

## **ANNEX VI**

### **Land degradation thematic materials**

#### **VI-1. United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa**

##### *VI-1.1 History of the convention and its ratification by Latvia*

United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (hereinafter – the Convention) was adopted in Paris on June 17, 1994 and entered into force as of December 26, 1996. In January 2002 it was signed by 178 countries and European Union. Convention has five regional implementation annexes where I addresses Africa, II – Asia, III – Latin America and the Caribbean basin, IV – Mediterranean, V – Central and Eastern Europe.

Term “Land degradation” was adapted to convention later as the majority of countries are not primary affected by desertification, however the land degradation is considered in each of them.

One of the main objective Latvia joining the convention was a summon of EU addressed to members and candidates as well to join the convention until Rio+ conference, which took place at Johannesburg at September 2002.

Latvia joined the convention by law “About United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa”, which was adopted by Saeima (parliament) in September 26, 2002 and entered into force at 9 October 2002. Translation of the convention and attachments is added to the law.

In the 4<sup>th</sup> paragraph it is specified that the Ministry of Environment is executable for co-ordinating the implementation of the requirements set by the convention.

##### *VI-1.2. Aims and implementation activities of the Convention*

The objective of the convention is to combat the desertification and land degradation using effective means in all levels with a support of international society applying the programs of partnership according to the main issues of sustainable development of the Agenda 21.

Consummation of this objective requires implementation of integral sustainable strategy realising land protection activities, soil productivity raising and establishing sustainable land and water resource management at the same time.

To meet the requirements of the convention, countries must prepare, discuss in wide public and enable National programs of activities.

The National programs of activities should be inter-linked with other activities for sustainable development of national policy. Programs like that should be renewed and complemented according to the latest data and practical observations.

The objective of the National programs of activities is to identify factors having the greatest impact on desertification/land degradation and to develop methods to combat desertification/land degradation.

The National program of activities defines the role of government, local governments and landowners as well as available and required resources.

A focus while implementing the convention in particular should be on:

- Preventive activities regarding areas that are not degraded or are just slightly degraded;
- Support to national climatology, meteorology and hydrology capacity building;
- Policy developments and strengthening of institutional system in order to improve co-operation between of all level institutions, stakeholders, society;
- Facilitate access of public to information and essential technologies;
- Wide participation of society, NGO's, male and female, landowners and land users, farmers and their representatives in developing policy, decision making, policy implementing and assessment according to the national programs;
- Regular assessment of activities and preparation of progress reports.

In fourth Conference of Parties that took place at Bonn in year 2000, it was agreed to add V Regional Implementation Annex to Central and Eastern Europe to the Convention, providing guidelines for effective implementation of the Convention in countries of Eastern and Central Europe.

#### *VI-1.3. Main principles*

In order to achieve the aim of the convention and to introduce its approaches, the Parties shall obey the following:

- Parties ensure that decisions on programme development and their implementation are made with participation of society members and representatives from local municipalities. Also good connections among actions of local and national levels shall be established;
- Parties establish mutual co-operation through solidarity and partnership by improving the co-operation and co-ordination on sub-regional, regional and international level, also by better use of financial, human, organisational and technical resources;
- Parties shall establish co-operation on all levels between state, municipal, non-governmental organisation and landowners. The co-operation shall be based on good partnership and co-operation to achieve better and common understanding in issues of nature and value of earth and water resources in influenced territories, which would allow more successful performance in sustainable utilisation of the resources.

#### *VI-1.4 Relations with other conventions*

It is said in Convention that Parties shall co-ordinate activities which are implemented within the framework of the Convention, and if the Parties are of other conventions or international agreements, particularly UNO General Convention for Climate change or Convention on Biological Diversity then co-ordination with the activities of mentioned conventions shall be practised in such way achieving maximum positive effect from each convention and avoid doubling of activities.

Parties also ensure common programme management, particularly in fields such as research, training, systematic observations, information collection and exchange in a shape and level that contributes to achievement of aims of relevant agreements.

#### *VI-1.5. Activities to introduce and practically implement the convention in Latvia*

Due to recent entering into force, the implementation of the convention in Latvia is at the initial stage.

Meeting of the main stakeholders of particular convention held in Igate Castle on 11 April was like discussion and exchanging views about actual status of implementation of the convention. In the meeting specialists from Ministry of Environment, Ministry of Agriculture, Environmental Agency, Latvian University of Agriculture and State SIA "Vides Projekti" took part as well as members of project implementation group.

During the meeting needs and first steps for Convention implementation were identified. It is necessary to establish inter-ministry work group for implementing the convention. The work group will consist of representatives from Ministry of Environment, Ministry of Agriculture, Ministry of Economic Affairs, Ministry of Regional Development, and Regional Authority Association and will be co-ordinated by Ministry of Environment.

Latvia has to prepare and submit the first National Report to the Secretariat of the Convention until the end of year 2004. To meet this target, an analysis of convention requirements and assessment of actual situation in Latvia has to be done. It is planned to complete such study by the end of 2003.

#### **VI-2. Land degradation in Latvia**

Although in Latvia the land degradation has not been defined and its condition has not been estimated, besides there are no priorities in the sphere of land degradation, basing on literature studies and Latvian scientists' opinion it may be concluded that all above-mentioned threats identified in the EU Soil strategy under development (soil erosion, reduction of organic substance, diffuse and local scale pollution, compression of soils, Reduction of biodiversity of soils are typical for Latvia.

Unfortunately it shall be mentioned that currently in Latvia there are too little number of studies carried out relating particularly to soil pollution as well as soil biologic diversity. Execution of complex soil monitoring is done partly therefore the information available now does not allow to see the overall picture of geography and level of alarm of land degradation processes.

One of the most common land degradation aspects is erosion. Wind erosion is typical for seacoast territories and inland areas with sandy or organic (muskeg) soil, which are used as cropland. Water erosion is hazardous for billowy where bevel is more than 5°. There is an assumption that 17,3% of areas used in agriculture are affected by water erosion and 12,5% is slightly eroded but 4,8% is medium or highly eroded areas (A.Karklins, 1997).

Along the most of Latvia coastline of Baltic Sea and Riga Sea Bay we can notice erosion of sea coastline (State Geology Service, 2003). Moreover, additional risk throughout the coastline is caused by increasing anthropogenic activity – active construction works in zone of dunes, increasing number of holidaymakers and vehicles.

In several region of Latvia common fact is karst processes, which can lead to losing of soil layer. In the valleys of biggest Latvian rivers (particularly, Daugava, Gauja, Venta, Abava) we can notice coast erosion and slope processes. (State Geological Service, 2003).

The land quality may decrease also in result of agricultural activities. In most of areas used in agriculture there is too low pH level for cultivating mostly common cultures. Territories have to been chalked frequently to avoid further pH level reduction. It is believed that the current chalking amounts are insufficient.

It is forecasted that with current economy method level of organic substance in soil is tended to decrease. It is proved by the results of the first round of land monitoring (1995 – 1996) done by State Territorial Office, which shows that 45,6% mineral soils are short of organic substance. The results of the second round (done in 2000) show that territories with lack of organic substance have enlarged and are 48,2% of mineral soils.

One of the factors that may cause land degradation is change of land usage type. Agricultural lands, which are not used, lose their value (this can not be considered as land degradation in its classic meaning, but in Latvian conditions decrease of land economic and landscape value we can consider to be a problem). Supervision data for lands used for agricultural activities for year 2002 show that in Latvia 503 068 Ha (21% of all agricultural lands) are not used for agricultural production. In several regions of Latvia, for example in Aluksne, Ludza, this figure does exceed 40 % of all agricultural lands. 7% of all agriculture lands in Latvia are lands polluted with tare. In separate regions such as Riga, Madona and Ludza this figure does not exceed 15 % of all lands used for agriculture lands. Bosky areas make up 2% of all agricultural lands.

As one of the main risks in Latvian conditions that can cause land degradation is wood cutting. Since 1990 when the forests became a private property the overall intensity of wood cutting in Latvia has increase 3 to 4 times. Although the ultimate aim of Latvian forest policy is to ensure sustainable forest and forest land management and one of the subordinated aims is to ensure that wood territories do not decrease, however the statistics data show that wood cutting leaving clear cutting areas in Latvia in 2001 was 33 700 ha, but forest restoration was performed in territory of 15 164 ha (Ministry of Agriculture, 2002). Although in Latvia even those wood which have not been renewed can renew in natural way, but this leads to

development of different wood structure that can leave an impact on other components of eco-system. But cutting of wet woods can cause bogging up.

According to forestry specialists significant risk is caused also by wood fire which can end with complete loss of vegetation and partly also soil layer that is difficult to restore. In territories gutted by fire has increased risk of soil erosion. However there is different opinion among biologists and eco-system specialists, respectively, wood fire have always been irreplaceable part of functioning of wood eco-system, particularly in dry type woods and from the point of view of biologic diversity such fire have great importance in existence of many kinds which have adopted to fire eco-systems, for example, *Skeletocutis lenis*, *Geraniem bohemicum*, *Agonum quadripunctatum*, *Melonophila acuminata*, *Platyrrhinus resinusus*, etc.

Potentially significant problem in the field of land degradation is pollution. However, within the country there is little information available about soil pollution and this information is not systemised. The problem of historically polluted areas in Latvia was not considered to be a priority during the last ten years, because the available financial resources were focused on development of waste management and construction, modernisation or reconstruction of waste water treatment plants. In order to achieve recovery of the environment it may require significant funding from the state budget, because it is not possible to identify the legal responsible person for pollution created during the previous economy method. Identification, evaluation and registration of polluted areas have been started in Latvia and are performed by municipalities in co-operation with corresponding regional environment board. However, at the moment the identification of polluted areas has been completed only in few municipalities. This figure can be explained with the fact that majority of the municipalities lack funding and staff to perform the mentioned tasks.

Specific problem is pollution left by Soviet army. Some of these territories are handed over to the Ministry of Defence, some of territories to municipalities. Currently the fact that there is both legal and institutional confusion towards the further use and recovery of former Soviet army territories cause the following problems:

- In these territories the principle “polluter pays” does not work. In these cases the polluter is former Soviet army; variants for solution of this problem shall be sought;
- Problem also is caused by privatisation process by returning of the property which is within the polluted territories of former Soviet army;
- Similar problem is with international investors which are interested to start their business in polluted territories of former Soviet army (naval base in Liepaja, military airports, etc.).
- This is a problem also to National armed forces of Latvia, because some of active army bases are located in polluted territories of former Soviet army.

Basing on the materials of completed studies and analyses we can state that territories of former Soviet army were polluted with mainly oil products, heavy metals and missile fuel. In the result significant threat of pollution was caused to ground-water. This is observed mainly in former shooting grounds, airports and fuel storage locations. The major military airports were located in regions of Daugavpils, Jekabpils, Liepaja, Ogre and Tukums.

Another problem that is present at former shooting grounds is threat of explosion. The territories very often are polluted with unexploded shells or their metal waste. It is believed that generally territory polluted with articles of explosion risk make up 1/7 of all land. Very high density of ground pollution with unexploded ammunition is in battle fields of WW1 and WW2, particularly in regions of Liepaja, Tukums, Dobele, Cesis and Madona. Articles of explosion risk remain also in location of former Soviet army bases and shooting grounds. Notably famous for being dangerous and very polluted place is former aviation missile ground in Zvarde as well as former territory of former ammunition warehouse in Cekule.

During the construction and maintenance of military objects ground upper layer was damaged, woods were cut down, soil and ground-water was polluted. Regular problem was lack or non-presence of water treatment plants. After moving out of former Soviet army from Latvia back in 1994 the regional environment boards on behalf of the Ministry of Environment carried out inventory of territories of former Soviet army. 300 territories were inspected and 57 out of them were identified as dangerous to environment and human life and health. Unfortunately chemical analyses were not carried out due to limited funding.

Soil pollution was created also by inadequate deposit of household and industrial waste which took place in past. However, this field has been identified as one of the priorities by the Latvian environment and environment investment policy. Within the framework of programme 500 – more than 500 household waste dumps were identified which are planned to close down until 2009, because currently construction of new and corresponding to environmental standards dumps take place as well as introduction of new waste management system. It is planned that until 2012 all current dumps will be fully re-cultivated.

Problems are caused also by illegal dumping of waste, particularly in suburbs.

Also large farms operated in soviet times, especially swine complexes and hence arising stable manure problem has increased soil diffused pollution. This type of pollution is created also by overdose use of mineral fertilisers and pesticides. Industrial giants (Olaine Complex of Bio-preparation) also shall be mentioned which emissions into atmosphere caused soil pollution in large areas.

Also in 80-ties unaccomplished and now abandoned and in some locations looted construction sites in Latvian conditions shall be considered as expression of land degradation (as attenuation of land economical categories and landscape degradation). Majority of unaccomplished and now abandoned buildings are in Riga (40) and Riga district (19), Liepaja (34) and Liepaja district (12), also Dobele and Daugavpils district.

Another actual problem at the moment in Latvia related to land protection problems is also bogging-up which is connected with insufficient maintenance of drainage system.

During the last years both in Europe and Latvia another problem was underlined which can be described as intensive building on land. However, in Latvia there are no particular studies concerning the issue.

### **VI-3. Capacity problems**

#### *VI-3.1. Summary of problems*

During first meeting of consultative work group on April 11, 2003, there were several problems identified that embarrasses convention implementation in Latvia:

- Lack of priority for implementation of the convention;
- Lack of common information about soil conditions in Latvia;
- Limited access to information;
- No concept of soil data collection and use (which data will be necessary in future, for what aims, who will be the users of data);
- Lack of aggregate information system about Latvian soil that would correspond to internationally accepted standards (FAO or other international classification);
- Insufficient institutional structure and co-operation between the institutions;
- Insufficient funding;
- Lack of human resources.

Considering that the assignment was meant to be made on consultative basis and participation, in this stage of capacity assessment study is made using preliminary defined problems.

Literature studies and interviews with stakeholders mainly prove the definition and actuality of the defined problems. However, during processing and analysing of the information the author of the study have stated another significant problems which affect the process of Convention implementation and also complex development and implementation of soil protection policy in Latvia:

- Both in the government and in the society soil protection is an issues of low priority;
- Incomplete legislation (normative documents do not define sectors and sector institutions' responsibility towards Convention implementation);
- Education and society involvement – public cognition level concerning soil protection issues is low, informative and educational activities or events practically are not practised.

#### *VI-3.2. Problem analysis*

##### **VI-3.2.1. Lack of priority for implementation of the convention**

Latvia has joined the Convention and the Convention has entered into force, however, situation towards land degradation and introduction mechanism and priorities for implementation have not been defined yet.

As one of the first steps planned we can name pilot study – situation identification in order to set priorities for Convention implementation in Latvia.

#### **Capacity problem:**

- Priorities for Convention implementation have not been defined.

### VI-3.2.2 Lack of common information about soil conditions

Currently soil information is stored in four different databases at least in four state institutions: State Land Register, State Geologic Service, Latvian Environment Agency and State Hydro-meteorological Agency. The mentioned databases are very different, part of them are technically and morally outdated. Data base structure, information placement have not been standardised therefore information circulation between the databases currently is not possible.

In the result of such situation application of information for particular aims very often is not possible. The manual data base in the State Land Register (archive in many volumes), which contains the most complete spatial information on soils of Latvian agricultural lands is difficult to use, many maps are technically outdated.

Currently no complex and systematic monitoring of soils is practised and therefore information updating does not take place.

#### **Capacity problems:**

- Data bases are located in several state institutions are not mutually compatible;
- Part of the information is outdated and does not correspond to current situation;
- Regular monitoring and data update does not take place.

### VI-3.2.3. Limited access to information

Great part of the soil information is not accessible or the access is complicated (information access is not free of charge or bureaucratic procedures must be performed prior to access – submission of application, waiting for permission from head of institution, etc.) to scientists, consultants and wide public.

#### **Capacity problem:**

- Access to information is limited.

### VI-3.2.4. No concept of soil data use

There is no programme developed and accepted at the official level to provide concept for soil researches, mapping and monitoring.

There is also no conceptual decision on common standards of acquired new soil data and on databases for storing of the data.

Logical solution of the situation would be reaching of conceptual agreement that standards for soil information and processing/storing systems will be adopted as they are already defined in the approved EU EUSIS (*European Union Soil Information System*). Corresponding to this system new data on Latvian soil would be accumulated and new databases would be developed. Meanwhile it is suggested to carry out projects in order to have more of the previously gathered information transformed into the new format in a faster way. It is also necessary to define priority directions which require information, but is insufficient.

### **Capacity problems:**

- Lack of common soil research programme;
- Conceptual indetermination on desirable standards of soil information;
- Priorities for information necessary in future have not been defined.

#### VI-3.2.5. Inadequacy of Latvian soil information system to FAO or other international classification

Latvia is the only Baltic state which does not have carried out any significant pilot projects for obtaining soil information according to European Unified Soil Information System (EUSIS) formulated by EU. So far the mapping of soils of agricultural lands was carried out applying extremely differing methods. Therefore current detailed (large-scale) soil maps do not provide information which can be used in an adequate way corresponding to modern needs and to be comparable on an international level.

So far Latvia only in several scientific projects uses internationally applied (FAO and USA Soil Taxonomy) soil diagnostics and classification schemes and soil analysis methods. On the level of state institutions the circulation of soil information is still fully based on outdated schemes which can not be applied on an international level/ this creates difficulties to Latvia in participation in inter-state projects as well as to prepare overview reports on implementation of international agreements (for example Kyoto Protocol). It is expected that upon joining EU additional problems and difficulties in circulation of soil information will arise.

### **Capacity problems:**

- Information system practised in Latvia so far does not correspond to international standards;
- Pilot projects for harmonisation of soil information with EU do not take place;
- Latvia is not prepared to participate in EU and global activities related to soil information circulation.

#### VI-3.2.6. Incomplete institutional structure and insufficient co-ordination of activities

Although several institutions (Ministry of Environment, Ministry of Agriculture and institutions under supervision/ subordinated to the ministries, State Land Register) have been provided with functions related to supervision and protection of land, including soil resources. still their actual activity is fragmentary, there is lack of proper co-ordination, information circulation and complex approach.

The Ministry of Environment manages and co-ordinates issues related to pollution control, development of norms and standards as well as implements State Environment Monitoring Programme. Ministry of Agriculture manages issues related to land use, introduction of good agricultural practise, implements subsidies to farmers for implementation of agrochemical researches and soil preparation activities. But in possession of the State Land Register is the most complete information database on condition of soils in Latvia, the Service is executing supervision of land

condition within the country basing on information which is obtained in 190 sample farms.

Based on conclusions provided by the work group as well as interview results it can be concluded that there is no institution, which would coordinate realized soil researches and following accumulation and use of obtained data. None of governmental institutions coordinate state participation in international soil research and information projects. As a result there is only vague partnership in level of separate scientists.

At the moment there is no mechanism for implementation of the Convention. It is planned to prepare such mechanism within next few months.

**Capacity problems:**

- Marked “sectoral” approach to solution of issues related to soil problems;
- Lack of information exchange and co-ordination among institutions of different sectors;
- Lack of co-ordination during implementation of study projects;
- Lack of implementation mechanism for Convention implementation.

VI-3.2.7. Insufficient funding

Funding for soil researches in Latvia has decreased dramatically in recent ten years. Presently such researches are carried out by University of Latvia, University of Agriculture, non-profit State SIA “Centre of Agrochemical Studies”, scientific institute “Silava”, Institute of Biology under University of Latvia, but mainly in relevance with concrete, primarily business problem solving and using grants of LR Scientific Council or orders of separate field ministries (mainly ministries of Environment and Agriculture). However they mostly are short term projects with limited funding.

While in past years there were strong traditions in fields of fundamental scientific researches involving soil genesis, morphology, physics, classification and mapping, by now there are no such activities. According to opinions of academic staff from universities, one of the main reasons for incapability in reaching the level of European countries in soil fundamental scientific and practical researches is obsolete equipment of laboratories in academic institutions.

A good figure that characterises division of priorities is contribution of state budget means for implementation of soil protection activities (administration, soil monitoring and research, soil treatment). It must be noted here that majority of soil recovery projects implemented in Latvia have been carried out using resources provided by international institutions or foreign financial entities (Latvia co-financing share has been small).

Significant funding is necessary also for detailed examination and recovery of polluted areas. The problem is particularly actual in relation to territories of former Soviet army which are highly polluted and require large investment.

### **Capacity problems:**

- Insufficient funding for soil monitoring;
- Insufficient funding for fundamental and practical researches;
- Lack of financing for examination and recovery of polluted areas, including municipal;
- Insufficient equipment of laboratories in universities.

#### VI-3.2.8. Lack of human resources

In Latvia it is possible to study soil science basic course on the Bachelor and Master's level at Faculty of Agriculture under University of Agriculture and Faculty of Geography and Land Sciences under University of Latvia. However, due to small volume of subjects in the basic course, the studies are limited mainly to mastering of basic knowledge on soil science. Although both University of Latvia and University of Agriculture could ensure also Master and Doctor's basic courses the demand for such programmes is low, because in real life there is no demand for specialists of such specialisation.

Due to the fact that in Latvia already ten years significant and wide soil information acquiring programmes (for example, mapping) have not been executed the funding for research has been reduced in the result of which great number of specialists and scientists have left this field of activity. This leads to situation when in Latvia there will be no adequate specialists when it will be necessary to ensure introduction of new technologies and needs (if ever necessary). Due to the fact that practically there is no international co-operation (except some scientists) and participation in international projects specialists do not have any possibility to acquire internationally applicable experience.

As both state and municipal institutions (except Ministry of Environment, where one employee is involved in dealing with soil issues on policy development and co-ordination level) currently do not plan to have to introduce employment positions and funding for soil specialists their possibilities to deal with soil protection issues is very limited. At the moment there are no real possibilities for specialists from sectors involved in soil protection activities (environment, agricultural, municipal) to improve their qualification.

### **Capacity problems:**

- Limited opportunities for education (only basic skills are provided);
- Specialists are not being prepared for working with new technologies;
- Lack of opportunities to acquire internationally applicable experience;
- There are no specialists working in state and municipal institutions dealing with soil issues;
- Specialists from involved sectors do not have possibilities to improve their qualification in soil issues.

#### VI-3.2.9. Soil protection issues have low priority both in the government and society

In the first edition of Environment Protection Plan (1995) the list of priority problems underlined several problems that were related to land degradation: influence of waste on environment and influence of agriculture upon the environment. However, it must be noted that actual activities and events were executed only in the sector of waste management while agricultural sector still have many submitted proposals left unexecuted (including, legislation and standards for soil protection).

The development progress of other normative acts regulating soil protection issues is also very slow. As an example we can mention development of soil protection normative acts which have already entered into force (Cabinet of Ministers Regulation No 388 from 15.07.03.) while the report is still under preparation.

Current participation of Latvia in development processes of EU policy, including development of thematic strategy for soil protection, can be considered as insufficient. For Latvian scientists who are able and are willing to work on international level lack sufficient national support for participation in international projects and policy development processes.

Majority of the interviewed specialists admitted that soil protection in Latvia is not a priority. This situation has its explanation: current economical situation in the country, land privatisation and transition to another economy model in agricultural sector, other priorities on the level of national policy (integration of Latvia into EU and corresponding adoption of legislation and institutional system), lack of resources.

It shall be noted that the most recent edition of Environment Policy Plan, which is available to wider number of interested persons since July 18, 2003 several chapters (summary and conclusions), particularly Chapter 1.4. "Sustainable use of natural resources", Chapter 1.6. "Examination and recovery of polluted areas", Chapter 2.4. "Environment and agriculture" provide characterisation of problems related to protection of land and soil resources and their sustainable use as well as defines policy aims for improvement of the existing situation.

#### **Capacity problems:**

- Lack of priority in the government and society;
- Difficulties concerning complete incorporation into EU soil policy development processes.

#### VI-3.2.10. Insufficient legislation

At the moment the responsibility, role and functions of sectors and their institutions (except Ministry of Environment which is nominated as the responsible authority) towards Convention implementation has not been assigned.

Such situation hampers further progress, because it is clear that currently also other institutions (Ministry of Agriculture, Ministry of Defence, State land Register, etc.) are involved in solution of essential problems and management of soil resources.

#### VI-3.2.11. Education and involvement of society

Convention assigns great importance to education and involvement of society particularly in development and implementation of national Action Programme.

At the moment it must be admitted that the society has little information on soil conditions and related problems, because there is no unified information within the country which would be easily accessible to land users or owners.

If information is available for a set fee, the number of potential users is significantly low. According to organisation representing farmers, at the moment only those farms oriented towards market economy which have intensive production are interested to obtain information on soil condition (the approximate number of such farms is estimated at 10 000).

The Ministry of Agriculture has prepared “Provisions for good agricultural practice” which is available in the form of booklets and in the Internet (in Latvian). The provisions contain information on optimal and environmentally friendly methods of economy. It also gives overview on factors causing land degradation as well as practical suggestions how to avoid problems leading to soil degradation. However, the implementation of such proposals depend only upon good will and understanding of farmers (except those receiving state assistance and receivers of subsidies under SAPARD programme, where implementation of these proposals has been set as one of the eligibility criteria for receiving the subsidies. This is all supervised by the Rural Support Service.

#### **Capacity problems:**

- Society has little information on land degradation issues;
- Majority of land users have little interest towards soil qualities;
- Lack of educational activities;
- Lack of motivation for implementation of good agricultural practice (except receivers of subsidies).

#### **VI-4. International co-operation in gathering and harmonising of soil information**

In the course of time countries had developed different systems for soil classification, estimation and usage of on that bases accumulated information. Such lack of uniformity is a serious barrier for using modern technology and exchanging information.

In recent decades a significant effort has been put into developing internationally accepted systems of auditing and harmonising methodology of data gathering, processing and interpreting. As the most valuable achievements here can be named FAO World Soil map and its legend, World Soil classifier, soil classification system of USA – Soil Taxonomy, land estimating system recommended by FAO, etc. It is widely practised to develop regional and global databases for different purposes. Digital world soil and relief database SOTER, global database of estimating soil emission potential WISE, database MARS, global soil degradation assessment database GLASOD can be named as the examples.

The special institution of European Commission – European Soil Office - is coordinating the process of gathering information about soil in Europe. Its mission is to put into effect scientific and technical programs in order to generalise, process and disseminate information about soil essential for enforcing EU policy and to provide with it EU institutions, member states and candidate states. The scale of required data is defined in order to develop mutually dependant system: Global – European – National – Regional – Confluence Basin / Nature region – Household, Populated area, Forest tract, any land sector scale. Such concept is put into basis of idea about developing united European Soil information system (EUSIS).

The key stage of the system will be geographically attached soil database in scale 1:250 000, which will cover all EU countries in future. In most of EU and candidate countries the process of developing this system is started.

Projects supported by FAO for developing global soil information systems and incorporating EUSIS models are prosecuted at the same time. Digital World soil map, digital World soil and relief database SOTER and Soil and Relief pollution risk assessment database for Central and Middle European countries (SOVEUR) could be named as examples.

Objective and mutually between parties harmonised soil data is essential for satisfying the conditions of numerous Europe scale agreements. EU Common Agriculture policy, EU Water Protection policy (implementing the Directive of Nitrates 91/676/EEC, Directive 200/60/EC and rehabilitation of Sewage Sludge Directive 86/278/EEC), providing of European Soil forum and European Environmental agency work could be named as examples.

Adopted in 1997 Kyoto protocol about Mitigation of Climate Change stresses the importance of role of soil in protection of ozone slayer in international scale.

Significant role of harmonised soil information is in largely activated in EU Land information system (ELIS). As foreseen, after a while Latvia will have to use defined there principles and methodology.

Information about soil is essential in solving different national issues in economics and environment. To fall within common progress, Latvia has to develop its own national soil information multilevel system and take part in existing global and European systems. To ensure compatibility of the data, it has to be based on common principles, methodology and standards.

#### **VI-5. The actual EU strategy of soil protection**

Although many of the actual EU policy aspects include significant activities for soil protection, still the sphere has not been a priority. However by now there is thematic strategy for soil protection coming up (“Towards a Thematic Strategy for Soil Protection” EC, COM (2002) 179 Final). There has been noted that soil is one of vital and mostly non-renewable resources that has recently been under serious pressure.

As mentioned in the strategy, the main processes that impinge on soil condition in Europe are:

- Erosion;
- Reduction of organic substance;
- Diffuse and local scale pollution;
- Compression of soils;
- Reduction of biodiversity of soils;
- Soil salt affecting.

The prevalence of these things is different in particular regions; still it is obvious that the impact of the processes rises in EU member states and in candidate countries as well. The marginal form of land degradation is desertification. It is foreseen that climate change will accelerate land degradation processes.

Monitoring systems and available data that are hardly comparative and differ from country to country compound realisation of common soil protection policy.

In future it is planned to develop common EU monitoring system to dissolve the problem. European Commission plan to prepare proposals in 2004 for soil monitoring regulations as well as particular communication about soil degradation, reduction of organic substance and soil pollution that will include recommendations for limiting and preventing them.

Basing on the above-mentioned thematic strategy currently within EU Soil Structural Policy Directive is being prepared which will be binding also to Latvia.

A fact that sorely different methods from internationally recommended are traditionally used in Latvia for soil descriptions, diagnoses and classification will cause difficulties for Latvia to participate in EU soil protection policy. There is a big volume of data accumulated in Latvia (soil descriptions, maps), however not in the format that would allow using it with modern technology.

## **VI-6. Description of institutions and interest groups involved in identification of soil condition and soil management**

As upon preparing of this report the implementation mechanism for Convention has not been prepared and practically does not function it was not possible to characterise its operational efficiency.

Therefore the author in this chapter has gathered information on institutions, structural units and interest groups which are assigned functions, competency or which are practically involved in land, including soil resources, management. It is expected that at least some of these institutions and interest groups will be involved in practical implementation of the Convention.

### *VI-6.1. Ministry of Environment*

Ministry of Environment is the central executive power institution in fields of environment and nature protection. The ministry with a help of all its subordinated institutions implements the state supervision and control as well as provides country support to spheres of its competence.

The main tasks of the ministry are:

- To develop and mutually with other state executive institutions implement common environmental protection, nature resource preservation and rational management, hydro-meteorology and use of bowels of the Earth policy;
- To develop drafts of laws and regulations as well as to ensure implementation of respective requirements and suggestions.

#### VI-6.1.1. Department of Environmental Protection

The department is responsible for developing and implementing policy of environmental protection. One of the main objectives it has is developing and implementing laws and regulations and ensuring improving of institutional structure.

The attachment to the convention for Central and Middle Europe prescribe that there has to be established the focal points for coordination of implementation. At the moment functions of the focal point are delegated to one of department clerks.

The Department has two employees who are responsible for soil protection and soil pollution issues.

#### VI-6.1.2 State Geological Service

The Office ensure protection and rational use of bowels of the Earth as well as drafts thematic laws and regulations, carries out geological mapping and regional researches, executes perspective natural resources (oil, geothermal energy, gas resources, etc.), underground waters (resources, monitoring, etc.) and mineral deposits.

The Office accumulates and processes geophysical data, manages databases and geographic information systems. During 1998 to 2002 the Office had carried out geochemical assessment and mapping in scale 1:500 000 in Latvia and as a result it is a large material about soils, mother rocks, and their geochemical characteristics in Latvia. However the results of mapping are still under processing and are not available for wider public yet.

At the moment there are no employees at the Office who would have specific obligations for overseeing the soil resources.

#### VI-6.1.3. State Hydro-meteorology Agency

The Agency executes hydro-meteorological, oceanographical, geophysical and agrometeorological researches and ensure inspections of environmental quality. Agency supplies general meteorological, hydrological and environment quality information, forecasts, warnings about hazardous or elemental processes to national, local governments, mass media and legal and private persons.

The Agency has a wide co-operation with international organisations. It carries out atmosphere air quality measurements (monitoring) and quality impact on eco-systems assessment as well. Measurements in the scope of environment pollution are done in

Rucava and Zosēni municipalities in context with international GAW (Global Atmosphere Watch) and EMEP (Co-operative Programme for the Monitoring and Evaluation of Long Range Air Pollutants in Europe) programs. The influence of cross-border flow of air polluting substances are monitored by analysing the quality of air; precipitation; surface, ground and soil water as well as from the condition of woods, vegetation and soil.

#### VI-6.1.4. Latvian Environment Agency

The Agency implements national policy in field of environment and nature protection by developing programs and informing public about environment quality, nature resources, their changes, environment protection activities and their efficiency.

The main objectives of the agency are to design common information system of Ministry of Environment, to act as national laboratory for exercising water and soil, measurements of stationary source emissions as well as ensuring free access to the data.

Latvian Environmental Agency is managing national monitoring program and accumulates acquired data. At the present several soil monitoring components are included in scope of different subprograms of national monitoring program.

At the moment the Agency is involved in implementation of project “Development of Soil Quality Database” in the result of which analysis of work of European Environment Agency and European Soil Office will be carried out as well as analysis of soil information necessary for calculation of carbon balance and its availability in Latvia. The pilot project is participated by scientists from University of Agriculture and University of Latvia. It is planned to end the project in November this year.

At the moment there are no employees at the Agency who would have specific obligations for overseeing the soil resources.

#### VI-6.1.5 Environment State Inspection

The Inspection executes implementation of laws and regulations in meaning of performing control of environment and nature resources usage in whole Latvia, continental shelf, Economic territory of Latvia in Baltic Sea and Riga Gulf, territorial waters and inland waters as well as supervises work of inspectors of Regional Environmental Protection Authorities, Sea inspection, reservation, and other specially protected nature territories.

Department of bowels of the Earth performs control of implementation of normative acts in the field of use and protection of nature resources in territory of whole country. Currently systematic soil control does not take place, because normative acts for soil quality are in the stage of preparation. The division supervises soil use in cases of exploitation of bowels of the earth by ensuring preservation of soil layer and rational exploitation (for re-cultivation, landscape improvement works, etc.).

Issues related to soil pollution in case of necessity is examined by employees of Environmental Pollution and Chemical Substance Control Department.

#### VI-6.1.6. Regional environment boards

There are eight authorities subordinated to the Ministry and they cover whole territory of Latvia.

Regional Environmental Protection authorities work on two directions:

- *Enabling of preventive activities* – issuing of licenses, permissions, activity accepting as well as initial evaluation of works influence upon environment, preparation of laboratory paper on environment pollution control, participation in implementation of national environment monitoring.
- *Control* - regional environment boards control exploitation of natural resources; state environment inspectors have rights to apply administrative fine for offences related to environment protection which are provided in Code of Administrative Offences.

Regional environment boards do co-operate with municipalities in identification and registration of potentially polluted and already polluted areas.

Regional environment boards currently do not have employees having functions in supervising particularly soil resources. Within their limits these problem issues are solved by inspectors of terrestrial eco-systems.

#### VI-6.2. Ministry of Agriculture

Ministry of Agriculture is the central executive power institution in field agriculture, developing and implementing the state agriculture policy and other projects of normative acts, prepares agriculture strategy, superintend crop farming and livestock farming resources and forecast their provision.

##### VI-6.2.1. Rural Development Department

The main objectives of Rural Development Department are development, analysis and actualisation of policy, harmonisation of national legislation with legislation of EU, development of national laws and regulations, preparation of resolutions about documents prepared by other ministries, implementation of state support system, involvement in international project implementation, development of scientific, education and research strategy, co-operation with other governmental institutions, NGO's and foreign institutions in fields of rural development.

##### VI-6.2.1. Division of Rural Economics and Environment

Main objectives of the Department is developing strategy and laws and regulations for rural development activities, less favourable regions, environment friendly agricultural methods (including, biologic agriculture) and for rural development and adoption activities (for example, improvement of rural infrastructure) as well as development of plan (SAPARD) and normative acts database for EU pre-accession activities for development of agriculture and rural areas.

#### VI-6.2.3. Division of Land Reclamation

Main objectives of the Division are developing strategy for rational use of agricultural areas, strategy for technical and agri-technological amelioration of soil, developing laws and regulations for transformation of agricultural areas and developing of use of melioration systems and strategy for soil maintenance.

#### VI-6.2.4. Department of Forest Policy

Tasks of the department include development of forest sectoral policy, evaluate correspondence of Latvian forest policy to international commitments and EU Forestry Strategy and prepare proposals for its actualisation, including policy of rational exploitation of land and for its implementation activities; prepare development and assistance programmes and projects for forestry sector; administrate and supervise projects in forestry sector funded by international donors; administrate and co-ordinate implementation of Latvian commitment in forest sector.

#### VI-6.2.5. Department of Forest Resources

Department is responsible for developing suggestions to forestry policy and developing strategy for forestry managing, use of forest resources, environmental issues of forestry, evaluation of adoption of normative acts and preparation of proposals for their optimising as well as estimating ecological changes of forests, assessing efficiency of biodiversity protection plans, evaluation of wood health and environment conditions and influent factors; development of legal and institutional base of wood environment protection system; co-ordination of wood resources monitoring and evaluation of programmes.

#### VI-6.2.6. Centre of Agrochemical Studies

Non profit- State organization SIA “Centre of Agrochemical Studies” carries out agrochemical examination of soil based on signed agreements upon demands from farmers, landowners and legal persons as well. Works are partly financed from the state budget.

#### VI-6.2.7. Rural Support Service

Rural Support Service is organisation subordinated to the Ministry of Agriculture which was established in the beginning of 200. RSS implements the policy of the Ministry on regional level. The main functions of the service is implementation of subsidy programme and management of SAPARD funds in the sector of agriculture.

The Service has nine regional branches and structural units in each administrative territory.

In its routine work the Service does not have regular co-operation with environment protection institutions, but in case provided in regulations (in case when it is necessary to have evaluation of project influence upon the environment or if activity takes place in protected territory) the Service receives and examines resolutions of regional environment boards on influence of planned works upon the environment.

### *VI-6.3. Ministry of Justice*

#### VI-6.3.1. State Land Service

State Land Service is state institution which supervises exploitation and protection of land resources. State Land Service is under supervision of Ministry of Interior.

The State Land Service was formed by consolidation of the Department of Land Use Planning of the Ministry of Agriculture, the Department of Geodesy and Cartography of the Ministry of Defence, number of enterprises linked with this branch and the Land use planning structure in municipalities in order to have effective implementation of land reform. In accordance to Latvian law "On State Land Service" the Service executes a list of tasks related to management of land resources: execution of state land settling; co-ordination and management of development of land cadastre and geographic information system; providing of this information to state, legal and private persons; co-ordination of scientific study directions; land supervision and land use control.

Due to funding reduction there has been reduction of staff mainly with mapping and data processing profiles. Presently there are no employees at the institution who would have specific duties connected with managing of soil resources. Still two employees have necessary skills and competence for co-ordinating soil management and planning. In regional offices of SLS nine soil mapping specialists work in other specialities.

#### VI-6.4. Ministry of Defence

The Ministry of Defence has taken over and currently make use of former Soviet military bases which have significant soil and ground pollution problems. Inspection of 148 potentially polluted areas has been executed and 32 out of them were identified as potentially polluted. During this year 7 potentially polluted locations were inspected.

Also the current influence of military activities on the environment may cause soil erosion, degradation of vegetation surface and leave negative impact on fauna. By constructing military constructions, moving heavy machinery, etc. soil is mechanically destructured, the land surface is polluted with various chemical substances.

The minister of defence has councillor dealing with environment protection issues. In order to limit and eliminate influence of military activities upon the environment the Ministry of Defence has prepared Environment Protection Strategy for the Ministry of Defence and national Armed Forces. With the support from governments of the USA and Sweden Environment Administration Plan for Adazi training shooting ground was prepared. The Ministry of Defence plans to prepare such environment administration plans for all largest shooting grounds. Also for the need of training activities similar environment protection plans are prepared where territories which can not be affected by any military activities are marked. It contains also information on measures for minimisation of influence, for example, waste gathering. The responsible persons for implementation of training plans are base commanders.

### *VI-6.5. Municipalities*

The responsibilities of municipalities towards protection of land and soil resources are provided in two main legislative acts “Law On Municipalities” and “Law On Environment Protection”.

In accordance with the law “On Municipalities” the responsibilities of municipalities include the following: collection and transportation of household waste, taking care of improvement of their administrative territory and sanitary tidiness, maintain protected nature objects of regional importance, to provide procedure defining public use of woods and waters, define procedure for construction works as well as ensure storage or recycle of household and industrial waste.

According to the law “On Environment Protection” municipal institutions are responsible for environment protection and use of natural resources in their administrative territory.

The tasks of municipalities in this field are the following:

- Control of environment protection and rational use of natural resources;
- Submission of proposals in order to have the responsible state institutions issuing limitations, or discontinue or interrupt economic activity or construction of buildings, reconstruction and expansion in cases when offences of environment protection legislative acts are stated; municipalities also submit corresponding proposals for elimination of such offences;
- Development of environment protection programmes for regions, towns, districts and villages, building, reconstruction and expansion of environment protection objects;
- Preparation of proposals for fee differentiation for use of natural resources to those legal and private persons which pollute atmosphere air, soil and water basin, do not ensure complex recycling of common mineral resources, rational utilisation or deposit of industrial and household waste;
- Assigning and depriving of rights to use land and other natural resources.

Municipalities execute identification and initial evaluation (in co-operation with corresponding regional environment board) of polluted or potentially polluted areas.

Another task of municipalities is territorial planning with the help of which it is possible to develop more optimal stationing of object polluting the environment. One of the principles to be obeyed in development of territorial planning is the principle of sustainability, which ensures qualitative environment, balanced economy, etc. for current and next generations. The task of territorial planning is also create preconditions for ensuring of environment quality and rational use of territories, and for elimination of industrial and environment risks.

The control and supervision of polluted areas is necessary in order to limit expansion of pollution and exclude infiltration of pollution into the ground, bowels of the earth and fresh water. Information of polluted areas and their evaluation are data which are to be used when preparing territorial planning – in order to exclude selection of inadequate form of land use in polluted areas which can negatively affect human health. It must be noted that currently the local municipalities and territorial planning

commissions do not fully exercise their authority for evaluation and supervision of territory pollution.

The Cabinet of Ministers regulations No 423 “Regulations for territorial planning” provide that territorial planning may serve as legal ground for decision-making on use of particular territory. Municipalities are responsible for development of territorial plan for territories under their authority and they shall gather information on quality of land plots and the territorial planning shall include all object of high danger or risk (which include also polluted objects and areas) which can cause threat to local population and environment. Municipalities have task to identify activities to eliminate potentially harmful influence of such objects upon population and environment.

#### *VI-6.6. Universities and scientific institutions*

In universities and scientific institutions all national scientific and research potential is concentrated. Significant research work currently is carried out in two universities: Latvian University of Agriculture (Faculty of Agriculture) and in University of Latvia (Faculty of Geography and Land Sciences). Professors from both of mentioned universities actively take part and represent Latvia in international projects (SOTER, SOVEUR, etc.) and are involved also in work of such international organisations as European Soil Office and EU work in harmonising of soil information and development of common policy as well execute order projects for policy support of ministries of Environment and Agriculture.

Both above-mentioned universities perform also providing of basic course of soil science on the level of Bachelor’s studies. There is practical possibility to continue studies in soil science also on Master and Doctor’s programmes, however, at the moment there is little interest of such opportunity.

#### *VI-6.7. Land users*

The general responsibilities of land users are provided by law “On land use and settling”.

In accordance with this law land users have the following responsibilities:

- Ensure use of land in accordance with the aims and rules that were applicable upon granting the land;
- Preclude destruction of fertile ground surface or worsening of its quality;
- To protect land from water and wind erosion, do not cause with users’ activities land flooding with wastewater, chemical and radioactive substances and other processes destroying land;
- To protect agricultural land from overgrowing and other processes that worsen the cultural-technical condition of the land;
- Not to allow activities which worsen land quality of other land users;
- To obey exploitation and protection rules of melioration systems and constructions, motorways and railways, cables, pipelines, air electricity lines and communication lines;
- To adjust and maintain order in commissioned territory, woods, perennials, buildings, motorways, melioration and other constructions;

- To protect nature, culture and historical monuments by obeying use regime of specially protected nature objects and their shelterbelt;
- When extracting mineral resources or executing construction or other works related with destroying of soil surface, the fertile soil layer shall be removed and used for land re-cultivation or improvement of its fertility;
- On its own cost perform re-cultivation of self caused quarries and other damaged areas in condition to be valid for agricultural use, forestry or other need; land re-cultivation shall be executed within one year after completion of use of damaged ground plot, if upon assigning of the land, it was not provided with other terms.

The above-mentioned law land users are provided also with special obligations in land protection:

- Cases when agricultural land is transformed into land which can not be used for agricultural needs or when forest lands is transformed into other types of land use, they shall be co-ordinated with the Ministry of Agriculture of the Republic of Latvia or other institutions delegated by the ministry;
- For land users who have objects on their land and operation of which can cause intensive land pollution shall be applied with sanitary protection zones within the borders of used land defining special land use regime (installation of protection plants, prohibition of growing of agricultural plants and other limitations to use of nature resources);
- Upon stationing, engineering, constructing and commissioning of objects, buildings and constructions as well upon introducing new technologies that can cause negative influence on soil condition the corresponding land protection and use measures shall be provided and implemented. It is prohibited to use technologies and commission objects if the mentioned measures have not been implemented;
- Users of agricultural land have the obligation to increase the fertility of the soil.

#### *VI-6.8. Mass media*

By analysing involvement of the most popular mass media (TV and daily newspapers) into identifying of environment problems it can be seen that environment issues are reflected in comparatively small amounts, mainly in the context of separate projects (construction of small water plants and its impact on environment, planned construction of cellulose plants, Baltic Oil Terminal in Daugavgriva, in past it was construction of Butinge oil terminal near Latvian border, construction within dune zone, etc.).

Newspaper *Diena* has column called “Nature of Latvia” which focuses on education and information of Latvian population on values of nature in Latvia. The column “Discoveries” as seen by the editors may provide possibility for publications of information on global environmental problems, for example, climate change (with the note “if there is reason to write about that”).

Problems related to land degradation are not reflected at all in mass media focused on large audience. Probably, it is practiced in specialised publications orientated towards agriculture, however it was not possible to carry out detailed research of this matter in this project.

## VI-7. Information resources

Information on quality of soil resources, its level of pollution, fertility and cadastral value as well as adequacy for development of various sectors of economy is necessary to various state institutions: structural units of ministries of Environment and Agriculture, State Land Service, municipalities as well as to land owners and users.

### VI-7.1. Gathering and accumulation in databases information about soil

By the beginning of Soviet period soil mapping was a competence of Land Utilisation system Administration under Ministry of Agriculture, but later competence of Land Utilisation Planning Institute (*Zemesprojekts*). Methodology was provided by Institute of Agriculture. All agricultural territories and state reserves have been mapped. Areas of State forestry fund have not been mapped in large scale.

Soil mapping was done together with soil quality estimation in three rounds. Due to changes in methodology during these rounds, the data is not entirely compatible.

1. 1959 – 1968 – mapping of all agricultural areas;
2. 1972 – 1976 – after massive land amelioration amendments in the results of the first round were made; new meliorated objects were inspected;
3. 1981 – 1991 – soil maps in scale 1: 10 000 for 13 districts were renovated.

In eighties in co-operation of Institute *Zemesprojekts* with Leningrad agriculture aerophotogeodesic institute overall mapping in scale 1 : 100 000 for 11 districts of Latvia was made.

At the same time examining of agricultural areas was done in five rounds by Republican Agrochemistry laboratory (later *Raziba*, now – non-profit organisation state SIA “Centre of Agrochemical Studies”)

1. 1959 – 1964
2. 1965 – 1972
3. 1973 – 1979
4. 1980 – 1985
5. 1986 – 1990

After rehabilitation of independence of Latvia soil mapping activities and examining of agricultural areas inter-alia were cancelled.

At the moment in Latvia there are several institutions which has different kind and plane data:

- State Land Service has detailed mapping material that shows soil type and grading composition spreading territories of former agricultural areas (materials of mapping 1959 – 1991 are gathered in “ Soil and Land Evaluation Matters).
- Non profit organisation – state enterprise “Centre of Agrochemical Studies” database “Agro” contains data about agrochemical and technological qualities of soil in period from 1965 to 1990. Since 1992 database about farmland agricultural qualities is under construction.

- The State Geological Service had accumulated data about soils, mother rocks, and their geochemical characteristics in Latvia and mapping in scale 1:500 000.
- Latvian Environmental Agency designs and maintains database with information accumulated during State Monitoring program, including components of the environment and Register of Polluted Areas inter alia.
- There are separate local databases in University of Latvia, University of Agriculture, State Hydrometeorology Agency, scientific institute *Silava* and other instances that carry out separate projects and take part in the State Monitoring program.

#### VI-7.2. *Soil monitoring and agrochemical examination*

The State Monitoring program is implemented and co-ordinated by Latvian Environmental Agency. Within the framework of the program, several subprograms include a component of soil monitoring:

- Soil radiation monitoring subprogram
- Integral monitoring subprogram (soil monitoring in two observation posts included)
- Monitoring subprogram of geological processes at seacoast risk areas.

Although the State Monitoring program includes also subprogram for monitoring of soil from areas used in agriculture and vegetation, it is not active because of lack of funding.

State Land Service carries out land supervision (soil monitoring) in 190 farms receiving information about soil productivity and change of agrochemical qualities. Received results are addressed to whole Latvia and the second stage is completed by now.

Non-profit State organisation SIA “Centre of Agrochemical Studies” carries out agrochemical examination of soil based on demands from farmers, landowners and legal persons as well.

#### VI-7.3. *Soil research projects and programs*

In recent ten years there has been several large scale projects in the World and Europe about soil resources global auditing and evaluation, and unifying different monitoring researches. Representatives from Latvia, mostly from academic organisations, had taken part in several EU, FAO and other projects:

- Development of digital world soil and relief database SOTER (FAO supported);
- Development programme of EU soil map in scale 1: 1 000 000;
- Development programme of EU analytical database of soil (JRC programme EC XII Directorate General);
- Soil and Relief pollution risk assessment database for Central and Middle European countries (SOVEUR: *Mapping of Soil and Terrain Vulnerability in Central and Eastern Europe*)

In University of Agriculture, University of Latvia, and Centre of Agrochemical Studies and in some more scientific organisations such as *Silava* there are some State financed projects connected with soil examination.

Within the period of time from 1996 to 1997 common project of Latvia and Norway was implemented under the title “Study of former Soviet army territories in Latvia and identification of problems and threats to environment”. During the project inspection was carried out of those former Soviet army territories which were inventoried before and in the result a document covering the inspected territories was prepared called “Passport of former Soviet army base”. Database containing information on 255 territories of former Soviet army was established. However, great number of former military territories were not examined in detail and included in the mentioned database.

In order to unite the so far dissipated information as well as to ensure co-ordinated co-operation among various state institutions in inventory of soil resources, data storage and actualisation, in year 2000 State Land Service attracting scientists and other stakeholders, established work group and developed project about Concept of aggregated soil information system. Although concept was finalised and submitted to government, it has not been accepted until now therefore it does not have legal status at the moment. One of explanations was that soil information was not considered to be enough important and these tasks were not allocated funding from the state budget. However, there is possibility (this is indicated by several interviewed) that further development of the conception was hampered by the potential discussion on the role and division of functions among involved institutions for implementation of the conception, in particular about the issue which organisation will be responsible for maintenance of the information base.

At the present there is funding allocated for project “Developing of soil quality database in Latvia”. Project contains the following tasks:

- Evaluation of soil information necessary for reporting to European Environment Agency (EEA);
- Description of information included in soil database of European Soil Office and evaluation of required information basing on information available in Latvia;
- Description and evaluation of information necessary for calculations of carbon balance (taking into account soil data available in Latvia);
- Development of list of European Environment information and monitoring network EIONET soil quality indicators and list of corresponding Latvian soil indicators;
- Analysis of Europeans Soil Protection Strategy;
- Preparation of summary on soil information (type and amount of information, period of time for which information is available, information carrier and other available data) available in various institutions in Latvia (State Geology Service, State Land Service, State Forestry Service, faculty of Geography and land Sciences of University of Latvia, Regional environment boards, Ministry of Environment, etc.).

## ANNEX VII

### Summary of the most essential sources of information, projects and activities in soil sector

Activity	Performer	Period of time
<i>Soil research and mapping</i>		
Research and mapping of soil within the country (Sc 1:10 000)	Land Utilisation Administration, Institute "Zemesprojekts"	1959-1968 1972-1976 1981-1991
Geo-chemical research and mapping of soil (Sc 1:500 000)	State Geology Service	1998 – now
Agri-chemical research, mapping, databases	Centre of Agrochemical Studies (formerly <i>Raziba</i> )	1959-1964 1965-1872 1973-1979 1980-1985 1986-1990 1990-now
<i>Monitoring</i>		
Land supervision monitoring in 190 farms	State Land Service	1995-2000
National Environment Monitoring (sub-programmes for soil radiation, integral monitoring, sea coastline monitoring)	Latvian Environment Agency (LEA)	2001 – now
<i>Projects</i>		
Development of soil quality database	LEA	July 2003 – now
Implementation of Stockholm Convention On Steady Organic Polluters	"Vides projekti", Latvian Environment Agency, Environment State Inspection	October 2002 – now
Study of former Soviet army territories in Latvia and identification of problems and threats to environment	Ministry of Environment, State Geological Service, Norwegian Geological Service, regional environment boards	1996 – 1997
Inventory of former Soviet army territories (300 locations inspected)	Ministry of Environment, regional environment boards	1994
Research of pollution at Lielvarde airport	Ministry of Environment, Ogre regional Environment Board, company IABG (Germany)	1994
Pilot project: Treatment of soil and ground water from missile fuel at Barta missile base	Ministry of Environment, Government of Canada, Riga Technical University	1994-1997
Pollution research and recovery at Rumbula airport in Riga district	Ministry of Environment, Danish Environment Agency, Riga City Council, company "Venteko" (Latvia)	1995 – now

<i>Policy documents</i>		
Environment Protection Policy Plan for Latvia 2 <sup>nd</sup> edition of the Plan	Ministry of Environment	1995
	Ministry of Environment	2003
Conception of Soil Informative System	State Land Service	2000
Waste Management State Plan	Ministry of Environment	2002
<i>Other activities</i>		
Identification, research and establishment of register of potentially polluted and already polluted areas	Municipalities, Ministry of Defence, regional environment boards, LEA	2001 – now
State subsidies for soil (improvement (chalking))	Ministry of Agriculture, Rural Support Service, farms	Every year