, nun moth, sawfly, burdock borer, tussock moth, tortrix, etc.) and secondary (first of all, eight-toothed bark beetle and its satellites);
- transfer of land rendered agriculturally ineffectual by the widening of dry zone under forest land fund;
- reduction/increase in efficiency of hydro forest reclamation systems and emergence of negative side effects of their functioning;
- growing risk of emergence and damage of late spring frost due to earlier beginning of vegetation;
- active shrub overgrowth of mires due to a generally lower level of groundwater and more intense evaporation from mire surface and their catchment areas;
- increase in transpiration of forest communities;

- changes in soil conditions of tree stand as a result of total reduction of groundwater level;
- worsened conditions of assimilation due to reduced air transparency;
- impoverishment of gene pool of forests' boreal flora and fauna;
- worsened water supply due to a generally lower groundwater level over enormous territories as a result of cumulative effect of man- and climate-induced factors;
- expansion of forest-steppe and steppe flora into forest ecosystems;
- generally accelerated turnover in forest ecosystems, in particular faster decomposition of forest litter;
- biodiversity enrichment through thermo- and xerophilous species of European-Small Asian and European Siberian – Aral and Caspian biotic complexes;
- plant productivity growth as a result of lower CO₂ limitation stemming from its higher concentration in the air;
- worsened overwintering conditions for forest vegetation in consequence of lack or shorter period of snow cover;
- worse access to waterlogged cutting areas during winter for wood harvesting machines as a result of increased temperatures, shorter snow cover period and forest road freezing.

A set of adaptation measures for forest management should include the following areas:

Planning and regulation:

- development of a sectoral policy and target programmes to adapt to new climatic conditions;
- critical revision and amendment of the regulatory framework and sectoral reference resources due to the ongoing climate change.

Organizational: implementation of a set of interventions defined by the sectoral policy and adaptation programme at the level of the Forestry Committee, regional forestry associations, sectoral enterprises (forestries, institutions).

Financial and economic: development of a dedicated programme of the sector's economic adaptation to new climate conditions incorporating cost rationale necessary to address and/or prevent negative consequences related to climate change to be covered from the national budget or other sources.

3. Water resources

A water resources forecast pinpoints the need to make preparations to possible adverse consequences of the climate change early on. In terms of water management, taking into account possible transformation of hydrographs of low-water years is most critical of all, especially if the entire amount of forecasted annual flow reduction will fall onto the summer-autumn low water period. **Negative effects of such a scenario for water management are as follows:**

- reduction of actual rated probability of economic sites using surface waters;
- a drop of minimum water levels in rivers and resultant complications for the operations of river intake, water transport and recreation;
- groundwater level reduction, especially in near-river areas;
- worsened quality of river water caused by low dilution of wastewater and other pollution sources;
- transformation of hydrobiological regime of rivers caused by a change of river's level and speed patterns, rising air temperature and consequently compromised hydrogen regime, reduced self-purification intensity.
- increasing "thermal pressures" on rivers and water reservoirs speed up eutrophication process, alter species composition (groups) of phytoplankton toward species (groups) with a higher temperature optimum (e.g. cyanobacteria) posing great danger to the quality of drinking water;
- a steady rise of water temperature in low-water reservoirs will lead to weight loss of the fish choosing to live in cold waters causing numerous fish to die;
- disturbed life cycles of fish, disappearance of stenobiont fish from ichthyofauna, changes in species diversity, numbers and biomass of fish;
- increased concentration of ¹³⁷Cs and ⁹⁰Sr radioisotopes in surface water sources of the Dnieper and Pripjat basins located in the Gomel and Mogilev Regions;
- emergence of more disastrous floods in the future than those we have witnessed recently;
- risk for the operations of water transport carrying cargoes and passengers along Pripjat, Dnieper, Berezina, Sozh and the Dnieper-Boug Canal (in the summer and winter of low-water years the local flow may drop to 2–3 % of the annual flow).

In view of the above, it is advisable to concentrate on the following adaptive responses in the field of water resources to mitigate negative climate change-related impact:

- development of flood-control activities, first and foremost targeting the Polesie Area territory considering specific patterns of river run-off formation in the Ukraine;
- establishment of reliable hydrometeorological monitoring, expanded use of radar and satellite data to assess snow cover characteristics and plan water management, agricultural and forest protection activities;
- regular forest amelioration within river basins as an effective way to combat erosive water streams;
- rationale for building underground water reservoirs in certain sections of the country which would allow regulating water regime in accordance with consumers' needs, i.e. address water supply by increasing guaranteed water content of a source.

Since it takes a great deal of time to implement water supply activities, large water management activities should be planned approximately 25 years in advance and their putting into service should be 10–15 years ahead of water needs.

Long-term water management planning should take into account vulnerability of surface waters and a somewhat limited nature of adaptive measures without relying on specific dates those changes should set in. Adaptation should in large measure include water saving, wide use of low-water technologies, a wider use of irrigation of agricultural land.

A priority list of potential follow-up water management projects can be defined:

- comprehensive water vulnerability assessment of the Dnieper, Neman, Western Dvina, Western Boug and Pripyat basins considering climate changes and economic development of those areas;
- establishment of a common information exchange system to drive basin-based water assessment with neighboring states;
- design and establishment of the state system to collect, analyze and synthesize information on the impact of dangerous climate changes on water ecosystems and water management;
- creating conditions to regularly produce the Regional Bulletin of Climate Monitoring containing a section on water management and water ecosystems;
- development of a system of preventive measures with a view to adapting climate-dependent sectors of the economy to climate changes, including water management.

The second vulnerable sector of the economy which will feel the impact of climate warming in the future is agriculture, which is directly linked to a certain degree of area humidification and water supply.

Climate warming might: substantially deteriorate conditions for soil humidification, increase evaporation, decrease inflow of moisture onto fields, as well as increase vegetative period. All of these events will create a need to develop irregular, mobile irrigation. On the ameliorated land, it will lead to a reduced average annual water-regulating effect of irrigation amelioration. It is also possible that forced-feed water sources will lose some of its resources. Hence, in order to support irrigation and drainage facilities, measures will need to be taken to regulate surface and groundwater runoff, supply water from outside, and re-use drainage water.

4. Socio-economic systems

Socio-economic impact of forecasted climate change is studied insufficiently so far, with only a few works primarily of an expert nature.

One of the essential socio-economic implications of climate warming is energy and fuel savings for heating needs.

According to climate change forecast-driven calculations, the heating period in most of Eurasia will shrink by one month, in Central Russia – by approximately two weeks. Other sources suggest that by the beginning of the 21st century the heating season will decrease by 60–30 days in the north and 10–15 days in central and southern parts of former Soviet Union territory. If projected climate warming turns out to be true, by the middle of the 21st century the heating period will shorten even greater – by 2–4 months in the north and by 1–1.5 months in the rest of former Soviet Union.

For Belarus, an important positive factor of warming will be a milder severity of climatic conditions, which currently predetermine the cost of supporting economy. **For our region, fuel and energy savings resulting from shorter duration and lessened severity of the cold season and, as a result, reduced heating costs for buildings may become one of the important socio-economic consequences of the expected anthropogenic climate warming.**

Keeping indoor temperatures at a comfort level in residential and industrial facilities throughout the year is very costly. It is possible to quantify such warming impact by calculating changes in the duration of heating period, as well as heat shortage and accumulated temperatures exceeding the pre-determined comfort level.

In Belarus, central heating systems are very common, for which standards and norms have been developed. According to these norms, heating period begins when the average daily air temperature drops to 8 °C, and the system should maintain indoor temperatures at around 18 °C.

According to change forecasts, air temperatures in high latitudes will vary between 0.5 and 2.5–3.0 °C by the middle of this century.

Changes in heating season patterns are of special account in analyzing climate change impact on the energy sector. In over 50 years, by the end of the 20th century, heating period had shrunk by 6–9 days mainly because of its earlier completion dates. The average temperature of heating period rose 1–1.5 °C (mostly in the north). All of this lessened degree days by 9–11 %. Heating costs should mirror this accordingly.

An analysis of changes in the average monthly and annual temperatures in Belarus between 1964 and 2000 and the usage of special calculation methodologies make it possible to predict the average monthly temperature for the country. A temperature change analysis showed that the temperature does not rise as significantly in the summer as it does in the winter which dovetails into studies in other countries. The air temperature rises more significantly in the first half of the year, while it even somewhat goes down in November and December.

Temperature changes were calculated based on the above assumptions of climate change from 0.5 to 3 °C at an interval of 0.5 °C. In order to forecast changes in the duration of heating season and fuel savings, the 1991–2000 period, i.e. the end of the 20th century, was used as a baseline. Based on the assumptions made, they produced a breakdown of average monthly temperatures as a factor of varying average annual temperature, and established the relation between heating period reduction and average annual temperature. The basic duration of heating season totalled 6.5 months. When average annual temperatures rise from 0.5 to 3 °C, heating period shrinks by 6 and 36 days, respectively.

Apart from heating period impact, increasing temperatures will also affect heat losses of buildings during the cold season. Methods for assessing heating costs use air temperature, wind speed and solar radiation as the key meteorological factors affecting heat treatment of buildings. Indoor temperature is an important parameter to calculate heat.

Calculations of building heat losses have been made. Reduction of heat losses, hence fuel savings will reach 3.5 % as temperatures rise 0.5 °C, and 15.3 % as temperatures rise 3 °C. Thus, accumulated fuel savings will amount to 6.6 % for 0.5 °C temperature increase and 33.8 % for 3 °C increase.

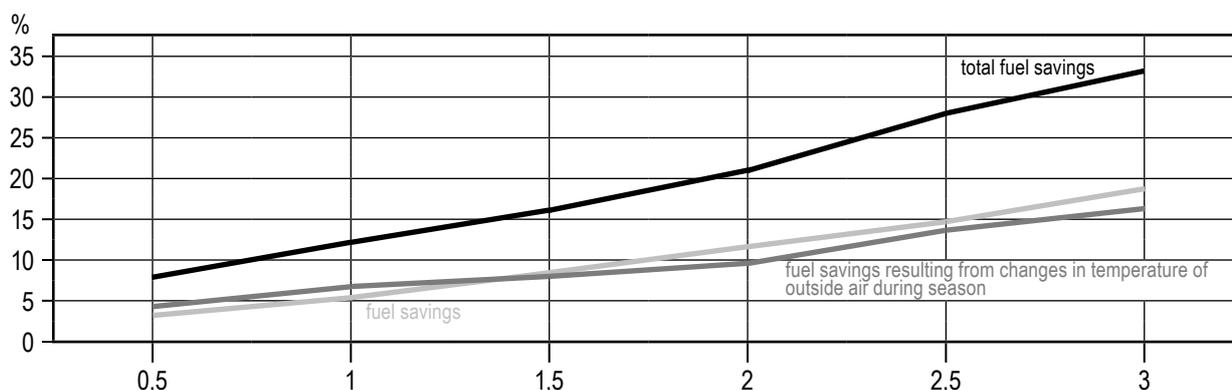


Figure 1. Fuel saving as a factor of rising mean annual temperature

5. Health impact of climate change

Human health is the cardinal aspect of climate change implications. In global terms, changes in natural ecosystems may trigger growth of ecological refugees, in whom probability of debilitated health, diseases and consequently death rate is likely to be higher. Global warming is expected to create an environment conducive for certain pests and diseases, which will affect human health in an adverse manner. Ozone depletion by 1 %, which is also linked to climate change, may increase incidence rate of melanoma by 2 %, non-melanoma cancer 3 %, cataract by 0.6–0.8 %.

Comfort level of work, recreation and living conditions considerably influence human health. Ensuring comfort as the climate changes will help iron out negative socio-economic implications of the process.

The direct effect of these factors may be “instant”, i.e. induced by dominant weather, or may be contingent upon a chain of events, i.e. upon synoptic situation. Effects can be cumulative and emerge as a result of lasting exposure to varying conditions.

How temperature changes affect human body. The environment temperature is a primary factor directly affecting human organism. The depth and frequency of breathing, blood circulation speed, haematopoiesis patterns, oxygen supply of cells and tissues all depend on the temperature. For most of the healthy people at rest, air temperature from 15 to 25 °C indicates heat sensations forming the comfort zone. Delayed heat losses occurring during high temperatures may help suppress important functions of the organism, reduce its viability and predispose to infectious diseases. A considerable drop in air temperature also disrupts heat regulation in limbs and mucosae of respiratory tract accompanied by cold. Mortality rate caused by cardiovascular diseases in moderate and high latitudes is invariably the highest during the cold season, January-February, and the lowest in warm months – July and August. Apparently, this is because heat factors affect elasticity and peripheral resistance of blood vessels, activity of sympathetic nervous system and physiochemical condition of blood (viscosity, coagulation time).

Extreme heat or cold, i.e. excessive thermal stress, are undoubtedly harmful: moderately warm climate increases susceptibility to intestinal diseases, moderately cold climate – to respiratory diseases. The following conditions could be attributed to the moderately heat-and-stress type: asthma, bronchitis, allergic rhinitis (hay fever), rheumatic conditions (in particular, rheumatoid arthritis), heart diseases (in particular, cardiac infarction and chest pains), apoplexy, certain eye diseases (e.g. acute glaucoma, acute conjunctivitis) and vascular disorders.

In Belarus, the best temperature regime, both for people and climatic treatment, is observed during the warm season, when average daily temperatures reach 15–25 °C. The most comfortable are summer months for people: June (average temperatures are 15–17 °C), July (17.5–18.5 °C) and August (16–17.5 °C). Temporal variability of temperature in the summer is marginal. Only in 5 % of years summer temperatures might drop to 13 °C and below and only in 5 % of years in July it rises above 20 °C. In June and August this is typical only of the southern parts. In addition to these months, the most comfortable in terms of air temperature are the second and third decades of May when average daily temperatures cross 14 °C and the first decade of September. May and September have 65–75 % of warm days with average daily temperature of 10–20 °C, which is conducive for climate therapy.

Sharp fluctuations of temperature noticeably affect incidence and death rates. It has been found that an inter-day temperature change of 6 °C and more causes negative sensations in people. Unfavorable inter-day temperature variability (over 6 °C) is mainly observed in the winter – about 6 % in the southwest and 10–11 % in the northeast dropping considerably only in the summer (3–5 %).

Thus, the warm season (2nd – 3rd decade of May – 1st decade of September) is characterized by optimum values of air temperature, when meteopathic reactions occur least of all. However even at lower temperatures under certain circumstances it is expedient to condition the body and harden oneself.

How humidity changes affect human body. The influence of air humidity on human organism is primarily associated with water metabolism regulation. Sharp increases of air humidity are known to cause renal diseases and pulmonary haemorrhage. However if the air is too dry, it is also unhealthy because it can cause irritation of respiratory tract, coughing, short breath, general excitement, headache and insomnia. The comfort level is attained when humidity is average (50 %) and does not vary sharply.

Belarus is characterized by higher humidity throughout the year. During cold periods from October through March, average monthly relative humidity ranges from 80–90 %, humidity variations across the territory are not traceable. Air humidity peaks in November – December (87–90 %). In the spring when the temperature rises, relative humidity decreases from 77–83 % in March to 65–70 % in May reaching its lowest point in the annual cycle. Daily cycle of relative humidity in the winter is not pronounced. In the summer the difference between its limit values during the day is 15–25 % (in the southeast above 30 %). The highest humidity is observed before the sunrise, when the temperature reaches its lowest point. The lowest relative humidity is observed in postmeridian hours, when the temperature reaches its highest point. Dry days with humidity less than 30 % are rare in Belarus – mainly in April – May – about 5 % in the south and even less than that in the north.

Thus, in the excessively humid context of Belarus throughout the year the most favourable conditions in terms of relative humidity are observed during the spring and summer period (May – August). However even during these months there are up to 10 % of humid days.

How atmospheric pressure changes affect human body. In medical terms, it is not the absolute value, but rather sharp changes of this value that matter the most. Reduction of atmospheric pressure by mere 5–6 mb entails impaired breathing, reduced pulmonary and tissue gaseous metabolism, oxygen impoverishment of blood and tissue which increases the risk of cardio-vascular diseases.

In Belarus atmospheric pressure mostly changes smoothly from day to day: in 30–50 % of cases by less than 2 mb a day. Unfavourable pressure drops of over 10 mb a day are recorded in 25–35 % of cases in the winter; 60 % in the spring; 10–30 % in the autumn. During the period of intense cyclonic activity in the cold season, day-to-day changes of atmospheric pressure reach their highest values – up to 30 mb, during the summer – up to 12–16 mb.

Experts believe that the intensity of weather variability has an important role to play in a comprehensive impact of climate on human body. Emerging meteorological reactions aggravate the course of a disease causing unwanted changes in man's health and mood.

By taking advantage of specificities of given climate (solar radiation, air properties, landscapes and other climatic healing factors), it is possible to reduce or increase a load associated with organism adaptability, train the body by improving the work of its protective mechanisms. If one bears in mind that the very protective mechanisms of human organism play a decisive role in addressing all sorts of harmful impact (infection, regenerative processes, toxicoses, oxygen starvation, etc.), the relevance and enormous practical meaning of using spa factors for health purposes become understandable.

Apart from direct influence of weather factors, there is indirect climate impact, since climatic conditions largely determine the nature of food, sanitary methods, design of residential houses, offices and industrial enterprises, affect the makeup of the society and family, as well as viability of insects and animals – carriers of pathogenic microorganisms within their habitats.

So, substantial changes in human health will take place if climate change forecasts are accurate.

6. Socioeconomic adaptation to climate change

Unfortunately, Belarus has not addressed consumer strategy selection, has not made consumer average losses and meteorological losses assessments, i.e. losses a consumer incurs because of making a business decision that does not meet actual meteorological or climatic conditions. Also other areas require more research, i.e. selecting criteria for the best current policy (average meteorological losses, minimum risk of losses in excess of a given level, maximum average income), making a climate-driven best decision, cost-benefit analysis of using meteorological and climate-related information.

The likely damage of adverse weather and climate conditions in the moderate zone countries is the greatest in agriculture (circa 70 %). If protective measures are taken, it can be lowered by 35–40 %. A share of likely damage for aviation, construction, power production, heating, manufacturing, transport and other sectors varies between 0.1 and 2 % of gross national income, while avoidable losses range from 20 to 40 % of total losses.

It has been established that the wind speed dropped by 15–20 % over last 20–25 years, which reduces the wind energy potential. Water consumption is an issue of considerable importance for development of the country in the climate warming context. Fresh water is constantly growing in demand versus projected reduction in the quantity and quality of fresh waters. Due to climate warming, irrigation become the key to guaranteed crop harvest, while investments in irrigation systems total around USD 1,000 per 1 ha. Producing 1 ton of grain on irrigated land is known to require 1,000 – 3,000 tons of water.

Highly urbanized areas are expected to suffer the greatest impact of climate change. These consequences might include difficulties with water supply, increased heat loads, emergence of favourable conditions for a variety of infections.

The ongoing changes in climate characteristics will require adjusting parameters of construction climatology and “Building Standards of Belarus”.

Assessments of temperature pathogenicity index, humidity, wind speed, inter-day pressure differences, and the annual cycle of the complex pathogenicity index over last 40 years have shown that these indices tend to develop in different directions. Pathogenicity indices of air humidity, inter-day pressure variability grow negatively affecting human health. At the same time, wind speed drops and temperature rises ensuring positive behaviour of the pathogenicity index of these characteristics.

Climate warming will increase the time people spend in recreational zones (forest, banks of rivers, lakes, water reservoirs), therefore increasing anthropogenic pressure can be expected on these ecosystems and, as a result, inadequate water quality and exacerbation of epidemiological situation.

In conclusion, let it be stressed that ecosystems (water, forest and agricultural) cannot be viewed in isolation, for all things are intermeshed in the nature. Human health is largely determined by the status of environment, therefore it will be relevant to carry out integrated assessments of ecosystems, economy and health impact of climate change in the future. It will contribute to identifying the most “winning” adaptive measures not only at a national level, but also at an interstate (regional) level.

Annex 3

**to the Final Report on
“National Capacity Self-Assessment
for Global Environmental Management in Belarus”**

**REVIEW
of the draft new edition of the Land Code of Belarus
and some proposals aimed at its improving in the light of Belarus
commitments under the three UN Convention**

Review of the draft new edition of the Land Code of Belarus and some proposals aimed at its improving in the light of Belarus' commitments under the three UN Conventions

(under the UNDP/GEF National Capacity Self-Assessment
for the Global Environmental Management in Belarus)

1. Introduction

A group of experts whose job has been to develop recommendations for improving land legislation in Belarus has been established within the UNDP/GEF National Capacity Self-Assessment for the Global Environmental Management in Belarus. The experts have carried out work in accordance with the following plan:

- review the existing Land Code of Belarus that entered into force on January 1, 1999, and identify reasons for developing a new version of the Code;
- scrutinize the draft new version of the Land Code of Belarus (hereinafter, the draft) prepared by the Committee for Land Resources, Survey and Cartography under the Council of Ministers and National Draft Law Centre under the President of Belarus;
- develop amendments into the draft in view of the three UN conventions, and in the first place the UN Convention to Combat Desertification/Land Degradation, and especially Annex V thereto.

To ensure direct involvement in the work on developing the draft new version of the Land Code and to be able to facilitate the introduction of the above amendments into the draft, one of the experts (Dr A. Pomelov) was made a member of the joint working group of the Committee for Land Resources, Survey and Cartography at the Council of Ministers of Belarus and the National Draft Law Centre at the President of Belarus.

To implement the above plan, the key provisions of the UNCCD and Annex V thereto that need to be taken into account while improving land legislation in Belarus were identified. These included:

- 1) land is an essential resource necessary for survival of human beings, and land degradation is a global problem;
- 2) land degradation is caused by a complex set of physical, biological, political, social, cultural and economic factors, which determine the multitude of forms land degradation takes and its links with global environmental issues;
- 3) preconditions and priority tasks for sustainable development include economic growth, social progress and poverty reduction. On the other hand, land degradation is a serious obstacle in this area and it can lead to more economic difficulties and worsened social conditions;
- 4) specific features of land degradation issues and tasks to address have been conditioned by economy-in-transition realities, therefore solution of the issues is closely linked with economic reforms, in agriculture in the first place;
- 5) the effective fighting of land degradation will require:
 - identification of sources and mobilization of financial resources (as well as human, technical, etc.), improvement of the investment climate, development of economic mechanisms for combating land degradation;
 - new more efficient integrated approaches (and better technology), coordinated long-term strategy at all levels, using sustainable development models;
 - international co-operation and partnerships for fundraising, technology transfers and coordination of efforts on implementing national plans and priority actions;
 - interaction between authorities of different levels and nongovernmental organizations, land users and different public groups;
 - systematic monitoring, research, developing new technologies and training (including retraining and upgrading);
 - refining legislation, developing long-term policy and action programmes.

2. Analysis of the current Land Code of Belarus; need for improvement

The current Land Code of Belarus (hereinafter, the Code) entered into force on January 1, 1999. The Code underwent amendments as of May 8, 2002. According to its preamble, it is designed to regulate land relations and aimed at sustainable use and protection of lands, to ensure equal opportunities for developing different forms of business on land, preservation and improvement of the environment, protection of rights of all parties to land relations.

The Code consists of 15 sections, 36 chapters and 174 articles, including 10 newer ones introduced as part of later amendments and additions. It sets out main provisions in the area of land relations, the use and protection of land (in particular, it defines land as an object of property, land legislation, land categories and the procedure for their application, forms of ownership of land, types of land rights and limitations thereof, objects of land relations, etc.), as well as regulates issues pertaining to:

- the area of competence of executive and administrative bodies, the authorized state body for land resources and land planning;
- the provision of land plots for use and life-long heritable holding, transfer into private ownership or leaseholding, as well as requisitioning of land plots for state or public use, termination of land rights, regulation of issues of land inheritance and payment for land;
- the rights and responsibilities of land users, tenants and land plot owners;
- land use, land tenancy and private land ownership of plots, including with regard to land transactions;
- the categories of land and the legal regime thereof, including lands affected by nuclear fallout;
- payment of damages to land users, tenants, and owners of land parcels, as well as compensation of losses to agriculture and forestry businesses;
- measures to protect land, government control over the use and protection of land;
- land monitoring, state land cadastre and land planning;
- resolution of land-related disputes and liability for breaking land legislation; and
- international treaties.

The adoption of the legal act in question was necessary, in the first place, in view of the need to revise the previous Land Code of 1990 and bring it in line with the Constitution of Belarus, other legal acts, and incorporating relevant provisions of the Law on Land Tenure, and some other needs.

A review of new legal provisions laid down in the Code allowed to conclude that:

- controls in the area of the use and protection of lands lie with the President of Belarus, the Council of Ministers of Belarus, the authorized state body for land resources and land planning, as well as local executive and administrative bodies;
- the Code provides for transfer of land plots ownership to legal entities according to established procedure, including international investors and other countries;
- agricultural lands set aside for Belarus citizens' subsistence farming and gardening are designated as urban lands, gardening co-operatives' and dacha lands;
- there is a provision for transferring powers to give to or take away land parcels from local executive and administrative bodies to the governing authorities in free economic zones;
- the Code introduces the notion of divisibility and indivisibility of land; regulates issues of delimitation of boundaries of parcels, registration of holding rights, lifelong heritable possession and ownership of land;
- sets out procedure for conducting transactions with land plots in ownership, including exchange and transfer of parcels into ownership and taking these away forcibly in case of breach of land legislation;
- resolves the issue of use of parcels in case of liquidation of legal entities, transfer of building ownership rights, including by inheritance;
- provides for allocation of land plots for the construction and operation of outdoor parking lots or garages; defines the status of land plots provided by the city executive committee for building private houses;
- sets out the procedure for distribution and utilization of land payments, as well as for accumulation and use of funds paid in compensation of damages to agricultural companies or forestries.

However, the experience of implementing land legislation in Belarus has shown that it does not fully meet the current standards of sustainable socio-economic development which is associated with raising the efficiency of the use and protection of land resources through promoting market-based land relations and economic mechanisms to regulate them.

Pursuant to Article 13, Part 6, of the Constitution of Belarus, agricultural lands (currently 45 % of country's territory) may not be conveyed to private ownership. A further 41 % of state owned lands designated for forestry, water management lands, military purposes, as well as 'other' purposes, shall not be transferred to private ownership either. Therefore, the current legislation permits only 14 % of lands to be subject to civil trade and exchange.

The analysis shows that the State, as the key land owner, does not manage land efficiently enough, although investing considerable resources into land – thus increasing its value, and allotting land plots for use or lifelong heritable tenancy. At the same time, a shady land market has been operating in the country for some time. Highly dependent on the enforcement of land rights and the development of land market, the investment climate remains unsatisfactory, with the legislative mechanisms designed to promote effective and sustainable land uses are not working properly, thus failing to utilize the universally accepted market mechanisms to foster wise use and protection of lands. There are no workable incentives for land parcels to be transmitted to more efficient and provident owners or tenants. Mortgage lending has not been developing sufficiently, therefore there is no interest to value or enhance the value of land. Land payments do not correspond to the real value of land, which results in significant losses to the state budget. Nearly every year funds earmarked for land management are redirected for general budget spending purposes, and as a result little or no funds are left for land improvement or protection.

Therefore it would be expedient to legitimize and promote land leasing, by introducing land lease rights. Such an approach has been successfully applied in China, Poland, Russia and some other countries. This will require evolutionary transition from the current five types of land rights – ownership, lifelong heritable possession, continuous use, temporary use and lease – to basically two rights – ownership and lease.

The urgency of the issue for the country has been one of the main drivers for the new version of the Land Code of Belarus to be developed and adopted. Additionally, the new Land Code should:

- provide definitions of key terms and notions, stipulating principles of land relationships;
- clarify issues related to land categories and define types of land;
- realign the regulations on objects of land relations with Article 128 of the Civil Code;
- clarify applicability of civil law to land relations (Article 1 of the Land Code and Article 1 of the Civil Code);
- define jurisdiction of authorities exercising state control and administration over the use and protection of lands;
- realign the Land Code with the Investment Code of Belarus, and the July 22, 2002 Law on State Registration of Immovable Property, Rights thereto and Transactions therewith, including matters regarding time of origination of land parcels and rights thereto, documents certifying parcel rights, enhancing the state land cadastre with a uniform state register of immovable property, rights thereto and transactions therewith.
- clarify land use in farming, including allocation of parcels for farmers;
- refine policy on parcel transactions and parcel lease rights, including by introduction of a regulation allowing parcel lease (Chapter 33 of the Civil Code), sublease, selling to private owners and leasing through auctions or tenders;
- adjust issues pertaining to inheritance of privately-owned parcels in lifelong heritable holding (deadlines for instituting the relevant rights and consequences of its inobservance, consequences of inheriting land plots and capital buildings on them for various reasons);
- settle other issues aimed at improving land relationships.

3. Review of draft new Land Code of Belarus

A review of the draft new version of the Land Code of Belarus (hereinafter, the draft), prepared by the Committee for Land Resources, Survey and Cartography at the Council of Ministers and the National Draft Law Centre at the President of Belarus, has allowed arriving at the following general conclusion. The draft considerably differs from the current version of the Code, as concerns ideology, structure and contents. It is clear that the authors of the new version were to a large extent guided by the Civil Code (1999) and the Law on State Registration of Immovable Property, Rights thereto and Transactions therewith (2002), particularly as concerns terminology.

The draft Code has no sections, but only 12 chapters, with the total number of articles almost halved. A list of articles below gives an idea of its structure and contents:

- 1) General provisions.
- 2) State regulation and administration of the use and protection of lands.

- 3) Payments for land plots owned by the state and transferred to private ownership, for leasing plots owned by the state and for the use of land plots.
- 4) Allotment of state-owned land plots. Imposing limitations (encumbrance) on exercising the rights on land plots.
- 5) Transfer of rights, limitations (encumbrance) on exercising the rights on land plots.
- 6) Termination of rights or limitations (encumbrance) of rights on land plots.
- 7) The rights and responsibilities of land users, protection of rights of land users.
- 8) Land planning.
- 9) Land monitoring. State land cadastre.
- 10) Protection of lands. State controls over the use and protection of lands.
- 11) Resolving land disputes. Liability for breaches of land legislation.
- 12) Final provisions.

It should be noted that, while the structure of the draft looks quite logical, there are two remarks to be made. First, the title of Chapter 3 seems to be too long, and may be changed to, say, 'Payments for the provision and use of land plots'. Second, both the title and the content of Chapter 4 seem to be out of place in the logical sequence above. Since Chapters 5 and 6 deal with transfer and termination of rights to parcels, it would be logical to expect that Chapter 4 dealt with the origination of such rights.

The review of the draft Code in view of the commitments Belarus has made under the three UN environmental conventions, particularly UNCCD, resulted in the following recommendations:

- 1) The draft should be supplemented with an article containing definitions of the terms and notions used in the document. In doing so, it is important to ensure, whenever feasible, that internationally accepted terminology is put to use as much as possible, including that of the UN conventions.
- 2) The proposed principles of regulating land relations need to be revised and edited based on widely acknowledged principles of sustainable land use set out in international documents, including UNCCD.
- 3) It is advisable that the general provisions be supplemented with an article on 'Government policy in the area of land relations, and the use and protection of lands' (or, in short, 'State Land Policy').
- 4) The categories of land, used in the draft, need to be refined, from the point of view of their definitions, principles and procedures for categorization, designation of legal status for different categories and its application in administering land relationships. In view of this need, the project experts have developed and submitted to the draft Code working group an analytical brief 'On Categories of Lands' (attached).
- 5) To increase the efficiency of regulation of land relations it is advisable to structure available land resources not only into categories of lands, which determine the way the land should be used and the respective legal regime for land use and protection, but also into 'types' of lands, which reflect the natural and historical properties, the condition and the kind of use of land parcels. Therefore the draft Code needs to be supplemented with an article on 'Types of Lands'.
- 6) The draft does not seem to specify clearly enough and divide the jurisdiction of authorities of various levels to administer and regulate land use and protection. Many of relevant functions are over-centralized, and there is no clear mechanism for local authorities, NGOs and land users themselves to be involved in the process, which is incompatible with the common practice worldwide.
- 7) The project experts view the article regulating changes in the area of highly productive lands as a constraint to enhancing the efficiency of combating land degradation. The agricultural land productivity is a function of land's quality, not its type. The way in which the land is used, hence, impacted does depend on its type and subtype. Reducing land use intensity by changing its type (turning to grassland, forestation, naturalization, etc.) is in many cases an effective tool to mitigate land degradation. Land users should be responsible for undertaking these initiatives.
- 8) One of the key objectives the draft Code strives to achieve is to introduce an effective economic mechanism to regulate land use, however the authors seem to have failed to clearly set out a procedure for economic motivation of land users to effectively use and protect their lands. Accumulation and targeted use of funds earmarked for land planning, land improvement and protection needs to be described more carefully.
- 9) The chapter dealing with the protection of land needs to be revised and enhanced. In doing so, it is advisable to expand on the provisions of the article by elaborating a draft law on protection of lands.

4. Proposed amendments to draft new version of Land Code of Belarus

4.1. Supplement the draft with Article 1 that reads as follows:

«Article 1. Terms, notions and their definitions

For the purposes of this Code the terms and notions used herein have the following definitions:

- type of land* – part of the stock of land resources distinguishable by its natural and cultural properties, status and modes of use;
- state land cadastre* – a collection of systematized facts and documents about the legal status, physical state, quality, spatial distribution, and the use of land for economic or other reasons;
- state control over the use and protection of land* – action by authorized government bodies and officials aimed at preventing violations of land law, identifying and punishing offenders;
- boundary of a parcel* – a line on the land surface as well as a vertical plane drawn along this line that separate one land plot from the other;
- land degradation* – the process whereby the quality of land deteriorates as a result of human impact or for natural reasons;
- degraded lands* – lands that have lost their initial useful properties and cannot be used effectively for the designated purposes (includes disturbed, polluted, heavily eroded lands, etc.);
- land pollution* – the process whereby toxic or radioactive chemical substances, pathogenic germs, viruses, other unwanted bio- or chemical elements are introduced to and accumulated in land surface, soils or ground water;
- polluted lands* – lands which are known to contain toxic or radioactive chemical substances, pathogenic germs, viruses, other unwanted bio- or chemical elements on their surface, in soils or in ground water at levels that exceed the maximum allowable concentrations (MAC) established for them;
- land relations* – public relations with respect to creation, modification or abrogation of land parcels; origination, transfer or termination of land rights; use and protection of lands;
- land resources* – lands that are or can be used for economic or other purposes;
- easement* – the right of limited use of an adjoining or other parcel, to enable passage, by foot or vehicle, laying or operation of power lines, communications lines or pipelines, water supply or land drainage, as well as for other purposes which may not be achieved without right of way;
- land dispute* – an unsettled conflict between subjects of land relations;
- land parcel* – an area of land relations being a part of the Earth surface that has established borders and a purpose for which it is used, and which is regarded as one whole with any capital buildings and other objects, on or under that surface, and connected with it firmly;
- land stock* – a total of all lands in Belarus or its administrative-territorial unit;
- land use (use of land plots)* – economic or other activities whereby useful properties of lands (land plots) are utilized and/or impact on land is produced;
- land users* – owners, holders, users, lease-holders (sublease-holders) of land parcels, unless otherwise specified in this Code;
- land use planning documentation* – a set of documents drawn up as a result of a land use planning project;
- land use planning file* – a systematized set of land planning use documentation in regard to a land use planning object and other materials relevant to that object;
- land use planning* – a system of legal, economic and technical activities and measures aimed at regulating land relations, improving the efficiency of land use and protection, as well as conservation of other components of the environment;
- land (lands)* – land surface including soils, water and vegetation, regarded as a natural resource used as a production asset in agriculture and forestry; contains various objects and is a material precondition for human wellbeing;
- seizure of land parcel* – legal action and technical procedure that leads to cessation of ownership rights, lifelong heritable possession rights, use rights, lease rights, based on the grounds prescribed by the current legislation;
- individual gardening* – an individual's activity aimed at producing fruit, berries, vegetables and other agricultural products, as well as creating an environment for rest and recreation;
- cadastral assessment of land* – determining of the cadastral value of land parcels and other land quality characteristics;

- cadastral value of parcel* – the cost of a land parcel derived from cadastral assessment and registered in the state land cadastre;
- category of land* – part of the land stock designated according to its end use, enjoying a particular legal regime of usage and protection;
- collective gardening* – activity of a group of individuals that are united voluntarily to form a gardening organization for producing fruit, berries, vegetables and other agricultural product, for recreation and recuperation;
- land monitoring* – a system of observations to assess the current state of land and forecast its changes due to natural factors or human impacts;
- object of land planning* – a part of land surface with established borders and allotted in line with specific objectives and tasks of land use planning;
- encumbrance of rights on a land parcel* – a condition, limitation or ban in regard to certain rights on a land parcel for the benefit or safety of the public, protection of the environment or historical or cultural heritage, protection of rights and interests of other individuals protected by law, established by legislation, or decision by a competent authority or according to the contract governing the use of a land parcel, or by the decision of a court of law;
- allotment of a land parcel* – a set of land use planning measures including procedures for seizure and granting of a land plot;
- protection of land* – a set of measures aimed at preventing land degradation and restoring degraded lands;
- lease right to a parcel* – property right of monetary value that can be pledged by the tenant, with landlord's consent, or paid as an contribution to the statutory fund of economic entities or associations or as an initial share into a manufacturing co-operative;
- agricultural lands* – lands systematically used for agricultural production, including arable lands, fallow lands, lands under permanent crops and grasslands;
- value of lease right to a parcel* – cost of the right to lease a land plot determined through an appraisal or an auction, according to law;
- conditions of allotment of a parcel* – prerequisites, set in accordance with land legislation, for the provision of a land plot;
- sustainable land use* – balanced use of useful properties of land which allows to sustain its quality;
- effective use of land* – the use of lands that brings about an economic, social, environmental or other useful effect.»

4.2. Complement the Article 'Key Principles of Land Relations' with the additional principles of 'priority of protection of agricultural and forested lands, as well as lands under water bodies and bogs' and 'priority of sustainable land use'.

4.3. Modify the Article 'Categories of Lands', as well as others connected with categories of land, in the light of the recommendations contained in the Annex.

4.4. Supplement the draft Code with an article 'Types of Lands' to read as follows:

«Irrespective of category-based distribution, the entire land stock is divided into the following types of land:

- arable lands – agricultural lands systematically cultivated and used for growing crops, including perennial grasses, with a term of service set in the crop rotation schedule, as well as reserve fields, areas of closed ground (greenhouses, etc.) and fallow lands.
- uncultivated lands – agricultural lands set aside from farming for over one year and not fallowed;
- lands under permanent crops – agricultural lands with plantations of trees, shrubs or perennial grasses grown to yield fruits, food, technical or medicinal stuff, as well as for greening areas;
- meadow lands – agricultural lands used, predominantly, for growing perennial grasses (improved meadow lands), as well as lands covered with natural meadow grasses;
- forest lands – lands covered with forest, as well as open lands designated for forest restoration (clearings, fire-sites, sparse tree sites, abandoned lands, glades, plots with dead stands, forest farms, as well as other lands designed for forest restoration), allotted for forest management;
- land under trees or shrubs (also planted) – lands covered with trees or shrubs (also planted), not included in the forest stock;
- peat lands – excessively humid lands, covered with a layer of peat;

- lands under water bodies – lands covered by water (rivers, creeks, springs, lakes, artificial water reservoirs, ponds, channels and other bodies of water);
- lands under roads or other transport links – lands under roads, pipelines, forest cuttings, droves and other transport links of mainly linear shape;
- lands under streets and other public places – lands under streets, squares, thoroughfares, embankments, parks, public gardens, boulevards, and other public places;
- lands under buildings – lands under capital buildings, as well as lands adjoining these buildings where maintenance infrastructure thereof is located;
- degraded lands – lands that have lost their natural or historical or economic value as a result of adverse human impact and now are in the state that prevents their effective end use;
- unused lands – lands that are not in economic or other use;
- other lands.

Ascribing land to one of the above types, and transfer thereof from one type to another is done as part of land use planning. Transfer of forest lands into non-forest lands is done as part of forest management planning in accordance with forest legislation.

A land plot can include different types of land, and the respective arrangement must be duly reflected in the land use planning documentation for this plot.»

In addition, it is proposed that the article be complemented with the following clause: “Reduction in the area of arable land, land under permanent crops, improved grasslands within agricultural lands is allowed only as part of land use planning”; while the article “The change of the area of highly productive lands” be removed from the current version of the Code.

4.5. Complement the draft with an article entitled “The land redistribution stock” which reads as follows:

«A land redistribution stock is established by district authorities as part of land use planning, mainly out of agricultural lands, which could be used more effectively provided their end use, mode of use or economic activity run thereon were changed.

Based on local conditions the land redistribution stock is formed for the following main purposes:

- Creation and development of agricultural enterprises, including private farms;
- Creation and development of agricultural departments of existing legal entities;
- Creation and development of personal agricultural holds of individuals, construction and/or maintenance of houses, gardening, dacha developments;
- Provision of low-productive lands for forestation to legal entities engaged in forest management;
- Industrial, transport, communications, energy engineering, military operations etc.

Land parcels included in the land redistribution stock shall be used by land users prior to their withdrawal or allotment in accordance with the land legislation.»

4.6. Since the land use planning system is considered to be the most important tool in managing land resources and regulating land relations that ensures, inter alia, integrated spatial development in time and space, and public participation therein, it is proposed that the requirement for the timely development of land use planning schemes, as well as the responsibilities of relevant authorities of all levels, be clearly set out in Chapter 2 and Chapter 8 of the draft Land Code, particularly for administrative districts.

4.7. In order to ensure the targeted use of land fees it is advisable that relevant provisions in the draft be strengthened, in particular it is proposed that Chapter 3 be complemented with an article to read as follows:

«Revenues obtained from transfer of state-owned land parcels and into private ownership, lease payments for state-owned lands, as well as payments for use of state-owned lands shall go into the national and local budgets in accordance with budget legislation and be used for the protection of lands, improvement of soil fertility and other useful properties of land, provision of monetary incentives to land users, land use planning, operation of the state land cadastre, including cadastral valuation of land, as well as for the development of social infrastructure and such other purposes, as may be appropriate according to law. The use of these funds for purposes other than the ones indicated above is not allowed».

4.8. To accumulate enough funds needed for taking measures in 4.7 above, it is necessary to minimize the number of legal provisions for exempting (or providing privileges/relieves to) land users from making up for losses caused to agriculture or forestry, and from land fees, as well as to refer these issues to the competence of authorities of the highest level (Chapter 2). The said privileges/relieves are best to be used in regard to specific land users to stimulate more effective use and protection of lands.

4.9. It is proposed that the article “Protection of Lands” be amended to read as follows:

«Land users must take the following measures:

- land protection;
- rational spatial organization and improvement;
- conservation of soil fertility and other useful properties of land;
- protection of land from water and wind erosion, waterlogging, salinization, aridization, compaction, pollution by waste, chemical and radioactive substances, and other adverse impacts;
- prevention of encroachment of trees, shrubs or weeds on agricultural lands;
- conservation of peat soils used in agriculture, prevention of peatland mineralization;
- decommissioning degraded lands for protective reasons, if no other fertility restoration approaches have proved to be effective;
- rehabilitation of degraded lands;
- removal, storage and subsequent use of the upper soil during rehabilitation works.

Land protection measures shall be included in:

- state forecasts and programmes of socio-economic development in Belarus;
- master plan of the use and conservation of land resources in Belarus, administrative-territorial and territorial land use planning schemes, farm and inter-farm land use planning schemes and other land use planning documents;
- project documentation for placement, construction, reconstruction, operation, decommissioning and liquidating industrial, transport, communications, forest or water management or agricultural facilities, as well as other facilities that have adverse impact on land; and
- technical normative legal acts that regulate technologic processes in land uses for economic or other purposes.

Legal entities and entrepreneurs, whose economic or other activity has to do with land use or adverse impacts thereupon, shall take land protection measures in accordance with land use planning documentation coordinated with local bodies of the Ministry of National Resources and Environmental Protection and the Committee for Land Resources, Survey and Cartography at the Council of Ministers of Belarus. Land conservation plans should contain reference to the guaranteed amount of funding for land protection measures and sources thereof.

Funding of land protection measures shall be provided through land users' equity, appropriate lines of national and local budgets in accordance with legislation, as well as from other eligible sources.

Costs borne by legal entities and entrepreneurs to take land protection measures out of their own funding shall be included in the prime cost of their produce (works, services).

Legal entities and entrepreneurs that take land protection measures at their own cost may be awarded tax relieves in accordance with tax legislation.

To facilitate the assessment of the state of land, maximum allowable concentrations for soil pollutants shall be set in accordance with legislation.

Particular conditions for protecting lands of selected categories and types shall be regulated by respective legal acts.

Procedures pertaining to land protection are established by the Council of Ministers of Belarus.»

4.10. In addition, the following chapters should be considered for inclusion in the draft Land Code: “Education, awareness raising and research in the area of land relations, use and protection of lands”, “Economic mechanism to regulate land relations, use and protection of lands”, and “International co-operation in the area of land relations, use and protection of lands”.

CATEGORIZATION OF LANDS WITHIN THE LAND STOCK FOR THE PURPOSES OF REGULATING LAND RELATIONS

(an analytic report in addition to proposed amendments into the new version of the Land Code of Belarus)

It is obvious that effective control and regulation in the area of use and protection of lands require continued analysis of the situation and systemic approach. This includes structuring of an object, that is dividing it into parts, relatively homogenous against certain criteria. In our case the object to be controlled, as well as an object of land relations, is land (lands) considered as a natural resource used as a production asset in agriculture and forestry, and a spatial basis on and within which items of property are located, as well as human life depends on. The most common approach is to divide the land stock into administrative-territorial and territorial units, categories and types, as the state land cadastre does.

Traditionally, land categories are given an important part to play both in land legislation and land law theory, which define these as parts of the land stock with a specified end use and assigned certain legal regime in terms of land use and protection.

However, despite the seeming definitive nature and stability, the institution of land categories remains to be one of the most problematic issues both in the theory and practice of state control over land resources and regulation of land relations (hereinafter – regulation of land uses). With a high degree of certainty it could be assumed, that the original sense and justification for land categories has been lost. This assumption is supported by some research. To be sure, the majority of interviewed land planners, from graduates of the land planning department of Belarus Agricultural Academy to experienced specialists of the state land planning services, have somewhat obscure understanding of the purpose the land categories serve, what they are and how to apply them. More than half fail to understand the difference between the category 'land of agricultural purpose' and agricultural lands, or remain convinced that the land categories are only needed for taking stock of land and that a total area of lands of all categories is equal to a total area of all lands that are included in the land stock of the country. Unfortunately, some legal acts have shown to err in the same manner.

Therefore the issue of land categories remains to be topical, and it requires further research, the results of which would have to be incorporated in the land legislation. Below is a brief overview of the seven categories of lands given in the existing Land Code of Belarus (hereinafter – the Code).

Lands of agricultural purpose. Pursuant to Article 95 of the Code, lands of agricultural purpose include all lands allotted for agricultural needs or designed for these purposes. This definition was left unchanged straight from the pre-reform times and as such has given rise to a number of questions. While the word 'allotted' can only be interpreted as 'allotted according to established procedure for the purposes stated', what does 'designed for' mean? It can be assumed that it refers to one of the following:

- lands that have been allotted and are used for other (non-agricultural) purposes but are potentially fit for being involved in agricultural turnover, and included in this category based on their future agricultural use;
- non-agricultural lands which are included in a land plan along with agricultural ones and are used for agricultural infrastructure (farm yards, farm road network, droves, drainage network, shelter forests, etc.);
- agricultural lands which have been allotted for purposes that are not linked with agricultural needs, but which, however, are systematically used for agricultural production.

To be clear in this matter, however, is very important, as the category 'lands of agricultural purpose' is widely found in the current legislation, including the Constitution.

In our view, lands of agricultural purpose should include land plots allotted for agricultural business. A primary territorial unit (a 'brick') for this category of lands is a land parcel or land use, understood here as one or several land parcels allotted to one land user for serving one purpose. However, one should realize that such land uses, land plots or their parts may fall into other categories as well, at the same time. For instance, they may be fully or partly located within the boundaries of a built-up area, within the boundaries of transport, forest management or other organizations (service land), within water protection zones, national parks, zakazniks, etc., as well as contain bodies of water, wetlands, etc.

Lands of residential areas. Part 5 of the Code is dedicated to this category of land, but lacks a clear definition thereof. It could be construed though that these are supposed to include lands within urban boundaries, land plots allotted for the urban development and other lands as specified in the legislation. However, this is not clear enough – where is the border of this category of land, is it the same as the boundary of a residential area or rural settlement, or does it include only lands that are controlled by city and rural executive and administrative bodies? At the present time it is not one and the same, therefore extra research is needed.

This category of land can theoretically include lands belonging in other categories. Article 10 of the Code seems to support this point of view. To be sure, within the boundaries of a built-up area there may be land plots (land uses) of individuals or legal entities, allotted for various eligible purposes, such as bodies of water, water protection zones, etc. as well as reserve lands, including land in common use within residential areas which are allotted to no one. Article 3 of the Code ascribes lands of gardening co-operatives and dacha development to this category, while those may be located within the urban boundaries.

Urban development documentation, developed and endorsed in accordance with the legislation, should, without doubt, serve as the basis for regulating land uses in built-up areas. Therefore an important task is bringing criteria and procedure for identifying land categories, purposes and objectives of allotting land plots and ones for identifying functional zones in line with each other, by urban planning tools, etc. The above conditions as well as the need for taking stock of and using very wide legal framework, encompassing various legislation sectors, to regulate land uses is the key feature of legal regime for this kind of lands.

It should be noted that this is the only category of land for which the primary territorial unit is not a land plot, land use or land contour or some special zone, but lands within a residential area, which may be an administrative-territorial or territorial unit itself. However, it is needed to have a more clear position here. 'Lands of residential areas, gardening and dacha development areas' should include lands located within the boundaries of towns, smaller settlements, rural settlements, gardening co-operatives, dacha development areas, as well as probably land parcels allotted for individual gardening and dacha development. In our view, the practice of 'delegating' the lands lying beyond the boundaries of a residential area to city, district and rural authorities must be ceased. The legal status of these lands is not clear and including them in lands of residential areas should be avoided.

Lands of industry, transport, communications, energy, military and other purposes. This category seems to be the least problematic from the formation point of view. Article 119 of the Code states that these are the lands allotted to legal entities and individuals for carrying out their respective tasks. Therefore it is obvious that the primary territorial unit for this category of land is a land plot (land use) allotted to an entity for purposes related to one of the above economic sectors, in accordance with the established procedure.

It is also obvious that lands of this category can be simultaneously referred to some other categories. For instance, land use at a manufacturing industry can fully or partly be located within a residential area, water protection area, as well as it can have within its boundaries a body of water, a bog, etc.

A particular feature of this category of land is that it includes land plots allotted as construction sites or for operating objects of various purposes. Traditionally, it has included also lands that do not fit in other categories. As a result, it includes a lot of relatively small land plots (land uses), with a variety of purposes they are used for. It is not very convenient in terms of regulating land uses, especially in terms of defining the competence of authorities, the size of land fees, etc. A set of subcategories (or new categories) within this category are therefore deemed expedient, for instance, lands of manufacturing purpose (land plots hosting industrial, energy production, transport facilities, etc.), social purpose (health care, education facilities, etc.) and others. In many countries commercial land is allotted for these purposes. It could also be proposed that a classification system for end use of property items be used, i.e. transition to a lower level of end use of lands: main end use of land (land category) – purpose of a land plot according to the classification system – the objective of allotment or transfer of a land plot.

Lands of nature protection, recuperation, recreation and historical-cultural purpose. There is no general definition for this category in the legal texts as it indeed consists of four subcategories.

Pursuant to Part 7 of the Code, lands of nature protection purpose include lands of natural reserves, national and dendrological parks, botanical gardens, zakazniks (excluding hunting grounds), natural heritage areas, water

protection strips (zones) near rivers or bodies of still water. Land of recuperation purpose includes lands with medicinal natural factors present (spas, medicinal mud deposits, etc.), lands of recreational purpose – ones usable for recreation and tourism, lands of historical-cultural purpose – ones of historical-cultural areas, memorial parks, burial sites and cemeteries, archaeological sites, as well as the archaeological cultural layer of historical centres in towns and other built-up areas.

It is a relatively new land category, introduced separately from the others, and for this reason it is, probably, so different from them. For example, it is quite difficult to formulate a uniform system of criteria and primary territorial units for this category of land. Lands of nature protection purpose may include:

- a) land plots (land uses) allotted for taking appropriate nature protection measures;
- b) lands of national parks, reserves and other protected areas and sites, not withdrawn from other land users;
- c) water protection zones and strips at rivers and bodies of still water.

The two latter groups may overlap with lands of almost any of the other categories.

Definitions given in the Code do not allow identifying precisely lands of recuperation, recreation and historical-cultural purpose, let alone determining where their borders lie. How does one link an 'archaeological cultural layer' with the Earth surface?

Not surprisingly therefore, that state accounts for this category of land are confined to land plots (land uses) of respective specialized organizations and other objects with identifiable borders. In the meantime it is characteristic of this land category to have the most specific legal status. Therefore it seems particularly important that it be established that ascribing land to this category can only be done based on approved project documentation, that includes maps with clear borders given and explication provided.

Lands of the forest stock. Pursuant to Article 125 of the Code, lands of the forest stock include lands covered with forests, as well as open areas (cuttings, fire sites, glades, etc.) allotted for forestry needs. Such an approach is traditional and quite straightforward. According to it, forest stock lands have always included all land plots (land uses) allotted for forest management, including all lands within their borders, both forest-covered and open, but designed to be used for forest growing and restoration (low-productive agricultural lands, fire sites, cuttings, glades, etc.) as well as lands with items of infrastructure and playing a supporting role in forest management (cuttings, roads, saw-mill, forest units' buildings, wetlands, etc.). Additionally, forest stock lands included land contours covered by forest within the boundaries of other (non-forest management) land uses, i.e. located on lands of other categories.

The situation became controversial with the adoption of the Forest Code of Belarus in 2000. It defines forest as an aggregate of natural and man-grown trees and shrubs, undergrowth, animals and microorganisms, forming the forest biocenose. However, further in Article 4 it is stated that 'all forests as well as forest stock lands not covered by forest (forested and forestless lands) form the state forest stock'. It has given rise to some questions as follows: how does one put together land and plants; does the state forest stock refer to plants or land after all, as the article further states that 'the borders of the state forest stock are defined by means of separating lands of state forest stock from lands of other categories...?'

In addition, Article 5 divides all trees and shrubs into ones included in the state forest stock and ones that are not, i.e. into 'forest' and 'not-forest'. Apparently, this decision has been taken in view of Article 13 of the Constitution which states that forests are exclusively owned by the State. However, in our view, there is an obvious confusion of the concepts 'land category' and 'type of land' here.

Therefore, forest stock land category should include forested lands (covered by forest and those that are not) which forest legislation ascribes to the lands of the state forest stock, as well as forestless lands allotted for forest management needs.

The primary territorial unit for this category of land is a land parcel (land use) of a state forestry unit, as well as a contour of forest lands of the state land stock. Such contours (expanses) can be located within the boundaries of other (non-forest management) land uses, such as, for instance, nature protection agencies, military bases, etc., i.e. be part of lands of other categories. In addition, state forestry land uses may include lands under bodies of water, water protection zones thereof, protected areas, as well as sites and lands belonging in other categories of land. Therefore the abovementioned clause about separating forest stock lands from lands of other categories does not correspond to reality.

To resolve these and other contradictions it is needed to clearly differentiate between the concepts of 'forest' and 'land covered with forest', although people tend to mistake them for one and the same. The aggregate of trees and shrubs and land covered with trees and shrubs are different things. Respectively, it is needed to see the difference between the state forest stock and the lands of the state forest stock. Conceivably, the term 'lands of forest stock' may also be alternatively used, to include all lands covered by trees and shrubs, which in its character of use and purpose are not always attributable to the state forest stock.

Water stock lands. Pursuant to Article 127 of the Code, water stock lands include ones taken up by bodies of water, wetlands, hydrotechnical and water management facilities, as well as ones under rights of way along the banks of bodies of water, arterial inter-farm ditches and collectors.

In accordance with the Water Code of Belarus, which unlike the Forest Code has clear and correct definitions, all waters (bodies of water) located within Belarus jointly form the state water stock of Belarus. Further in the document the term 'water stock' is used, and it is stated that ascribing lands to the water stock and determining their borders shall be done according to the procedure established by the Belarusian legislation. The water stock includes surface waters (bodies of water): rivers, creeks, springs, lakes, ponds, reservoirs, canals, etc., as well as ground waters.

It could be assumed in view of the above that the primary territorial units within this category of land are land plots (land uses) allotted to organizations that operate and service hydrotechnical and other water management works, as well as contours of land taken up by bodies of water and wetlands. The place of wetlands should be clarified though, as the term 'wetland' is mentioned only in the glossary. On the one hand, taking into account the general role and value of wetlands in forming water regime and protecting water resources, these can be ascribed to the lands of water stock, on the other hand, the term 'wetland' is treated differently in various areas of expertise, therefore the issue of taking stock of them and ascribing to some specific category of land remains to be addressed.

Therefore the water stock lands should include ones taken up by bodies of water (and wetlands?) as well as ones allotted for water management operation, including for placement of water management facilities and structures. It is proposed that near-water strips at bodies of water, as well as lands taking up the first band of sanitary protection zones around water intakes and other water management (hydrotechnical) works and structures, according to established procedure, be included in the water stock, too.

Reserve lands. Pursuant to Article 128 of the Code, the reserve lands include all lands that are not allotted to users, provided into lifelong heritable possession, and not privatized. It is important that these lands are allotted based on their fitness for specific purposes, and that they can only be used after they have been transferred to one of the above categories.

The reserve lands are an unused reserve for redistributing lands until they are transferred to other categories. It includes mainly lands unwanted or unused for some reasons, including ones expropriated, according to the established procedure, from land users, landowners or tenants. It has important practical consequences. The definition of reserve lands which is not clear enough has led to the fact that in different regions in the country these are understood differently, as in the case when large bodies of water are ascribed to such lands, on the grounds that they are allotted to no one, although this fact does not permit them to be included in reserve lands.

It is necessary to divide the lands not allotted to use, lifelong heritable possession or ownership into general use lands and reserve lands. These lands shall have a particular legal regime, as, unlike other lands, all powers with regard to administering, owning and using them shall be exercised by local executive and administrative bodies, in the first place by district, town and rural authorities, on behalf of the owner – the State. At the same time, in order to differentiate reserve lands from others, the definition of this category should be complemented with the words "not used for any economic purposes", or otherwise state that general purpose lands are not included.

The review of the existing institution of land categories lends evidence to the need of its improvement. In the first place, it is needed to clearly formulate the objective of dividing the land stock into land categories: to create conditions for raising the efficiency of governmental controls and regulation in the area of using and protecting lands. This objective is attained by the interlinked differentiation of lands according to their main purpose and legal

regime established for them. The main purpose refers to key types of economic uses of the land, linked with its useful properties as a natural resource, production asset, spatial basis, an environment for man, etc. Legal regime is characterized by a legally established procedure and conditions for distributing, administering, owning and using land, the composition and competence of relevant authorities. Therefore, it would be more precise to put it as follows: forming land categories is done in accordance with the land's main purpose which in turn determines legal regime for each of the categories. Moreover, unless there is a specific aim for establishing legal regime, it may not be necessary to set up a separate category.

Obviously, the concept of land categories would 'work', if legislation contained not only procedure for forming these, but also specific peculiarities of legal regime for each of the categories (subcategories). A good enough model would be that in which land legislation, primarily the Land Code, establishes general norms that regulate land relations in regard to the whole of the land stock to each of the categories separately, while specific norms, especially ones dealing with additional conditions and limitations on land uses within the borders of specific land categories are established in separate legal acts belonging in relevant legal sectors (forest, water, nature protection, etc.), which the Code should contain references to. In this manner it would be possible, by direct reference in the Code, to identify for each of the land categories (subcategories) authorized government bodies and their local subordinate bodies which are engaged in regulating land uses within the boundaries of respective land categories.

Within the existing system of authorities in the country the list of land categories and authorized bodies is quite self-evident. A practical implication is the fact that while determining the fate of a land plot (for it to be expropriated, allotted, privatized, sold-bought, etc.), with the end use and type of use of the plot to change too, a specially authorized control body (or its local office) is to be engaged in regulating land relations within a given category of land, apart from regular competent bodies dealing with land resources and land planning. Such an approach corresponds to the existing governmental control structure: general – specialized – institutional (sectoral), and will allow bringing in order to some extent the current procedure for considering and coordinating decisions in the area of land uses.

Another very important issue regarding the methodology for dividing the land fund into categories is as follows: what is the system of land categories designed to reflect:

- 1) the end use of lands according to the way they are actually used;
- 2) the end use of lands established in line with existing legislation;
- 3) the future end use that corresponds to lands' potential fitness and the most efficient way to use them?

Definitions of land categories given in the current legislation do not allow giving one definite answer: being used, being allotted or purposed?

The above formulated objective of dividing the land stock into land categories best fits the second option. The main end use, identified in order to ascribe lands to one of the categories, should be determined based on a clear set of purposes for land plots, as well as other legal provisions that determine appropriate legal regime. The task of ensuring that the actual use matches the designed purpose should be vested in state controls over the use and protection of lands and other regulating mechanisms for land uses.

However, one should remember, that dividing lands into categories is an effective tool within another land use regulation function – planning (forecasting, projecting). Therefore it is needed to differentiate between land categories identified, for example, in an administrative district's land use planning scheme. Once the scheme has been endorsed according to the decision of a respective administrative or executive body, it needs to be implemented, and at this stage land categories start to play an important regulating role. In forming new or redistributing existing land plots any changes in their designed purpose and the ways they are used must correspond to the established land category.

The third issue that requires consideration relates to the spatial aspect of dividing lands into categories. As shown above, at present primary territorial units can be land plots (land uses), contours of land types, zones and objects, administrative-territorial or territorial units, individual land complexes. On the one hand, the fact that so heterogeneous criteria for selecting and grouping of territorial units are used proves that even theoretically the land categories should 'overlap', and, on the other hand, this is indicative of the fact that the existing system is difficult for understanding and thus require updating.

There is predominance of balance calculation methods and stock taking of lands. For this reason the fact that land categories may overlap is not quite welcomed by land planners. At the same time, using the existing land planning norms and land cadastre data of 1 January 2003, one can get a total of the area of all land categories equal to 136 % of the whole land stock of the country. And that without a considerable part of lands of nature protection, recuperation, recreation and historical-cultural purpose, as data on these simply does not exist.

The issue of land category overlapping can be seen most vividly in residential areas. Trying to resolve this common for the post-Soviet countries problem so that land balance remains more or less the same, our Russian colleagues added to the definition of two land categories the clause 'beyond settlements', but the problem remains unresolved as there are still four other categories, with some lands thereof falling within the boundaries of built-up areas.

In the current situation there are two scenarios whereby things may develop. In the first one, the existing procedure for forming the most problematic categories will have to be dropped: lands of residential areas, gardening and dacha development, nature protection, recuperation, recreation and historical-cultural purpose. The first category could be considered, for instance, a type of land, and then the latter be divided into categories. Such an approach has been quite successful abroad in some different forms (urbanized and agrarian territories, built-up and non-built-up areas, etc.). The second category might include only those land plots which have been allotted or transferred for nature protection, recuperation, recreation and historical-cultural activity (locating objects of respective purpose), while legal regime for the rest of lands of these particular purposes located within other categories should be regulated by setting limitations on their economic uses according to the existing legislation.

However, for some subjective and objective reasons forming land categories within built-up areas is a much more complicated thing than beyond those. A considerable part of lands in built-up areas, such as residential blocks, cannot be ascribed to a category at all, as these in many instances are not distributed among users and registered as common use lands, which would need to be made part of a separate category. As concerns reforming the land category of nature protection, recuperation, recreation and historical-cultural heritage, this, too, requires extra research and coordination with state control bodies. It would be rather hard to explain why, for example, within a national park only a minor part consists of nature protection lands (or protected area lands), while the rest does not.

The second option, which is more realistic in the short term, would involve recognizing the fact that land categories do 'overlap'. This will require including in the legislation a legal provision to the effect that a land plot (land use) or a part thereof may be ascribed to two or more land categories. Respective land regimes should apply to them, and, in a contradictory situation, the regime listed first in the legal documents on the land should take precedence. After all, why cannot a land plot have more than one end use, especially in view of the versatility of land (production asset, spatial basis, natural resource, habitat, etc.)? Why should a balance of lands across categories be aimed for? Land categories serve, in the first place, for carrying out legal control of land uses, and the fact that they 'overlap' would only facilitate this, while for taking stock of lands and state land statistics it would be better if 'land user' categories were used.

In the long term, as automated systems for state land cadastre, property registration, rights thereupon and transactions therewith are created and developed, the main territorial unit within the land stock should become a land parcel, or a part of it, as appropriate, to which legal regime and certain limitation should apply, in accordance with the legislation. The end use and legal regime must be the attributes of a specific land plot and not linked with the rightful user/owner. This theoretical presumption is an important condition for successful development of market land relations.

In all cases, be land plots created, altered, annulled, as well as be rights on these be created, altered, annulled or limited (encumbered), it is necessary to establish (justify) their end use according to a classification system for end uses of property items, and then, based on this, ascribe them to respective land categories. This data shall then be entered into the uniform property register, rights thereon and transactions therewith, which is part of the state land cadastre. The decision of a competent body to allot a given land plot its purpose may be adjusted and elaborated further (within a respective category and classified purpose) in view of the objective the allotment is pursued for.

Annex 4

**to the Final Report on
“National Capacity Self-Assessment
for Global Environmental Management in Belarus”**

**Existing capacity and the ways to improve it
in the context of meeting commitments under the three UN Conventions
in Luninets District, Brest Oblast, Belarus**

I. EXISTING CAPACITY AND THE WAYS TO IMPROVE IT IN THE CONTEXT OF MEETING COMMITMENTS UNDER THE THREE UN CONVENTIONS IN LUNINETS DISTRICT, BREST OBLAST, BELARUS

The objective of the project at the regional and local levels was to assess the existing capacity and identify the ways to enhance this capacity in Belarus Polesie (more specifically, in Luninets District, Brest Oblast) to meet the commitments under the UN Convention to Combat Desertification/Land Degradation, as well as identify some of the 'cross-cutting' (synergetic) issues among the three UN conventions (UNCCD, UNCBD, UNFCCC) in this particular area.

The goals of the project included:

1. Develop recommendations for enhancing capacity in the region in the context of the 3 UN conventions.
2. Identify the stakeholders' capacity in improving land uses, refining the monitoring network, widening the system of protected areas, changing the functional profile of available land resources, raising awareness in local populations, etc.

Preliminary assessment of the contemporary environmental situation in Luninets District and existing land uses had shown that the best measure that could dramatically improve the capacity for implementing the 3 UN conventions, through a synergetic effect, was a review of the land use structure. If done properly, it could allow linking considerations under each of the conventions together, so that each convention would benefit as a result.

Luninets District is typical of Belarus Polesie, characterized by a high level of human impacts and plenty of the 'hot spots' of the larger region.

The district has an area of 2.8 thousand km² and is located in the western part of the Polesie. The largest river of the southern Belarus – the Pripyat crosses the district from west to east. The river has a number of tributaries within the district, namely: the Slutch, the Lan, the Smerdz, the Tsna, and the Bobrik. A serious problem both in the district and the wider Polesie region is floods of the Pripyat and its tributaries. The floods occurring every four or five years cause tremendous economic losses. Almost every year up to 80,000 ha are affected by spring floods, with about half of them being agricultural lands.

The district has a high forestation rate, with 112,000 ha of forested land (40 % of the total area).

At January 1, 2004, there were 15 collective farms in Luninets District. Other agricultural enterprises included Mezhlenskoye, Lobchanskoye and the Polesie Pilot Station for agriculture and grass farming on drained lands. The total area of lands belonging to these companies was 125,328 ha. Of these, 78,209 ha were agricultural lands (62.4 %), including arable land – 36,840 ha (47.1 %), hayfields – 16,500 ha (21.1 %) and pastures – 24,750 ha (31.7 %).

Before the land drainage, there used to be 131,600 ha of wetlands (47 %) in the district. Too humid an environment held back social and economic growth, and put obstacles in the way of sustainable and more intensive agriculture.

Land drainage carried out in the district resulted in additional 62,100 ha (almost 80 %) of agricultural land. On an average, each collective farm in the district now has 3,450 ha of lands with controlled water regime, as no other district in the country. There are 50 operational drainage and drainage-irrigation systems and five irrigation systems. According to an inventory of 1998–1999, 41.6 % of the drained lands have a closed drainage network. The drained agricultural lands include 27,770 ha of arable lands (46.2 %), 13,658 ha of hayfields (22.7 %) and 18,670 ha of pastures (31.1 %).

37,963 ha of drained lands (55 %) have one-way drainage systems, put in place 30 to 35 years ago. As a result of the deformation of the channels, changed water regime and physical properties of the drained soils, micro- and mesorelief consequences, etc. most of the drainage systems now fail to perform the functions they have been designed for.

The total length of the channels weeded with shrub-like vegetation with a diameter of stem of below 2 cm is 202.9 km, and above 2 cm – 103.9 km. Shrubs cover 337 ha of drained lands, 5,395 ha are periodically flooded as a result of insufficient drainage, as is, to a lesser degree, another 22,050 ha, the inventory data shows.

ANNEX 4. Existing capacity and the ways to improve it in the context of meeting commitments under the three UN Conventions in Luninets District, Brest Oblast, Belarus

For the last 10 to 15 years, there have been no new land drainage projects, there have been only the cleaning and reconstruction of the existing drainage systems. However, the works are well behind the existing needs, and as a result of this there is a clear trend towards worsening of the quality of lands in land drainage terms. It is especially well felt in extreme weather conditions.

Drained lands in the district are represented by a variety of soils. Peat soils are 23,248 ha (29.7 %) in total, of which ones with a 0.3–1.0 m peat layer take up 91.7 % and only 1,939 ha of peat soils have a peat layer of 1.0 m and deeper.

The peat soils are the best part of agricultural lands in the district. However, they are environmentally unsustainable, and if used improperly they are bound to degrade quickly. Therefore they, especially soils with a thin peat layer, require careful handling.

Growing arable crops or cereals on peat soils leads to an irreversible process of their transformation into organic-mineral or mineral soils.

As much as 34 % of previously drained peat lands eventually have transformed into poor soils, predominantly light ones, as a result of long use. Currently these occupy an area of 12,163 ha, or 15.6 % of all agricultural lands. According to the agronomic laws that govern the use of peaty soils, this area is bound to grow with time.

Over 40 % (31,775 ha) of the drained lands are light soils. Of these 3,913 ha (12.3 %) are loam-sandy soils, and 27,837 ha (87.7 %) are sandy soils.

The large scale assimilation of drained lands has resulted in putting some low-productive soils to use in agriculture. A land optimization project conducted in 2000 identified a large stock of such lands, and recommended that these be put to other kind of use (Table 1).

Table 1

Measures to Optimize Land Use at Farms in Luninets District

Take total lands out of agricultural use, ha	9,330
including:	
<i>arable land</i> , to be converted to:	2,855
fallow land	2,030
natural hayfields and pastures	305
other unused lands to be later transferred to forest stock	519
<i>Improved hayfields</i> to be converted to:	2,746
natural hayfields	2,140
fallow land	329
other unused lands to be later transferred to forest stock	277
<i>Improved pastures</i> to be converted to:	3,722
natural pastures	581
natural hayfields	1,868
fallow lands	1,170
wetlands	9
other unused lands to be later transferred to forest stock	94

One of the most important constituents of more efficient agriculture in this country is properly optimized land uses. Generally, this means finding and implementing the most efficient (optimal) variant(s) of the use of land resources at all levels: nation-wide, oblast level, district level and company level. This is a complex and multifaceted problem: from optimizing the size of existing collective farms, distributing lands between them drawing on their relative capacity, profile, existing business links, etc. to recommendations as to how each given plot of land should be used the wisest way. Solutions come with a varying degree of detail (including with the help of optimization math models and computers) in land planning schemes and land project documents.

Data has been taken from available documents¹: agricultural land registers; crop suitability rating in the by-plot land assessment records; proposals on advisable land uses in each agricultural company in the country aimed at increased efficiency of land at **no- or low-cost**.

The first and rather important stage of work to have land uses optimized is a comparative assessment of productive capacity of agricultural companies and how effectively it is being used. Generally, the amount of agricultural land to be redistributed or taken out of use depends on the quantity, quality, and the level of utilization of **all** production resources. The key ones are well known to be land, labour and productive assets.

Assessment² of production capacity of key agricultural companies in Luninets District was made through an analysis of aggregate resource supply indices in each company as compared against district-average and nation-average production figures.

The key constituents of production capacity are:

- the quality of cultivated³ arable lands (the total cadastre assessment score);
- the average annual number of workers in agriculture per 100 ha of cultivated lands;
- the amount of productive agricultural assets per 100 ha of cultivated lands, in million roubles;
- the amount of energy resources per 100 ha of a technologically comparable area of cultivated land (including field work costs according to cadastre assessment), h.p.

According to the agriculture and food department at Luninets District Executive Committee, there were 18 large companies engaged in agricultural production on January 1, 2004. All the companies (except for Tsna specializing solely in vegetable farming) produce mainly meat and milk, as well as cereals. The companies perform differently: only one third of them perform efficiently, while another third's plight causes clear concern. The problems and goals the companies deal with are similar to ones across all the country: getting higher crop yields, higher milk and meat output, getting more fodder, producing their own formula feed, etc.

The key agricultural companies take up only 34 % of the district's area. Many land uses are spread around, mixed with forests or wetlands, with other companies' land. As at January 1, 2004, the agricultural companies had a total area of agricultural lands of 74,600 ha, including arable lands – 32,800 ha, perennial crops – 0.1 ha, grassland – 38,100 ha (including 33,500 ha of improved hayfields and pastures).

It must be noted that since 2002 these enterprises have gained some fallow lands which have now a total area of 3,600 ha. The Agriculture Improvement Programme⁴ till 2005 set out for converting 3,533 ha of arable and grass land into fallow land, and taking another 625 ha out of agricultural use. Therefore the planned redistribution of lands has been done ahead of schedule and thus the total area of agricultural (including arable lands) is smaller almost in each agricultural farm than according to the Programme. The decreased area of arable lands at the cost of taking out low-productive ones has led to more intensive use of the rest of the lands, i.e. an increased capacity of the companies. Cadastre assessment data has become 'obsolete' too (unfortunately, having it corrected will require separate studies). All this affected the results of the analysis but didn't make them less significant for, if nothing else, proving the feasibility of reducing the area of arable lands at some farms.

A description of production capacity for the period 2001–2003 is given in Table 2, while the constituents of production capacity, partial and gross capacity assessment indices – in Table 3.

Partial indices for individual constituents of the production capacity and aggregate indices for its gross assessment for key agricultural companies were calculated in relation to the district-average and nation-average (only for companies, answerable to the district's agriculture and food authority). It should be stressed that the average level of production capacity in all its constituents, except for labour supply, is lower than the nation-average index: in soil quality – by 15 %, in material assets – by 10 %, and energy supplies – by 7 %.

¹ Prepared by experts of Project Design Institute Belgiprozem.

² There are many capacity assessment methodologies. Here we used the methodology described in the Guidelines on Addressing Land Planning Issues Using Cadastre Assessment, developed by specialists of Project Design Institute Belgiprozem.

³ Arable land area is a total area of arable lands, and ones used under perennial crops and improved grass land. Cultivated lands are intensively used lands and their total area better characterizes production capacity than the total area of agricultural lands.

⁴ Adopted in 2001.

Table 2

Production Capacity Data (on average, for 2001–2003)

	Agricultural Enterprise	Cultivated lands					Annual number of workers engaged in agricultural production	Annual value of production assets, mln rubles	Energy resources by end of the year, h.p.
		Area, ha	Quality						
			Total cadastre assessment score	Work costs index					
				Arable	Not arable	Field work on average			
1	Bogdanovka	2,534	21.1	1.18	1.24	1.23	202	6,986	7.0
2	Lobchanskoje	3,494	25.4	1.20	1.25	1.24	255	7,459	7.7
3	Luninskii	3,456	24.1	1.11	1.12	1.12	297	14,799	13.2
4	Veduta	3,227	20.6	1.12	1.16	1.15	288	14,014	11.7
5	Dzjatlovichskii	6,786	21.8	1.16	1.31	1.28	408	14,851	13.2
6	Vulkovskii rassvet	3,640	21.7	1.17	1.25	1.24	426	7,207	11.0
7	Gorodokskii	4,495	27.0	1.21	1.23	1.23	466	6,677	10.1
8	Dvoretiskii	6,264	29.6	1.19	1.21	1.21	1,000	33,539	22.7
9	Ozernitsa	2,723	21.8	1.18	1.23	1.22	241	7,645	8.0
10	Lakhvenskii	2,007	23.2	1.24	1.33	1.31	164	4,902	5.3
11	Novoye Polesie	6,024	24.5	1.17	1.22	1.21	400	10,596	11.6
12	Rodigerovskii	3,807	24.1	1.25	1.34	1.32	345	9,682	8.1
13	Sinkevichi	4,723	25.6	1.22	1.31	1.29	287	11,718	12.0
14	Chuchevichi	4,998	28.2	1.11	1.15	1.14	363	16,910	12.7
15	Khoetskoje	2,940	23.1	1.15	1.19	1.18	261	8,375	10.0
16	Tsna	209	33.4	1.18	1.26	1.25	214	8,171	9.0
17	Mezhlesskoje	6,836	31.0	1.10	1.13	1.12	475	19,595	14.4
18	POSMZIL	2,541	32.6	1.06	1.06	1.06	343	8,853	11.0
District total		70,494	25.6	1.16	1.22	1.21	6,221	203,808	189.8
Country total		6,430,322	30.1	1.52	1.47	1.48	409,539	20,562,162	22,839.3

Only three companies have the quality of their soils higher than the nation-average, in 10 of 18 of them the total cadastre score is below the district-average. In most of the companies the “quality of arable lands” index varies between 81 to 106 % of the district-average.

Considerably higher differentiation can be seen in labour supply. The labour supply index varies between 0.69 (agricultural enterprise Sinkevichi) to 1.82 (agricultural enterprise Dvoretiski)⁵. In 9 companies this index is lower than the district-average, while in 2 – lower than nation-average. Data on assets is similar: 12 companies are below both the district-average and the nation-average. Agricultural enterprise Gorodokski, for instance, is below the district-average and nation-average by 46 % and 51 % respectively.

Energy resources are below the nation-average in 10 companies, of which 8 have the figure below the district-average, too. Energy supply index varies between 0.71 and 1.84.

There are companies which have the lowest value of the index for all their resources: Dzjatlovichskii and Novoye Polesie.

⁵ The particular indices and the general production capacity index of agricultural enterprise Tsna exceeds the district-average 11–15 times (as noted above, the company specializes in vegetable farming). To ensure homogeneity the company was excluded from the ones being analyzed.

Table 3

Production Capacity Assessment

	Agricultural Enterprise	Key components of production capacity				Key components of production capacity in indices to district-averages					
		Quality cultivated agricultural lands, total cadastre assessment score	Per 100 ha of cultivated agricultural lands			Supply				Total comparative assessment index	
			Annual number of workers	Main production assets, mln rubles	Energy resources per comparable land area, h.p.	Quality of cultivated agricultural lands	Labour resources	Main production assets	Energy resources	By all factors	Less the quality of cultivated land
1	Bogdanovka	21.1	8.0	275.7	271.8	0.83	0.91	0.95	1.01	0.92	0.93
2	Lobchanskoje	25.4	7.3	213.5	215.3	1.00	0.83	0.74	0.80	0.82	0.81
3	Luninskii	24.1	8.6	428.3	414.3	0.95	0.98	1.48	1.54	1.11	1.12
4	Veduta	20.6	8.9	434.3	380.4	0.81	1.01	1.50	1.41	1.11	1.13
5	Dzjatlovichskii	21.8	6.0	218.8	183.7	0.85	0.68	0.76	0.68	0.70	0.69
6	Vulkovskii rassvet	21.7	11.7	198.0	295.7	0.85	1.33	0.68	1.10	1.19	1.20
7	Gorodokskii	27.0	10.4	148.6	222.4	1.06	1.18	0.51	0.83	1.04	1.04
8	Dvoretiskii	29.6	16.0	535.5	362.9	1.16	1.82	1.85	1.35	1.74	1.77
9	Ozernitsa	21.8	8.9	280.8	289.8	0.85	1.01	0.97	1.08	1.00	1.01
10	Lakhvenskii	23.2	8.2	244.2	244.6	0.91	0.93	0.84	0.91	0.92	0.92
11	Novoye Polesie	24.5	6.6	175.9	192.3	0.96	0.75	0.61	0.71	0.74	0.72
12	Rodigerovskii	24.1	9.1	254.3	195.2	0.95	1.03	0.88	0.73	0.98	0.98
13	Sinkevichi	25.6	6.1	248.1	237.5	1.00	0.69	0.86	0.88	0.75	0.74
14	Chuchevichi	28.2	7.3	338.4	268.3	1.11	0.83	1.17	1.00	0.91	0.90
15	Khoetskoje	23.1	8.9	284.9	347.9	0.91	1.01	0.99	1.29	1.03	1.04
16	Tsna	33.4	103.7	3,909.6	4,180.5	1.31	11.78	13.52	15.53	11.90	12.45
17	KUP "Mezhlesskoje	31.0	6.9	286.6	226.0	1.22	0.78	0.99	0.84	0.84	0.82
18	POSMZIL	32.6	13.5	348.4	494.2	1.28	1.53	1.21	1.84	1.50	1.51
District Average (less Tsna)		25.5	8.8	289.1	269.2	1.00	1.00	1.00	1.00	1.00	1.00
Country average		30.1	6.4	319.8	290.7	1.18	0.73	1.11	1.08	0.84	0.82

Total indices of comparative assessment of production capacity are calculated as weighted mean partial indices for some of the constituents. Determination factors were used as weights, and had been determined through correlation-regression analysis of relevant components' influence on performance, in particular on the gross output (on an average, for 2 years at 2003 prices) per 100 ha of cultivated lands.

Of all the above mentioned factors, the most influential on the output is labour supply (pair correlation factor is equal to 0.95!). It is followed by energy supply and asset supply (pair correlation factors are 0.58 and 0.52 respectively). Less important for the output is the quality of cultivated lands (pair correlation factor is 0.36) which is linked to the fact that this value does not vary much in comparison with the others. The said factors 'are responsible' for 90.3 % of any changes in performance (multiple correlation factor is very high – 0.95). Labour supply takes up 70 % within the total variation of the output, while energy supply – 15 %, asset supply – 10 % and quality of cultivated lands – 5 %.

The total comparative assessment of production capacity is 23 % higher than the nation-average. Half of the companies are above the district average, while the remaining half is not (see Table 4 and Fig. 1).

Table 4

The efficiency of using production capacity (factual, on average for 2001–2003)

	Agricultural Enterprise	Aggregate index of comparative assessment of PC to district-average	Gross agricultural output at 2003 prices per 100 ha of cultivated lands, mln rubles, total (on average for 2002–2003)	Gross output index to district-average	Calculated* gross output per 100 ha of cultivated lands, mln rubles	The efficiency of using production capacity
1	Bogdanovka	0.92	17.1	0.49	28.5	0.60
2	Lobchanskoje	0.82	20.0	0.57	24.1	0.83
3	Luninskii	1.11	33.9	0.97	32.4	1.05
4	Veduta	1.11	39.4	1.13	35.0	1.13
5	Dzjatlovichskii	0.70	20.6	0.59	16.7	1.23
6	Vulkovskii rassvet	1.19	56.7	1.62	49.6	1.14
7	Gorodokskii	1.04	42.8	1.23	41.9	1.02
8	Dvoretzkii	1.74	81.5	2.34	81.0	1.01
9	Ozernitsa	1.00	31.5	0.90	33.9	0.93
10	Lakhvenskii	0.92	17.8	0.51	29.7	0.60
11	Novoye Polesie	0.74	25.0	0.72	19.5	1.28
12	Rodigerovskii	0.98	36.6	1.05	36.3	1.01
13	Sinkevichi	0.75	19.5	0.56	16.9	1.15
14	Chuchevichi	0.91	25.7	0.74	25.3	1.02
15	Khoetskoje	1.03	36.6	1.05	32.9	1.11
16	Tsna	11.90	368.2	10.55	587.9	0.63
17	Mezhlesskoje	0.84	24.5	0.70	22.7	1.08
18	POSMZIL	1.50	56.9	1.63	59.9	0.95
	District Average (less Tsna)	1.00	34.9	1.00	31.9	1.09

* Calculated using one of the functions used in the study:

$$Y = -21.0 - 0.003 X_1 + 6.18 X_2 + 0.018 X_3 - 0.02 X_4 \quad (R = 0.95),$$

where X_1 – total cadastre assessment score for cultivated lands;
 X_2 – number of workers engaged in agricultural production per 100 ha of cultivated lands;
 X_3 – the amount of main production assets per 100 ha of cultivated lands, mln roubles;
 X_4 – horse power units per 100 ha of technologically comparable cultivated lands.

The quality of land, labour resources supply, and that of production assets and energy resources are all objective performance factors, and it is not easy to change them or sometimes impossible at all. However, fertile soils and high resource supply are but prerequisites for good performance. Evaluation of gross output (Table 4) shows that only in 11 of the 18 companies the output matches the existing production capacity. Correlation-regression analysis allows making conclusions about the efficiency of using production capacity.

A few special functions had been built to explore dependencies between the output and the listed above factors.

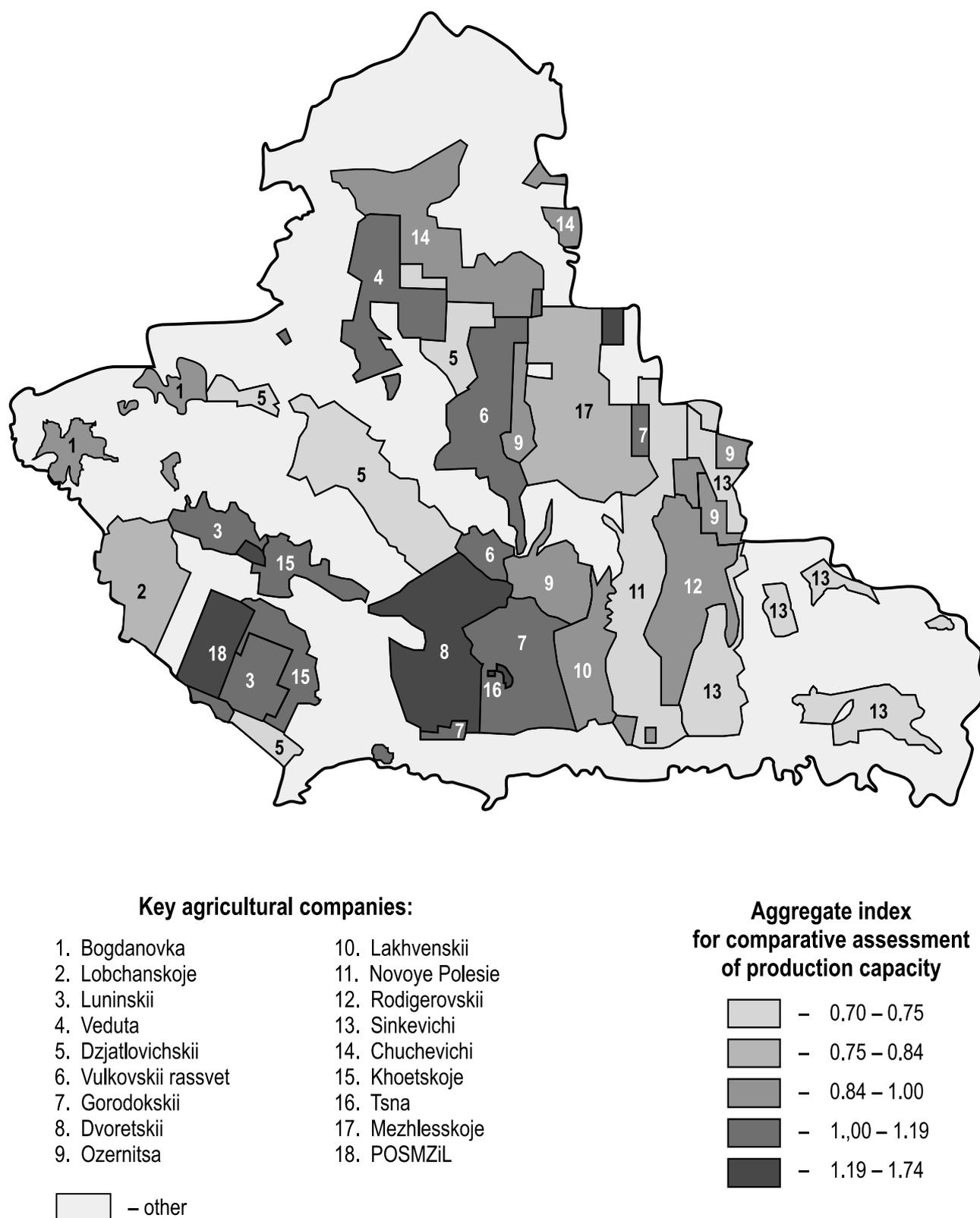


Fig. 1. Assessment of Production Capacity of Agricultural Companies in Luninets district (in indices to the district-average)

The output calculated with one of the equations (see Table 4) represents the level that should be reached at a given collective farm with all the production factors taken into account, such as available resources and the quality of land. The difference between the actual and calculated output may be used in evaluating the farm's performance. If the actual output is lower than the calculated one, it is clear that the farm uses its production capacity less than fully, – and vice versa.

The calculations show that the 'lagging' ones include 6 companies (see Table 4 and Fig 2). These include a few (Bogdanovka, Lakhvenskii) whose actual output is 60% below the output that the companies could possibly achieve, i.e. using their production capacity a bit more than half its size.

Increasing the output is possible through more efficient production. A difference between a company's gross output calculated by a regression equation and an average in the district is due to the fact that production circumstances of the companies deviate from the district-average. Using a production function (regression ratios) it is possible to analyze the potential capacity of a company to increase its output by bringing it first up to the district-average level and then, conceivably, to the level of the best-performing companies, while assessing the influence each of the factors has on the output.

However, in the present conditions agriculture is in, with shortages of manures, pesticides, fuels, etc. etc., one of the objectives, as mentioned above, is to ensure that land resources are used in the most efficient way and that this is done at low cost. One of the ways to attain this is through taking various production factors in optimal proportions and striking a balance between what is needed and what potentially can be provided within the production cycle. The low-cost requirement suggests that this should be done primarily through re-distributing lands between collective farms, phasing low-productive plots out of arable farming and putting them to economically and environmentally wiser use.

There can be different combinations of resource supply (production capacity assessment index P), on the one hand, and the efficiency of using the capacity (capacity efficiency index K), reflecting policy, a differentiated approach to land and other resources.

The farms fall into four categories⁶: (Fig. 3 and 4): 1) $P < 1$, $K < 1$; 2) $P < 1$, $K > 1$; 3) $P > 1$, $K < 1$; 4) $P > 1$, $K > 1$. In the first category, resource supply index is below the district-average, and resources are utilized less efficiently than on average in the district. These companies are in need of reform in the first place. Using the resource supply factors it is possible to calculate the area of cultivated land in these companies that is better to be transferred to other land users so that a balance between the capacity and available resources is ensured. In some companies it can be as much as half of their current arable land (in agricultural enterprise Bogdanovka, for example, it is 1,150 out of 2,534 ha, in Lakhvenskii – 912 out of 2,007 ha etc.).

In the second category, resource supply is lower than the district-average, however, the capacity is used more efficiently than is the case averagely in the district. Such companies could be called intensive type companies. Depending on specific requirements, in such companies there may be required either some reduction (to increase land allotments to the company' members for personal use, for vegetable farming etc.) or some increase in arable lands' area in current use.

The third category companies enjoy ample production resources which are used, however, inefficiently, with the extensive type of economic development prevailing. Stripping such companies of 'extra' lands does not seem to be a good solution as the rest of land would simply receive more resources available. The key task for such companies is to undergo internal reform, institutional improvements, etc.

The fourth category companies include ones in which both production capacity and the efficiency are above the district-average. It is recommended that arable lands in these companies be increased at the cost of companies of the first or second categories. For example, to improve the existing ratio between resource supply and resource utilization in Gorodokskii it is advisable that arable land be increased by 75%. Partly, it can be done at the cost of adjoining farms, such as Ozernitsa and Lakhvenskii (category 1) and Dzjatlovichskii (category 2). The first farm could feasibly transfer up to 270 ha, the second one – 912 ha and the third one – 510 ha.

The analysis allows drawing only preliminary and rough conclusions about how land and other resources are used in the district. A more detailed and complex analysis and calculations are needed, within separate land planning projects for the whole district as well as for land uses in an inter-farm context and those within the farms themselves.

⁶ In enough detail, such an approach, while justifying the land redistribution funds taking into account resources available to agricultural lands, is discussed in D.A. Tchizh's articles and dissertation.

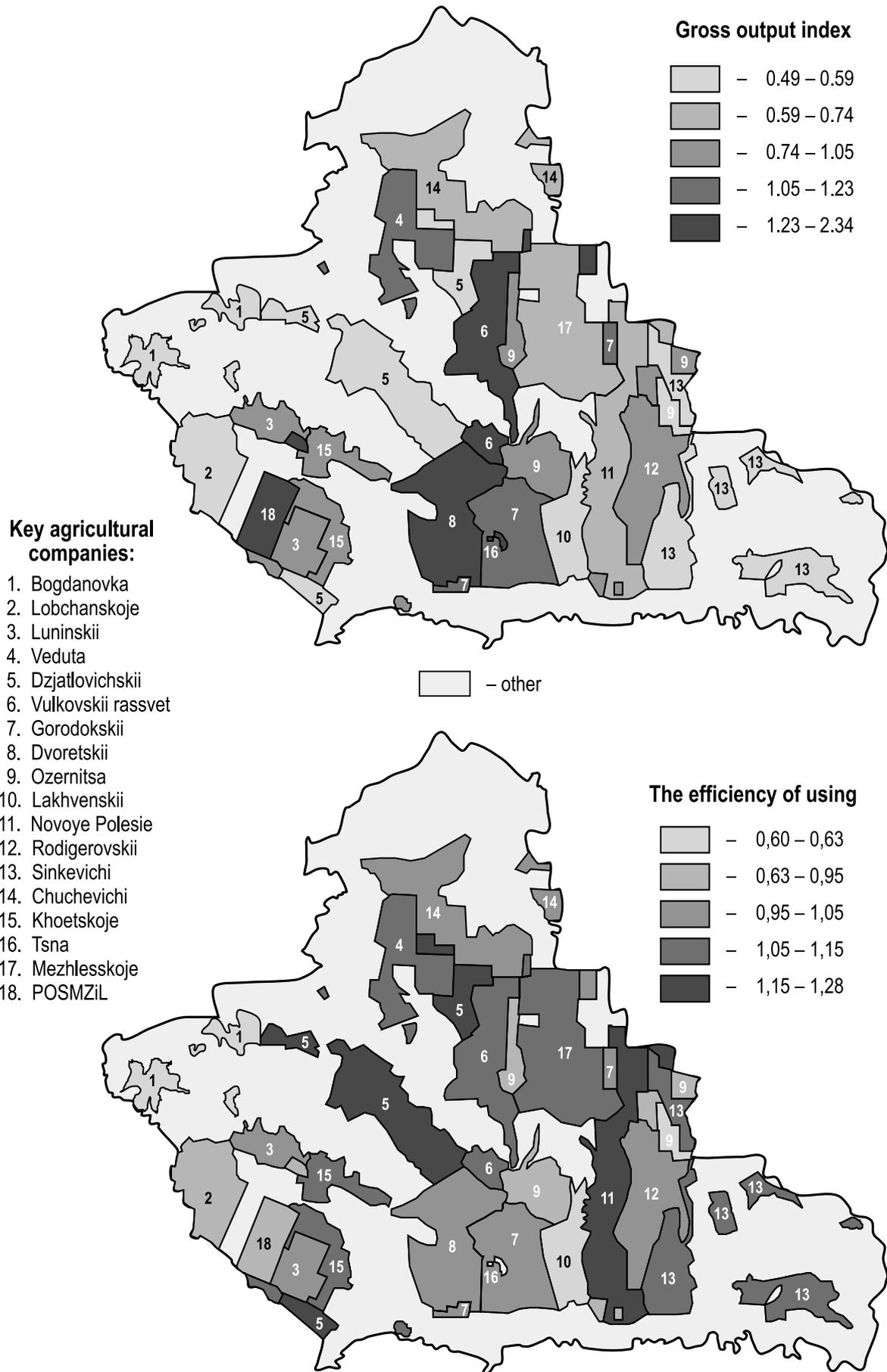


Fig. 2. Assessment of How Production Capacity is Used in Agricultural Companies in Luninets District

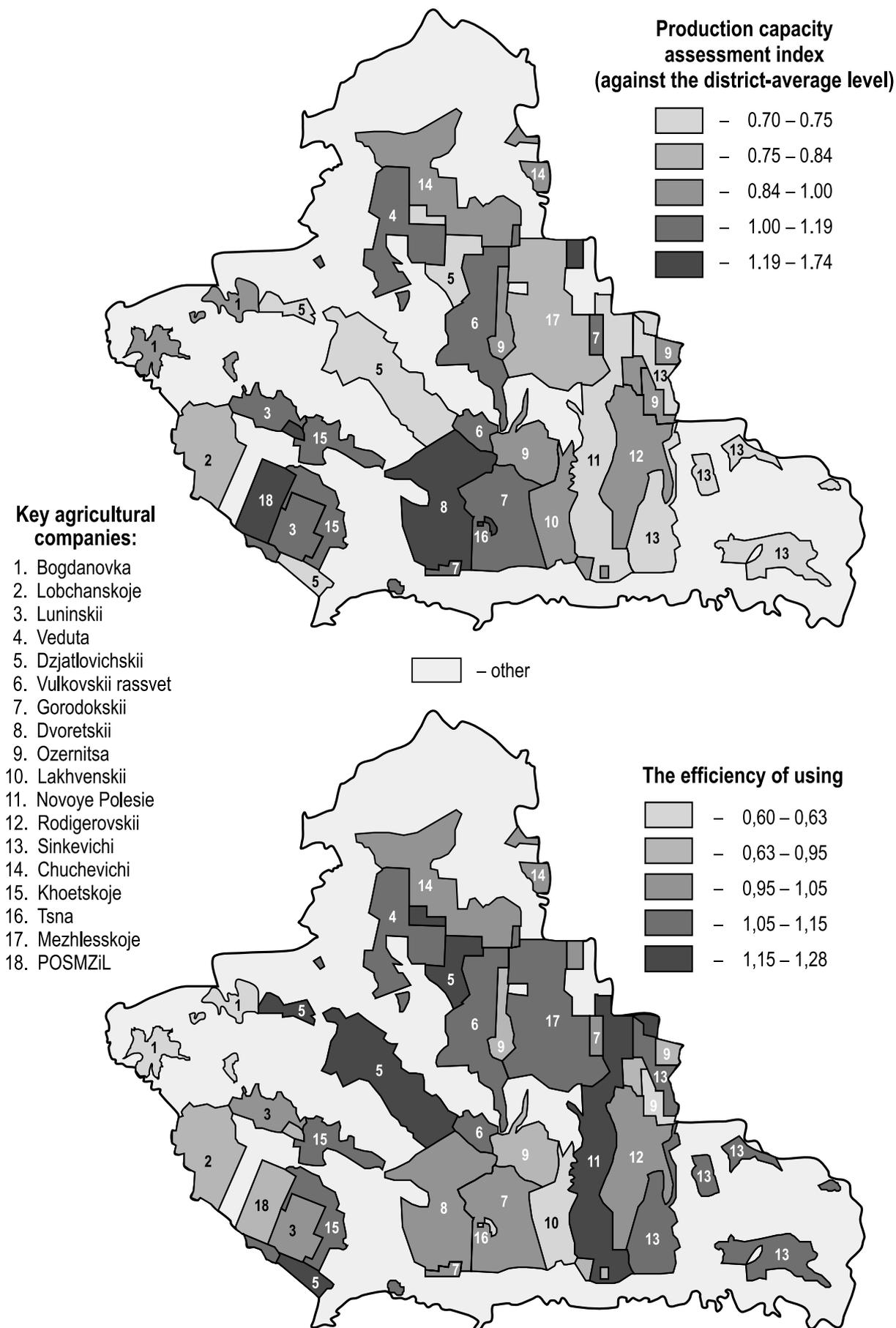
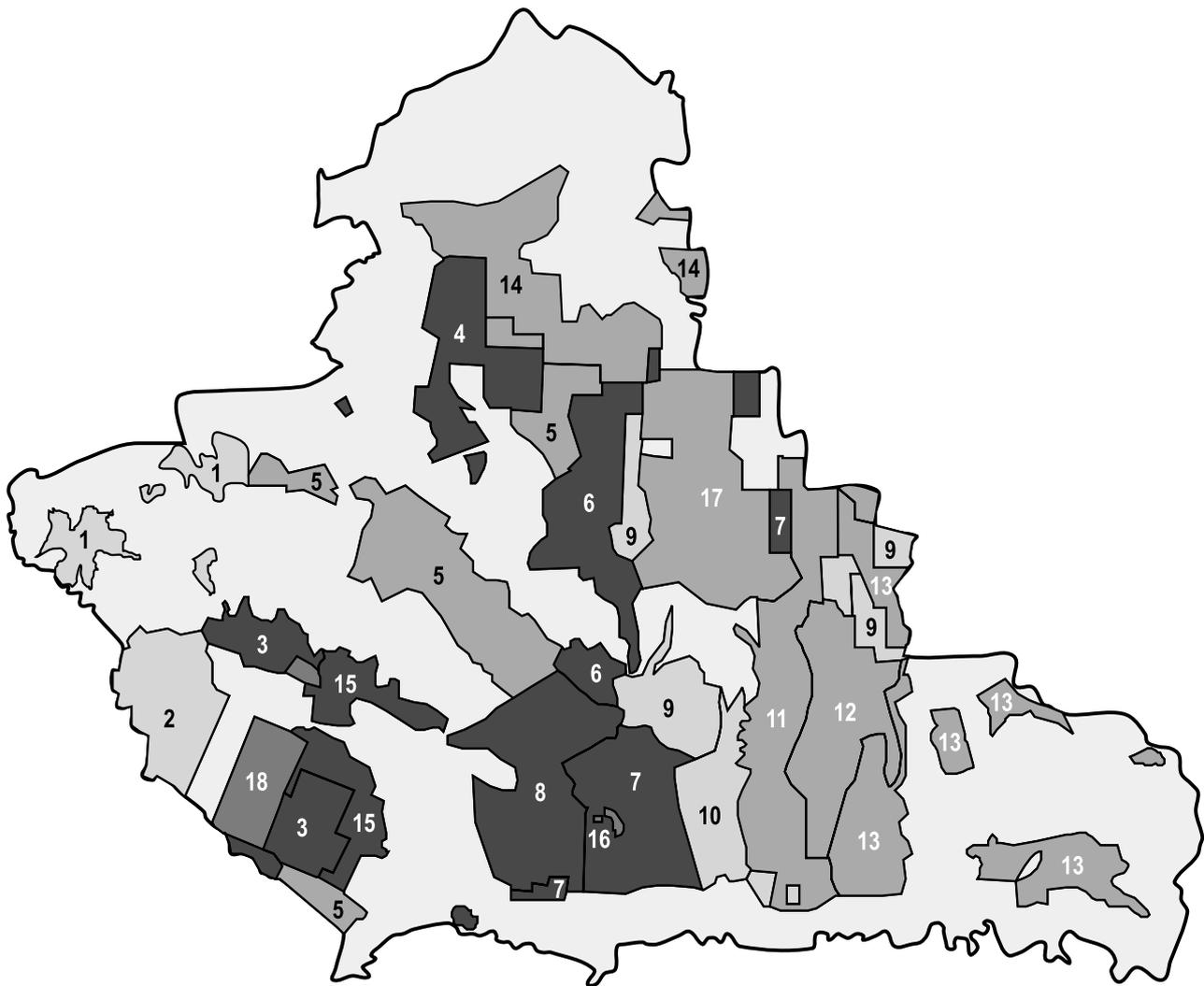


Fig. 3. Comparative Assessment of Production Capacity and the Efficiency of using it in agricultural companies in Luninets district



Key agricultural companies:

- | | |
|-----------------------|--------------------|
| 1. Bogdanovka | 10. Lakhvenskii |
| 2. Lobchanskoje | 11. Novoye Polesie |
| 3. Luninskii | 12. Rodigerovskii |
| 4. Veduta | 13. Sinkevichi |
| 5. Dzjatlovichskii | 14. Chuhevichi |
| 6. Vulkovskii rassvet | 15. Khoetskoje |
| 7. Gorodokskii | 16. Tsna |
| 8. Dvoret'skii | 17. Mezhlesskoje |
| 9. Ozernitsa | 18. POSMZIL |

Ratios:

- | | |
|---|----------------|
|  | - P < 1, K < 1 |
|  | - P < 1, K > 1 |
|  | - P > 1, K < 1 |
|  | - P > 1, K > 1 |

 - other

Fig. 4. Classification of agricultural companies according to resource supply (P) and efficiency of resource utilization (K) in Luninets district

II. ASSESSING CAPACITY NEEDS IN LUNINETS DISTRICT AND IDENTIFY OPPORTUNITIES FOR RAISING THE CAPACITY TO MEET COMMITMENTS UNDER THE UNFCCC

The Polesie region and, in particular, Luninets District is renowned for its unique natural and climatic features, which makes it appropriate to have chosen it as a model district using the example of which some human impacts could be seen in terms of GHG emissions and removals, as well as meso-climate changes. The features that make the district particular is a high forestation rate (forest lands take up 40 % of its total area, or 112,000 ha) as well as a large area of wetlands and waterlogged lands (47 % of the total area, or 131,600 ha).

On the other hand, the district has seen a large-scale interference of man with the environment, which has affected GHG sinks in the first place. Over 62,000 ha, or almost 80 % of all agricultural lands are drained lands with regulated water and air regime, as in no other district elsewhere in the country. There are 50 operational drainage and drainage irrigation systems and five irrigation systems.

At present the state of repair of drained lands is getting worse which has a bearing on both their efficiency in performing their function, and the total absorption of carbon dioxide during the annual biocycle. This has to do with the fact that a considerable proportion of drained lands (the best soils) is indeed peat soils vulnerable to human impact which explains their current prompt degradation, with transformation into other types of soil. This is definitely the case with one of the feasible scenarios of further economic development when no allowances are made for vulnerability to human impact.

Peat soils, if used in arable farming, degrade at an average rate of 1 to 2 cm a year, therefore there is periodic transition of new peat layers from the geologic cycle to the biogenic one. Peat decomposes to release CO₂, ammonia, water and some other end products. Thus decomposing peat is an additional source of carbon dioxide emissions.

Yearly CO₂ emissions in tons per 1 ha vary among different types of agricultural land use, as follows: arable crops – 20.9±3.4, cereals – 12.8±2.3, perennial grass – 7.7±1.5 tons/ha. CO₂ emissions from drained and worked-out peat deposit sites are 21.3–23.6 tons/ha a year. The figure is higher than for cereals and perennial grass because in worked-out peat deposit sites there is very slow accumulation of organic matter in the soil due to poor vegetation cover.

A comparison of the above data with the data on the structure of drained lands in use in the district (arable land – 27,770 ha, hayfields – 13,658 ha, pastures – 18,670 ha) shows that it is hundreds of thousands tons of CO₂ that might be emitted from drained agricultural land in Luninets District yearly.

It is the re-swamping of depleted peat deposit sites and inefficiently used drained peatlands that can feasibly help avoid or mitigate the effects of the dramatic interference with the carbon-cycle-related function of wetlands on large areas. In this case, as peat formation begins, so does the transition of elements from the biogenic cycle to the geologic one, and the wetlands start performing their transitional function again and at full scale.

All the above is evidence that Luninets District is indeed the most appropriate pilot area for assessing anthropogenic impacts on removals and emissions of greenhouse gases. Available information on land use changes, including that on land drainage systems over a long period of time, allows tracking GHG removal and emission trends. In combination with meteorological data, the information creates a basis for establishing a correlation between changes in land uses and changes in mesoclimate in the district, which in turn helps initiate research into exploring the anthropogenic constituent in mesoclimate changes.

In developing a land use optimization programme which would incorporate the best option for land uses, it is advisable to use the GHG emission and sink factors. To this end, along with the assessment of production capacity of agricultural companies and the efficiency of using it, one of the initial stages of work on land optimization should be a detailed inventory of GHG emissions and sinks in the district for the last 40 years.

The results of such assessment must be taken into account while determining the amount of land to be transformed or redistributed, taken out of active agricultural use, and developing proposals on the use of each individual plot of land.

The inventory data could be used in an investment project on CO₂ emission reduction through optimizing land uses and enhancing GHG sinks. Such a project could be prepared following Belarus' accession to the Kyoto Protocol. This project is in line with the requirements of not only UNFCCC, but also UNCCD and UNCBD, and will allow practically using the synergetic potential between the conventions and help enhance capacity at the regional and national levels.

III. OVERVIEW OF REGIONAL ISSUES IN THE LIGHT OF PROVISIONS OF UNCBD, ASSESSMENT OF RELEVANT CAPACITY NEEDS AND OPPORTUNITIES TO FILL THEM

III.1. Brief overview of regional issues in the area of implementing UNCBD in Belarus

Belarus is a relatively small country with the fauna and flora structure being more or less uniform across the country. Protected areas are spread quite evenly, too, and nature uses are commonly similar. Therefore, the list of issues and threats to biodiversity of Belarus as a whole has many common items in every region in the country. There are some regional features of course, but these are mainly confined to Polesie, Poozerie, areas around large cities, etc. A brief overview of main threats to biodiversity known in the country is given below.

Most threats to biodiversity have as their root cause the insufficient inter-institutional coordination in the uses of nature and land in Belarus. The unwise and, as a rule, uneconomical use of natural resources, stemming from this, and a low level of environmental assessment in the public and authorities lead to taking environmentally inadequate decisions in the area of biodiversity.

The large-scale wetland drainage of the last century has affected the country's environment in the most significant way, with the most serious implications for biodiversity. Landscape diversity has changed dramatically as has the hydrological regime over a large area. The results of the first stage of the national wetland inventory study give an idea about the scale of the changes. While in the early 1960's wetlands in Belarus had a total area of 2.399 million ha or 14.2 % of the country's area, following the drainage of 54 % of wetlands, about 1.345 million ha of natural mires have been left intact (6.4 % of the country's area). Such major interferences with the natural environment have had adverse effects on biodiversity both at the regional and global levels. As a result of the drainage campaign, populations of some globally endangered bird species, as well as some IUCN Red Data Book animal species, have dramatically decreased [Collar et al., 1994]: Greater Spotted Eagle *Aquila clanga*, Corncrake *Crex crex*, Great Snipe *Gallinago media*, Aquatic Warbler *Acrocephalus paludicola*.

As a result of fen mire drainage, 11 species of wetland plants have disappeared altogether, while the occurrence of another 115 species has dramatically fallen down. These include some plants registered in the globally endangered species list and the European Red List (33 species). The most important of these are: *Caldesia parnassifolia*, *Carex davalliana*, *Carex heleonastes*, *Cladium mariscus*, *Coeloglossum viride*, *Corallorhiza trifida*, *Cypripedium calceolus*, *Cypripedium guttatum*, *Dactylorhiza baltica*, *Dactylorhiza fuchsii*, *Dactylorhiza incarnata*, *Gymnadenia conopsea*.

In the 1960–1980's, the key impact on biodiversity was the direct destruction of habitats (river, wetlands, water-meadows, alluvial forests, etc.). While earlier biodiversity was spread more or less evenly across the country, in the present-day Belarus biodiversity is mainly preserved in confined natural areas surrounded by man-transformed areas. Most of such areas have been given the status of protected areas. However, even within protected areas some ecosystems are subject to adverse impacts arising from economic activities either inside or in adjacent areas.

The most significant problems of areas of special importance for biodiversity include:

- lack of coordination between organizations engaged in activities involving the use and/or conservation of natural resources;
- absence of protected area management plans;
- absence of management bodies in most of protected areas in Belarus;
- deteriorated water regime due to drainage, re-flooding or provoked flooding;
- agricultural or forestry practices which take no account of the need for biodiversity conservation;
- hunting or angling practices without taking into account the need for biodiversity conservation;
- acceleration of vegetation successions, often in the undesirable direction;
- wild fires (forest or peat fires, grass-burning by local population);
- excessive recreational pressures;
- human-induced land contamination at mining sites or in areas adjacent to these;
- high level and speedy processes of urbanization in some regions;
- fast development of transport infrastructure;
- absence of or fragmented data on the most valued components of biodiversity in some areas.

Key threats to biodiversity inside protected areas are as follows:

1. Inadequate structures for natural resources management.

The absence of management units and protected area integrated management plans (except for national parks and nature reserves) gives rise to all other threats. Protected area management bodies and integrated management plans would allow strengthening coordination between land users and landowners, and institutions responsible for the conservation and sustainable use of natural resources. The lack of such coordination is a serious threat, as many projects and works liable to produce impact on biodiversity (land drainage, dam construction on rivers, planning of agriculture, water management, forest management, etc.) are carried out by different parties without taking account of environmental considerations or undertaking environmental appraisal of new projects.

The lack of water resources management based on integrated management principles is one of the reasons why water regime in many river basins has become upset.

Environmental legislation does not provide for the establishment of bodies to manage protected areas at the level of zakazniks or natural heritage sites. Although such administrations could be established according to the current legislation, their status or mandate are not provided for at all. Apart from that, there is nobody to directly supervise the management of all protected areas in Belarus or coordinate the ways these are managed.

Legislation does not provide for the development and implementation of protected areas management plans. This factor has adverse implications for all types of habitats.

The most important areas of concern in which this factor has been well felt include:

- Ramsar wetlands, zakazniks of national importance: Mid-Pripyat, Sporovsky (management plan has been developed and is currently under implementation), Zvanets (management plan has been developed and is currently under implementation), Dikoe (management plan has been developed and is currently under implementation), Olmany Marshes;
- Pripyatsky National Park (management body exists, however management plan is lacking),
- zakazniks of national importance: Vygonoshchanskoe, Golubitskaya Pushcha;
- proposed Svislochsko-Berezinsky zakaznik;
- proposed Belaya Rus National Park;
- all categories of valued ecosystems beyond the existing specially protected areas.

2. Interference with the natural hydrological regime is another key factor of adverse impacts on biodiversity, including within protected areas. As a result of drainage projects in river catchments, the network of channels (main and branch ones) is more than 2 times as long as the river network (65,000 km of channels vs. 27,000 km of rivers). This has dramatically affected water regime in areas, led to more frequent floods and droughts. Flood control measures on rivers (embankments) and setting up polders in their flood lands have led to an increased level of the water between dams, which affects some wetland birds and fish (floodplain meadows are flooded longer, with the result that there is less shallow water area). This is especially topical in the Polesie Region.

Floods during the vegetation period lead to dramatic changes for the worse in the hydrochemistry of water in bogs, and cause vegetation successions (sedge mires get overgrown with narrow-leaved cattail), changes in local plant, insect and bird species.

Summer floods lead to dramatic declines in the populations of some globally endangered species: Aquatic Warbler, Corncrake, Great Snipe, and some rare plants typical of fen mires and floodplain meadows. A persistently high ground water level due to dam and road construction, etc. leads to flooding and consequent death of whole forest communities, including broadleaved and black-alder ones (e.g. in Pripyatsky National Park).

Persistent low ground water level resulting from land drainage action, as well as in the zones of influence of mines (sand, gravel, peat, etc.) is conducive to peat and forest fires.

Degradation of biotopes as a result of lowered ground water level manifests itself in overgrowth of open mires and floodplain meadows with trees and shrubs. Consequently, habitats of some globally endangered bird species – Corncrake, Great Snipe, Aquatic Warbler – are threatened, as well as those for other species populating open lowland bogs and water meadows, with the result of losses to local phytocenoses of some of their most rare components.

Increased water turbidity, silted spawning sites, as a result of measures to regulate river flow, affect fish populations.

Projects to drain river catchments or construct full-length levies along river banks lacked consideration for biodiversity conservation needs. Although each district in Belarus has its own water resources management plan, the needs for maintaining appropriate water regime within protected areas are overlooked, as a rule.

Abnormal water regime seriously affects floodplain meadows, fen mires and raised bogs, inundated and gallery forests, previously drained forests, bodies of still water and watercourses.

Protected areas where the factor of lower ground water level has been well felt, include:

- Ramsar wetlands, zakazniks of national importance: Mid-Pripyat, Sporovsky, Yelnia, Zavanets, Dikoe, Olmany Marshes;
- Pripyatsky National Park;
- zakazniks of national importance: Vygonoshchanskoe, Golubitskaya Pushcha, Osveya;
- small rivers.

3. Forestry practices which do not take into account biodiversity needs (clear-cut forest harvesting, fires, monocultures, removal of dead fallen or standing trees, forest fragmentation, biological contamination) affect forest biodiversity, which results in flora and fauna losses as forest management becomes more intensive. Forests are distributed unevenly across the country. More than 21 % of forest-covered land is represented by phytocenoses with an impoverished floristic basis, simplified structure and low resistance to adverse environmental factors. In one-species forest plantations the gene pool of forest-forming species is not rich enough, trees tend to have low resistance to diseases and pests, and micro-evolution process is largely impeded. Unsuitable conditions for forest restoration result in declines in populations in which native deciduous species dominate (oak, ash, etc.) as well as fir-tree. At the same time, areas occupied by pine and small-leaved species tend to expand, to the detriment of biocenosis diversity. Mid-age stands dominate among age groups (45.4 % of forest-covered area) with young stands ranking second (27.5 %). The most valued old-age mature and over-mature stands take up 7.9 % of forest-covered land. However, their share in the country-wide forest structure varies greatly, from below 2 % (Bereza District – 1.6 %, Minsk District – 1.8 %) to above 15 % (Rossony District – 17.5 %, Mstislavl District – 15.3 %).

The most adverse impacts on the environment generated in forest management are:

- cutting important for biodiversity forest sections (in floodplains, on slopes, broadleaved tree stands – oak, ash, maple, linden, elm, forest populations in late stages of successions: old-age and different-age stands of fir, pine, oak, black alder, etc.; on wood grouse's display-grounds, permanent nesting sites of rare bird species; habitats of rare plants and animals: chiropters, dormice, badger, bear, etc.);
- clear-cut forest harvesting in water protection zones, as it leads to soil erosion and water pollution;
- predominance of clear-cut harvesting in key felling methods (86.9 % of the total area of harvested timber is harvested by this method);
- invasion and naturalization by invasive species (northern oak, ash-leaved maple, dwarf serviceberry, etc.), which may create obstacles for the reintroduction of indigenous species;
- cutting of old hollowed trees and almost total removal of dead wood from the forest in the course of harvesting and sanitary thinning;
- excessive use of land clearing by fire following harvesting, killing or otherwise harming animals in the first place (insects, small mammals, some birds species);
- wide use of one-species material – forest or pine – that leads to impoverished diversity of flora and fauna;
- lack of information about habitats of the majority of protected animal and plant species, and, linked with that, adverse human impacts on their populations in the course of forest management activities;
- in some places: overgrazing by livestock in especially valued forests, as a result of which many plant species sustain losses, as do undergrowth and underwood, and soil erosion takes grip.

One reason of not quite adequate forest management practices is to a very high degree the absence of appropriate biodiversity conservation traditions. Forest planning and practical forest management actions pay little attention to the need for biodiversity conservation even in forests within protected areas, let alone ones beyond those. In protected areas (except for national parks and nature reserves) forest management planning regulations are the same as elsewhere, while it should be an obvious requirement that forest planning in protected areas be of special quality, focused on biodiversity conservation needs.

Forest legislation misses specific provisions requiring unconditional observance of the principles of environmentally sustainable forest management.

The awareness of forest workers about the principles of sustainable use of nature and the need for the conservation of biodiversity is generally low.

Specially protected nature areas require specialized biodiversity-focused forest planning which is not the case now (with the exception of the national parks and the biosphere reserve).

Forest certification as a powerful incentive for “greening” forest management is not promoted sufficiently, regardless of whether international or national systems are being used.

Habitats mostly affected by inadequate forest management practices include, first of all:

- fen mire forests (ash, black alder);
- broadleaved forests;
- uneven-aged fir forests;
- communities of fir-hornbeam-white alder forests near the boundaries of habitat; mixed-age pine forests on dry sands (especially on dunes).

The most important and concurrently most concern-causing protected areas, within which forest management has been found inadequate, include:

- Ramsar wetlands, national importance zakazniks Mid-Pripyat, Zvanets, Dikoe, Yelnia, Olmany Marshes, Duleby Islands;
- National Parks Pripyatsky and Belovezhskaya Pushcha;
- planned zakaznik of national importance Svislochsko-Berezinsky;
- planned National Parks Belaya Rus and Surazhsky.

4. Unsustainable land uses (agriculture, hunting and fishing) in areas of importance for supporting biodiversity and adjacent territories bring about considerable impacts on biodiversity. In particular, soil cultivation within protected areas can lead to the disappearance of rare plant species. Such practice is of a special concern when it takes place on ‘isles’ of mineral soils in the midst of fen mires or river floodplains. Despite bans on cultivating soil in protected areas, such patches of mineral productive soil are known to be cultivated on a large scale. The reason why this is done by local communities is that soils on such patches are of much better quality than those on surrounding, often waterlogged, peatlands.

Machine-mowing on meadows without following the rules for protecting biodiversity (bird-deterrent equipment, mowing from the centre of the field outward, etc.) causes populations of meadow birds to decline, including the globally threatened species, such as Corncrake and Great Snipe.

Improper hunting practices (excessive killing of animals, insufficient hunting control measures, poaching) have led to reduced populations of some valued game species (Elk, Otter, Capercaillie, Beaver) as well as rare protected species – European Mink, Badger. Many of the existing protected areas, owing to their high environmental capacity, could become major game species reproduction centres, given a good management system. However, most of the protected areas in the country lack an appropriate management body that could plan and take required measures.

The introduction of new species (Raccoon Dog, American Mink, Muskrat) has resulted in their forcing indigenous species out (European Mink, Forest Polecat).

Unwise fishing practices (excessive catch, lack of protection and reproduction measures, poaching) have led to losses in fish resources, some undesirable changes in species diversity. The introduction of non-native fish species has, in some cases, resulted in dramatic drops in native fish populations. Stocking bodies of water with new fish species started in the 20th century and has been done most extensively for the last 30–40 years. As a result the stock of fish has changed considerably, coupled with losses in native fauna and flora.

Commercial and amateur gathering of berries (especially cranberry) leads to some animals and birds experiencing a shortage of food, and to the disturbance of soil cover, especially when scoop collectors are used. The collection of wild berries and other useful plants is done, as a rule, without prior planning or control measures, which leads at times to harvesting excessive amount of berries or edible fungi, and damaging the soil by trampling.

The fact that hand grass mowing on natural grasslands is either no longer practiced or has significantly declined is one of the reasons of invasion by shrubs and degradation of biotopes of some rare plant and animal species which choose to breed only on open fen mires or grasslands. Prior to the large-scale drainage campaign grass to feed livestock came mainly from natural grasslands, i.e. lowland mires and floodplain meadows. A considerable part

of these grasslands used to be mowed manually by local farmers, which prevented shrub encroachment. Since the advent of drained grassland which allowed machine mowing, manual grass cutting has dropped dramatically, or no longer practiced, e.g. on lowland mires. This has led to the encroachment of shrubs and low trees into open mires.

Inappropriate practices in using land and natural resources are often caused by low awareness shown by local authorities or populations.

The factor of inadequate land uses has a negative bearing on virtually all types of habitats, ecosystems and natural areas.

To give some local examples, it is worthwhile mentioning the harvesting of chanterelle in the most predatory manner in Grodno and Brest Oblasts, or of cranberries in Polesie, Minsk and Grodno Oblasts. When the berry picking season starts, fires hit wetlands, coupled with their soils being trampled down by gatherers, in zakazniks Yelnia, Olmany Marshes, Golubitskaya Pushcha, Prip'yatsky National Park, Polesie Radiation and Ecology Reserve. The ploughing of mineral isles in the middle of fen mires is an issue of concern in some zakazniks, namely Sporovsky, Zvanets, Dnepro-Sozhsky and Mid-Prip'yat.

5. Fires are one of the key impacts on biodiversity. Fires due to spring grass burning, when occurring during high water in fen mires or floodplain meadows, help prevent invasion by shrubs and reed and provide room for sedge populations which are ideal habitat for some rare and globally threatened species of flora and fauna.

Peat fires, especially in areas where the ground water level is low, lead to dramatic changes in local flora, destroy habitats for many birds, including globally threatened species, like Corncrake, Great Snipe, Aquatic Warbler, as well as result in significant CO₂ emissions.

Forest fires lead to dramatic changes in habitats and losses in many components of biodiversity as a result of direct destruction of animals and plants.

Key causes of forest or peat fires are grass-burning and unsafe handling of fire. Grass-burning is widely practiced to improve the productivity of grasslands, especially those which have not been mowed the previous year. The frequency of occurrence of fires and their scale is linked with the level of local ground and surface water.

Most of large fires occur on peatlands where the ground water level is low.

Long draught spells occur in Polesie occasionally, causing the groundwater level to decline and creating conditions conducive to fires.

Low environmental awareness leading to unsafe handling of fire in a natural environment is one of the key causes of fires. One important reason why damage from fires is generally high is a lack of fire control measures to protect natural areas (forests, peatlands, meadows) such as fire detection, availability of fire-extinguishing means, etc., and very often also lack of coordination between institutions concerned (local offices of Ministry of Forestry, Ministry of Emergencies, local fire brigades, etc.).

Key habitats frequently affected by fires include bogs, especially drained, forests (especially pine forests on dry sandy soils, as well as coniferous forests under 30 years old), open grass- or shrub-covered floodplains.

Important areas to be mentioned in relation to the fire issue are Ramsar wetlands, zakazniks of national importance Mid-Prip'yat, Zvanets, Dikoe, Olmany Marshes, Yelnia, Sporovsky, Vygoshchanskoje, Prip'yatsky National Park, planned national zakaznik Podveliky Mokh, and Polesie Radiation and Ecology Reserve.

6. Lack of environmental education and the resultant low level of awareness in the public and officials are among the most significant reasons for inadequate decisions-making in terms of supporting biodiversity and inappropriate land use practices. A low awareness level in the public and officials is due to deficiencies in the former and, partly, in the current education systems in the country, including promoting the importance of environmental friendly technology, the importance of protected areas etc., as well as of the conservation of biodiversity and sustainable use of natural resources. As a result, in some areas there is unauthorized action by local populations, or management decisions are taken that run counter to biodiversity conservation needs. Although it is a normal practice that management in protected areas follows special land use guidelines, local populations and land users are often poorly informed and thus may act in violation of the rules set for protected areas.

7. Pollution of wetlands and forests by industrial, construction or domestic waste is one of the elements of considerable negative impact on animal and plant diversity.

An increased mineral content in water polluted by runoff from agricultural and urban areas leads to eutrophication and changes in species diversity. Pollution of water by toxic substances in concentrations resulting in losses in fish and aquatic invertebrates does not occur on a large scale. In heavily polluted sections of rivers downstream of large industrial centres aquatic fauna undergoes significant changes though, with rheophil fish dropping out completely from river communities (Dace, Trout, Gudgeon, etc.).

Towns and cities are among the most significant sources of adverse impacts on the environment. Polluting emissions, wastewater discharges, house building projects, unregulated recreation are all examples of adverse urban impacts on biodiversity.

Despite a decline in polluting emissions reported since 1980, chemical industries, power plants, heavy machine building factories, transport, etc. remain the largest sources of air pollution. In 2001, total emissions from stationary sources in major cities were as follows: Novopolotsk – 53,600 tons per year, Minsk – 35,900, Novolukoml – 14,800, Gomel – 14,400, Grodno – 12,900, Mogilev – 10,700. In some cities elevated levels of dust, carbon monoxide, phenol, ammonia, carbon bisulphide, nitrogen dioxide, and formaldehyde in near-surface air is registered, especially in periods of unfavourable weather conditions. High levels of contaminants in the air are regularly registered in Mogilev, Gomel, Orsha, Pinsk, Mozyr, Minsk and Bobruisk. Among industries, the largest polluters (by gross emissions) are Naftan Oil Processing Company and Polymir Chemical Company in Novopolotsk, Novolukoml power plant, Azot Chemical Company in Grodno, Power-and-Heat Station No 2 in Mogilev, Power-and-Heat Station No 4 in Minsk, oil refinery in Mozyr, Belaruskali Company in Soligorsk, etc. However, the largest air polluter remains transport accounting for more than 70 % of all emissions.

Environmental pollution coming from cities and large industrial sites affects surface waters in the most serious way. The municipal services sector accounts for the largest proportion of wastewater (some 70 %) that pollutes the environment. Industries and agriculture account for 27 and 3 %, respectively. Municipal wastewater discharged into bodies of water carry about 80 % of organic matter, petrochemicals, ammonia nitrogen, nitrates and nitrites that pollute surface waters. Minsk City is by far the largest polluter. Municipal and industrial wastewater discharges to the Svislotch river were in excess of 272 million cubic meters in 2000. The said river is one of the most polluted rivers in the country. The integrated pollution index (IPI) for Svislotch downstream of the Minsk City aeration station was estimated at 3.0, which placed the river within the 'polluted' range. Berezina is another river that is under considerable pressure, as it receives polluted water from its tributary Svisloch and wastewater from the towns of Borisov, Bobruisk and Svetlogorsk. Berezina's IPI near Bobruisk was 1.2–1.4, while downstream of Svetlogorsk 1.6–1.8 (moderately polluted). Sozh is another example of a polluted river in the country, receiving effluents from industries and municipal services in Gomel. Sozh's IPI was 1.5–1.6 (moderately polluted). The key contaminants whose high levels are registered in the Pripyat river remain nitrites and petrochemicals. Downstream of Pinsk the river's IPI ranged from moderately polluted to polluted (IPI = 1.2–2.6). Other heavily polluted rivers include Neman and Western Dvina (downstream of Vitebsk and Novopolotsk).

The Dnieper river is fairly polluted within the country, receiving wastewater from industries in Orsha, Shklov, Mogilev, Bykhov, Rechitsa and Loev. As a result, the IPI was as high as 1.7 in some sections.

A considerable portion of Belarus has been affected by the nuclear fallout. The level of Strontium-90 contamination in Bykhov and Buda-Koshelevo Districts is as high as 80 Cu/km², Rogachev District – 14 Cu/km²; Gomel, Zhlobin and Mogilev Districts 5 Ku/km². The nuclear contamination does not have direct impacts on biodiversity. However its indirect effects are significant. As a rule, there are not many human impacts in contaminated areas which lead to increased populations of some rare and economically valued species. Visible changes in biodiversity in the affected areas are linked with changes in biotopes taking place in the absence of human activities.

Thus, the pollution sources of natural ecosystems that lead to losses in flora and fauna include:

- runoff from agricultural fields into bodies of water;
- soil cultivation in near-water areas;
- insufficient treatment of industrial and municipal effluents, and industrial emissions;
- fast growth in the car fleet, a considerable share of which are 7 to 15 year old cars;
- a lack of capacity to treat municipal wastewater;
- runoff from animal farms; inadequate manure application;
- failure to operate drainage systems in line with design operation regime;
- unauthorized dumping of industrial, domestic and construction solid waste;
- low environmental public awareness.

Littering affects more or less all types of natural areas, especially in the vicinity of urban centres (Minsk, Oblast centres, Novopolotsk, Polotsk, Borisov, Zhlobin, Bobruisk, etc.), as well as within or near recreational areas.

The most important protected areas which are thought to be under the highest threat of contamination include: Ramsar wetlands; zakazniks of national importance Sporovsky, Mid-Pripyat, Olmany Marshes; Polesie Radiation & Ecology Reserve; national parks Narochansky and Braslav Lakes; planned national Dnieper zakaznik; landscape zakazniks Vydritsa, Strelsky, Mozyrskie Ovrage, Staritsa; biological zakazniks Lebjazhi, Vetkovsky, Zamkovy Les, Shabrinsky, Stiklevo, Glebkovka, etc.

Considerable transforming effects on the environment lie with mining and related industries. At present there are over 600 explored deposits of useful mineral resources, out of which 300 are being developed, with about two thirds of the latter located in the south-east and south of the country. Most of the deposits are non-metallic minerals: clay, sand-gravel mixtures, sands, carbonate materials, building stone. The extraction of the said non-metallic minerals is by open-pit mining.

Shaft mining is used to develop the largest in Europe potassium salts deposit – the Starobinskoye – for the development of which the Belaruskalii Company is responsible. Table salt is mined at the Mozyr deposit by a method consisting in pumping brine out of the mines intentionally flooded beforehand. Over 60 oilfields have been discovered in the basin of the Pripyat, of which 38 are being developed.

An area of about 120–130 km² is currently taken up by the concern-raising Soligorsk industrial zone where the potassium salts mines are, with a considerable part of the area being occupied by landfills containing at present about 350 million tons of salt mining tailings and waste ore. Surface and ground waters have been polluted over a large area.

Over 600 ha are contaminated as a result of drilling test wells for oil. The key polluting media here are waste brines, wastewater and drilling sludge, being discharged in large quantities into open bodies of still water or water courses. Drilling waste landfills are liable to release polluting effluents on a permanent basis.

8. The disturbance factor is important with some animals. The presence of man in some habitats can lead to losses in the populations of animals that are sensitive to it (game species, Spotted Eagle, Osprey, Golden Eagle, etc.)

The reasons for the disturbance factor to have increased in recent years are as follows: an increased density of road networks with simultaneous growth of the number of cars, population density growth; increased human pressures on natural ecosystems; unauthorized activity (including in protected areas): soil cultivation, illegal alcohol production, poaching, collection of excessive amounts of berries, edible fungi, valued plants, etc., hunting with hounds, poor awareness of local populations of the adverse effect on biodiversity the disturbance factor can have. The disturbance factor is aggravated by the lack of appropriate rules for visitors to biodiversity-rich areas (predator birds' nesting sites, display grounds, capercaillie mating places, etc.). Some human activities are of concern especially, such as: forest felling (all types of), cattle grazing, military action (within firing ranges, etc.).

The disturbance factor seems to be the heaviest in relation to biodiversity of rivers, mires and wetlands, while it is found to be less dramatic in regard to forests.

9. The current high and growing urbanization in the country is another very important type of impact on biodiversity.

One of the most indicative parameters of the quality of the environment is the ratio between the area of highly assimilated (urban, agricultural) lands and that of lands remaining largely intact. For a considerable portion of the country this ratio cannot be assessed as a positive one.

On January 1, 2001, there were 0.92 ha of agricultural land per 1 inhabitant on average in Belarus, including 0.61 ha of arable land, for Mogilev Oblast these two values were 1.2 and 0.84 ha, respectively.

The growing threats to valuable natural landscapes can be best seen in the expansion of cities. Since 1990's there have been intensive private house developments within a radius of 5 to 20 km off major cities. Natural areas are affected through this. Only for the decade 1992 to 2001 the urban areas in Belarus have increased by 22,000 ha, having achieved 265,600 ha in total. Cases of resulted degraded natural ecosystems and destroyed habitats have been registered.

10. The development of transport infrastructure in the country poses threats both directly and by means of cutting off the routes of migration for animals. A threat to biodiversity is posed by the development of large transport international links: No 2 (Berlin – Warsaw – Minsk – Moscow) and No 9 (Helsinki – Saint-Petersburg – Pskov – Vitebsk – Kiev – Kishinev – Plovdiv, with branch No 9B: Minsk – Vilnius – Klaipeda). Urban areas adjoining the transport links benefit from economic and spatial development point of view, while associated natural complexes come under additional pressures due to increased traffic and the development of auxiliary infrastructure. Particular concern is raised in view of likely implications for nearby protected areas and important wetlands. In particular, the area of influence of the No 2 transport corridor covers such zakazniks of national importance as Priluksky, Seliava, Vygonoshchanskoe, Seliakhi, Sporovsky, Buslovka, Mikhalinsko-Berezovsky, Denisovsky, Baranovichsky, Prilepsky. Within the range of the No 9 corridor lies transport and engineering communications in the valleys of rivers: Berezina, Dnieper, Sozh, impacting directly on the Svislochsko-Berezinsky natural complex (a would-be national park), zakazniks of national importance Babinovichsky, Buda-Koshelevsky, Dneprovsko-Sozhevsky, Staritsa and Smychok.

III.2. Ways to Enhance Capacity to Implement UNCBD in Belarus

Each region, oblast or district will have its own list of priority biodiversity issues. It will depend on how intensive and distributed business activities are in a region, whether or not there are protected areas, special climate features, special features of plant and landscape diversity, types of land uses, existing practices in agriculture and forestry.

Therefore there is no one and only way to address biodiversity and, respectively, enhance the capacity to implement UNCBD.

In fact, each oblast and district need their own strategy and action plan for conservation and sustainable use of biodiversity.

However, some key lines along which the capacity to implement UNCBD can be raised are as follows:

- environmental legislation should be strictly followed, while relevant authorities should ensure proper law enforcement;
- everybody should meet rules set for protected areas;
- action should be taken to ensure environmental optimization of land uses (renaturalize disrupted or degraded lands; phase poor quality lands out of agricultural use and their transfer to more environmentally appropriate types of use, etc.);
- enhancement of the environmental factor in agriculture (e.g. put to wider use shelter forests, multi-species perennial grass mixtures, biological plant protection, consume less energy and fuels; ban the practice of growing arable crops on peatlands, on floodplains, etc.);
- enhancement of the environmental factor in forest management (e.g. increase the share of non-clear-cut forest harvesting techniques and the efficiency of forest conservation and protection measures; develop forest certification; take measures on identifying key biotopes, and lands in need of special protection measures; widely use environment friendly technology and techniques, reduce the share of one-species plantations, etc.);
- provision for sustainable hunting and fishing (including bioengineering measures; increasing populations of game species; measures to fight poaching, population control measures against alien animal species, etc.);
- prevention measures to check growth of GHG emissions and reduce the most hazardous of those;
- take measures on eliminating unauthorized solid waste dumping sites in natural areas and prevention of new ones from appearing;
- development and implementation of pro-active preventive measures to reduce the level of adverse impact of major transport links on animal diversity (including measures to arrange for special passages across roads for hoofed animals; fences, measures to prevent runoff from roads from entering bodies of still water or watercourses);
- awareness raising with local communities and with personnel of organizations involved with land uses;
- involvement of students, members of hunting communities and other categories of the population in measures on the conservation of biodiversity, studying and using it in a sustainable way.

III.3. Brief Description of the Pilot Study in Belarusian Polesie within the Larger UNDP-GEF NSCA Project

Luninets District, Brest Oblast, had been selected as a pilot area for the study, as most regional biodiversity issues were found here, as well as ones related to sister UN conventions (UNFCCC and UNCCD).

The objective was to assess the existing capacity at regional and local levels and identify some solutions for raising it in Belarus Polesie (taking Luninets District as an example) for fulfilling obligations under UNCBD, as well as addressing some of cross-cutting issues between the three UN conventions.

Some key tasks the project was designed to do:

1. Describe the existing capacity to implement UNCBD at regional and local levels (including the description of biodiversity, uses of forest, animal and plant resources, key users of biodiversity in the region, environmental policy and measures taken locally, protected areas, stakeholders, etc.).
2. Identify the capacity of the stakeholders in terms of their potential involvement in implementing UNCBD at local level, aimed at improved land uses, developing and operating a biodiversity monitoring system, taking forward the local PA system, changing land use profiles, as required, and raising public awareness in biodiversity-related issues.
3. Develop recommendations on raising capacity to address both UNCBD-specific issues and cross-cutting ones among the three UN conventions, including ones mentioned in the main report (chapter 10.2).

Preliminary assessment of the existing environmental situation in the district, land uses found here, interviews with directors of local agricultural companies, the Luninets District forest unit and specialists at district authorities suggested that the most urgent measures to be taken in the district to support the implementation of the three UN conventions were:

- revise the structure of land uses so as to increase the percentage of land kept in close-to-natural conditions;
- make agriculture and forestry more environment and biodiversity friendly.

Other areas in which the Luninets project took action were:

- giving an appropriate role and place to protected areas as a means to support the implementation of the three UN Conventions;
- developing the concept and taking further practical action to launch a local biodiversity monitoring system;
- promoting environmental education and awareness in the thematic areas of the three conventions;
- mobilizing local (oblast and district level) environmental NGOs.

This will allow linking at the local level the objectives of the conventions in the form of specific action and steps and would hopefully help combat land degradation, protect ecosystems and habitats, and contribute to preventing further climate change.

Luninets District is a typical one in Belarus Polesie, and business activities are high here and virtually all problems of the whole region can be found here. It has an area of 2.8 thousand km². The main rivers here are the Pripyat – the largest river in southern Belarus, with its tributaries: Slutch, Lan, Smerdz, Tsna, and Bobrik. The rivers and their expansive floodplains are rich habitat for fish, aquatic and near-water animals and plants. High floods occurring every four to five years are a serious problem both in the district and in the whole of the Polesie, as they cause significant economic losses. Up to 80,000 ha of land are flooded virtually every year, of which nearly half are agricultural lands.

The district is richly forested, with forest lands taking up 112,000 ha (or 40 % of the total area).

The key values of biodiversity are: rare, protected and resource-value species of plants and animals, rare communities and ecosystems that are mainly found on forested lands (forests, fen mires, small and middle-size rivers, oxbow lakes, etc.), and to some (but also considerable) extent the values are linked with the Pripyat River, as well as with lands owned by agricultural companies (mainly, natural hayfields, pastures, shrubs and watercourses).

As agricultural production in the district is described in detail in the report of the UNCCD thematic working group, forest uses in the district are given here more focus.

The only forest management company in the district is the State Forest Management Unit Luninetsky Leskhoz. The forestry unit is the largest land user in the district. It controls a total of 144,800 ha of land, of which 110,400 ha are covered by forest. A considerable portion of these forests – 23,913 ha (21.7 %) – is taken up by valued forest species; 21,588 ha of these lands are wetlands: a very important category of land in terms of biodiversity. Rivers and oxbow lakes take 820 ha. The group 1 forests have an area of 70,900 ha (49.2 %). These include water protection (21,100 ha), shelter (28,100 ha), sanitary and recreational (4,100 ha) forests. Protected areas occupy 17,385 ha and include zakazniks Mid-Pripyat and Luninetsky.

The dominating species are pine (39.2 % of forested land), birch (26.5 %), and black alder (19.3 %). Broad-leaved species have considerable presence too: oak (7.85 %), ashen, hornbeam. Shrubs take up 4,118 ha (3.7 %).

As for the age of tree-stands, mid-age ones dominate (39.0 %), as well as class 2 aged stands (22.2 %) and ripening ones (18.5 %). Notably, the share of ripe and overripe stands (9.4 %) is slightly higher than the nation-average (7.9 %).

16.16 million cubic meters of timber is currently available in the forests controlled by the forest unit, including ripe and overripe stands – 1.42 million cubic meters. The stock of the most valued coniferous timber in ripe forests is about 380 thousand cubic meters, oak – 171,700 cubic meters. The main part of ripe timber in the district is made up of black alder (554,700 cubic meters) and birch (222,500 cubic meters).

In recent years 6,740 ha of agricultural lands have been converted to forest management land, including 5,777 ha of forest land, of which 3,632 ha are actually covered with forest, while another 963 ha are not forested (mainly wetlands).

The forest management unit is one of the largest employers in the district, as it currently has 777 employees.

The most significant environmental issues in forest management and use include:

- inadequate forest management practices which result in animal and plant losses (absolute domination of clear-cut harvesting, excessive removal of dead fallen trees, direct damage to populations of some valued species as a result of lacking knowledge about their whereabouts, etc.);
- vulnerability of peatlands to fires due to deteriorated water regime;
- absence of a biodiversity monitoring system in forest management;
- lack of awareness about biodiversity needs that forest management unit's specialists show;
- non-abidance by protection regimes or inappropriate land uses within protected areas as a result of the lack of protected areas management plans.

The key tackling approaches to the above issues include:

- inventory of key biodiversity resources in the area controlled by the forest management unit, including populations of protected plants and animals, and forest, wetland, meadow or aquatic communities of special value and biotopes;
- development and endorsement of a set of measures aimed at reducing negative impacts of forest management on biodiversity;
- taking preparatory action for the forest management unit to apply for getting properly certified according to forest certification procedure, and conducting initial audit;
- developing the concept of and project documentation for a local animal and plant monitoring system;
- holding training workshops on the UN conventions for forest management staff;
- developing and taking measures to improve the technologic regimes of the forest drainage and adjoining land drainage systems, so that there be less damage during drought spells and fires and lesser fire risks.

IV. SUMMARY OF THE UNDP–GEF PROJECT: PROTECTION AND SUSTAINABLE MANAGEMENT OF THE POLESIE REGION

There are currently full-scale preparations for the UNDP–GEF Project ‘Nature Conservation and Sustainable Management in the Polesie Region by Incorporating Biodiversity Considerations into Business Activities on Key Biodiversity Areas’. It is foreseen that during the project, with some co-funding from the government, full land use planning studies will be conducted in four districts, hosting the Mid-Pripyat zakaznik, as well as certification audit will be carried out at the Luninets Forest Management Unit with the aim of having this forest management area properly certified.

The key idea of the project is to develop a management plan whereby any business conducted in the area would not cause damage to biodiversity, but would still bring benefits to local populations. To achieve this, it is planned to assess first of all the efficiency with which the area is used, paying special attention to land drainage systems in the Pripyat floodplain. For inefficiently used systems it is planned to either introduce improvements or opt for decommissioning them altogether.

Tentatively, the following drainage systems have been identified as ones to be checked for consistent land use as a matter of priority:

- The left-hand side floodplain of the Bobrik River before it enters Pripyat;
- The land drainage system near the village of Sinkevichi (left-hand flood land of the Lan River before it enters Pripyat).

It is possible that these drainage systems may be converted to summer polders and to be further used as hayfields or grazing land only.

There is one special value area in Luninets District that has been classified as an international importance bird area. It is planned to set up a zakaznik of international importance here. This area is located near the Veluta Lake and is a nesting place for Spotted Eagle, a globally endangered species.

Annex 5

**to the Final Report on
“National Capacity Self-Assessment
for Global Environmental Management in Belarus”**

**STATUTE
of the UN Conventions Information-Analytic Centre
at the Ministry of Natural Resources and Environmental Protection
of Belarus**

I. General Provisions

1. The UN Conventions Information-Analytic Centre (hereinafter referred to as the Centre) is a division of the Belarusian Scientific and Research Centre "Ecology" (BSRC "Ecology").

2. The Centre has its own bank account for conducting financial transactions in accordance with the Centre's statute and, as and when the opportunity arises, for handling funds raised with international multi- or bilateral donors.

3. The Centre's address is as follows: _____.

4. The Centre is a division within the BSRC "Ecology" empowered to deal with the following UN Conventions in the Republic of Belarus: on climate change, on biodiversity and to combat desertification/land degradation.

5. The Centre is accountable to the Minister of Natural Resources and Environmental Protection of Belarus, or his or her deputy(ies), responsible for issues pertaining to the implementation of the UN Conventions in Belarus, as well as to the Director of the BSRC "Ecology".

II. Purpose and objectives

6. The purpose of the Centre is informational, analytical and other practical support for the three UN Conventions as concerns implementing them and/or meeting commitments thereof in Belarus.

7. To fulfil this purpose, the Centre has the following objectives:

- Coordinate, as a national focal point, the implementation of the three UN Conventions, including by means of:
 - keeping working contacts with the Secretariats and other competent bodies of the UN Conventions;
 - coordination of international and other projects carried out in Belarus for the purposes of implementing the UN Conventions;
 - organization of work to develop and coordinate legal documents, within its competence, for the purposes of the implementation of the UN Conventions in Belarus;
 - provision of consulting, methodological and technical support to relevant bodies or individuals involved in the preparation of national reports on progress in implementing the three UN Conventions, and their submission to competent bodies of the Conventions;
- Provide informational and analytical support within its competence as needs associated with implementing the UN Conventions in the country dictate, including by:
 - integrated analysis of the progress in implementing the UN Conventions in Belarus;
 - problem analysis of the current legal framework and lawmaking efforts, as well as of local government and self-government for the purposes of the UN Conventions in Belarus;
 - collect baseline and secondary data and transform these into information for the purposes of informing decision-makers, preparing national communications on the three UN Conventions, and performing such other tasks as may be delegated to the Centre;
 - design, create and operate an information system and relevant databases to support the implementation of the three UN Conventions in Belarus;
 - inform the public about progress in the implementation of the three UN Conventions in the country;
 - develop project proposals, from a project idea to a full-scale project proposal/application, and submit the latter to technical assistance donors for co-funding, to achieve more efficient implementation of the UN Conventions in Belarus;
 - participate in implementing technical assistance projects, falling within the Centre's mandate, on behalf and in the name of the Ministry of Natural Resources and Environmental Protection of Belarus.

III. Functions

8. The Centre's functions are as follows:

- conduct work as the national body providing practical support for the implementation of the three UN Conventions in Belarus, according to a work plan approved annually and coordinated with the competent bodies of the Conventions;
- develop and operate databases on the three UN Conventions according to specific terms of reference;

- manage a website(s) dedicated to the three UN Conventions, and provide all necessary support for it (them) to function normally;
- create and ensure the functioning of a system to collect data and transform them into information relevant to the UN Conventions, in line with established procedure;
- ensure the functioning of a monitoring system to follow the progress of implementing the UN Conventions;
- monitor regional issues pertaining to the UN Conventions;
- carry out integrated analysis of information linked to implementing the UN Conventions in Belarus;
- produce printed and audiovisual material aimed at informing the public and decision-makers about progress in implementing the UN Conventions in Belarus, current problems and Conventions-related future areas of endeavour;
- generate viable project ideas and conduct negotiations/hold consultations with the aim of finding donors, investors or other sources of funding capable of making a contribution to the implementation of the UN Conventions in Belarus;
- provide methodological support to bodies or individuals engaged in generating project ideas or carrying out approved projects aimed at the implementation of the UN Conventions;
- participate in the proceedings of those research and development, or other bodies, that deal with issues within the range of those of the three UN Conventions;
- perform the role of contracting party for research and development projects/programmes;
- conduct information exchange with other information-analytical agencies of the Ministry of Natural Resources and Environmental Protection, regional and local authorities for natural resources and environmental protection, local governments, statistics agencies, research and development organizations in Belarus and other countries, and contract specialists thereof for performing specific tasks within the Centre's competence.

IV. Powers and responsibilities

9. The Centre has the powers to:

- represent, within its competence, the Republic of Belarus in correspondence or other contacts, as appropriate, with competent bodies of the three UN Conventions, as well as at any conferences or meetings organized by competent bodies of the Conventions for the parties thereof;
- perform the functions of the national body in Belarus responsible for the coordination of the fulfilment of provisions of the three UN Conventions in Belarus;
- act as the national focal point for coordinating action on developing project proposals and managing approved projects aimed at implementing the three UN Conventions in Belarus;
- request and obtain information from governmental bodies of the Republic of Belarus, local authorities, agencies of the Ministry of Natural Resources and Environmental Protection, state-owned unitary companies and other relevant organizations in Belarus, according to established procedure;
- conclude, in its own name, contracts with legal or natural persons in accordance with existing legislation, including contracts for providing specific advice, work (service) contracts and other legitimate contracts. Funds to pay remuneration to persons contracted through work (service) contracts and other legitimate contracts shall not be included in the payroll fund for the Centre staff and shall come from a different budget line;
- submit proposals aimed at raising the action efficiency of and improving the plans and programmes of the Ministry of Natural Resources and Environmental Protection in the area of implementing the three UN Conventions.

10. The Centre's responsibilities include:

- carry out assignments delegated by the Minister of Natural Resources and Environmental Protection or his or her deputy(ies) responsible for the implementation of the three UN Conventions in Belarus, as well as by the Director of the BSRC "Ecology";
- submit for approval draft action plans and/or work programmes to the deputy(ies) of the Minister of Natural Resources and Environmental Protection responsible for the implementation of the three UN Conventions in Belarus, as well as to the Director of the BSRC "Ecology";
- submit progress reports, within the Centre's relevant responsibilities, to competent bodies of the three UN Conventions;

- submit progress reports to the Minister of Natural Resources and Environmental Protection and his or her deputy(ies) responsible for the implementation of the three UN Conventions in Belarus, as well as to the Director of the BSRC “Ecology”;
- keep all necessary financial books, submit statistical and other reports in accordance with legislation of Belarus;
- ensure that all its staff is provided in terms of safe work conditions, and bear, if need be, liability for damages caused to their health and/or ability to work.

11. The Centre shall execute any other rights and liabilities as established by decisions or resolutions of the Minister of Natural Resources and Environmental Protection of Belarus.

V. Management

12. The Centre is headed by a Director, who is appointed and relieved of his position by the Minister of Natural Resources and Environmental Protection.

13. The Director guides and organizes work that the Centre carries out, acting as the undivided authority, within his or her competence.

14. The Director of the Centre shall:

- act, without a written power of attorney, on behalf of the Centre, and represent its interests in governmental bodies and bodies of local authority, commercial and non-commercial organizations;
- within his or her competence, conclude contracts, issue powers of attorney and open banks accounts for the Centre;
- endorse the structure and the list of staff members in accordance with the Centre’s staff requirements approved by the Minister of Natural Resources and Environmental Protection;
- make decisions regarding the establishment of subordinate bodies of the Centre;
- develop and take measures for improving the performance of the Centre;
- administer the Centre’s funds and credit, and have signatory authority;
- bear personal liability for financial discipline at the Centre and its performance, as well as for any equipment in the Centre’s day-to-day management;
- employ, appoint and terminate staff members of the Centre and endorse their job descriptions;
- deal with issues of remuneration of the Centre’s staff in accordance with existing legislation.

VI. Steering Committee

15. The Steering Committee shall be responsible for providing general guidance to the Centre in its endeavours; the decision as to which national bodies shall sit on it is subject to consideration and approval by the Minister of Natural Resources and Environmental Protection, in consultation with relevant ministries and other relevant competent bodies.

16. The rules of procedure for the Steering Committee will be endorsed at its first meeting.

VII. Property issues

17. Equipment and other items of property assigned to the Centre at the date of its establishment and/or those acquired by it using state budget funding is managed by the Centre as items of day-to-day management.

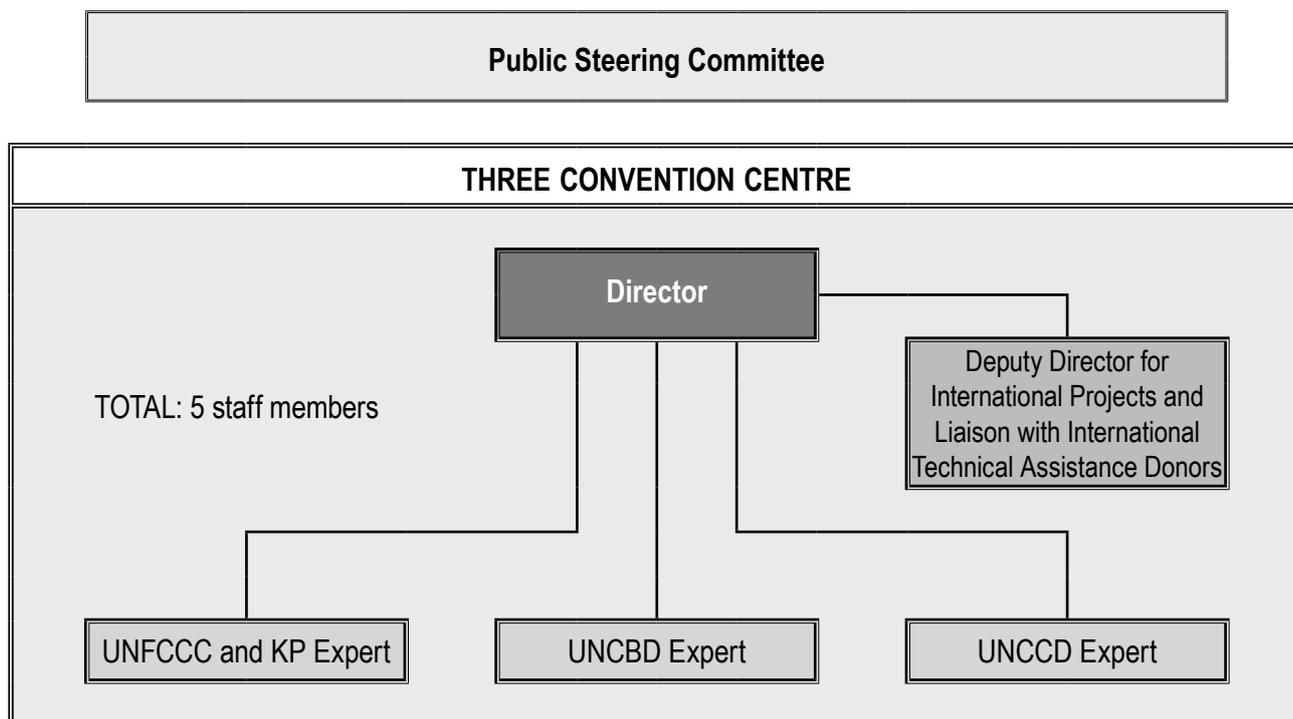
18. The Centre’s property items are entered in its accounting books as independent balance items.

19. The Centre receives funds from the National Nature Protection Fund and the BSRC “Ecology”, and also dispenses funds raised from donors or other investors, and specifically targeted at supporting the Centre.

VIII. Reorganization and liquidation

20. The reorganization and liquidation of the Centre shall be in accordance with the existing legislation of Belarus.

Proposed structural flowchart for the Three Convention Centre



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FINAL REPORT ON
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