

## **Waste management**

### **Situation in Latvia**

600 to 700 thousand tons of municipal waste are produced in Latvia annually. Approximately one half of this quantity can be regarded as biodegradable municipal waste. Management of municipal waste within administrative territories is the responsibility of municipalities. The majority of collected municipal waste and other types of waste is buried in dump sites without pre-treatment. Approximately 40 per cent of collected waste is buried at the Getliņi landfill site situated in the Riga district.

10 to 12 new regional landfill sites for municipal waste and appropriate waste treatment installations are to be established in the Latvian territory in accordance with a waste management state plan (for 2003 to 2012), while the current dump sites are to be closed and recultivated.

According to a survey conducted by the Latvian Packaging Institute, the total volume of packaging waste per year exceeds 100 thousand tons. Pursuant to Law on Natural Resources Tax the tax is levied on the packaging of goods and products produced in Latvia and on the packaging of imported goods and products. The law also provides for tax allowances for business companies participating in the used packaging management programme on a voluntary basis.

Such programmes are carried out by several business companies on their own account. Business companies have also been established with their principal business activity related to the management of used packaging. The capabilities of processing several types of used packaging materials are limited in Latvia, therefore export of used packaging materials to other countries for processing is supported. The system for the collection and processing of used metallic packaging is not developed since the activity is currently not economically advantageous.

Approximately 93 thousand tons of hazardous waste were produced in Latvia in 2000. The majority of hazardous waste (60 per cent) is formed by metal production waste. At present hazardous waste is temporarily stored at the premises of business companies and special waste storage sites. Three sites have been installed for the storage of unusable pesticides containing approximately 2,000 tons of hazardous waste. Of these storage sites, only one site with a capacity of 1,500 tons complies fully with regulatory requirements, including the monitoring programme. Waste stored at the premises of business companies is kept packed in separate rooms.

Information is provided to regional environmental boards by business companies annually on produced and stored waste. The information is collected by the Latvian Environmental Agency. It is planned to either burn the stored waste or to bury it at the hazardous waste landfill site. The producer or owner of waste has to obtain a permit for the temporary storage of hazardous waste.

Pursuant to regulatory requirements, producers of batteries and accumulators are responsible for labelling which indicates that batteries and accumulators are to be collected after use separately from other municipal waste. Sellers of batteries and accumulators are obliged to take these products back once they have been used up

without extra charge, provide for safe storage thereof and enter into agreements with business companies providing hazardous waste management services on further management of such products.

There are several business companies operating in the country that collect accumulators containing lead and export them abroad for processing. In 2001 collection of used household batteries was started, mainly in supermarkets and schools.

End-of-life cars are used in spare parts, as scrap iron for export or stored in the territory of processing companies. Various liquids and oil residues are drained from end-of-life cars before storage. These residues are then either refined or transferred to business companies dealing in the collection of oil products. In Latvia it is possible to process or export for processing to neighbouring countries more than 90 per cent of materials and raw materials so obtained. Collection, processing and utilisation works are not carried out pursuant to regulatory requirements as yet, however. Collection of abandoned end-of-life cars is an important problem, especially in rural areas. The system for collection of used tyres must also be improved.

Approximately 700 thousand tons of oil products are imported to Latvia for internal consumption needs annually. An oil product collection and processing system has been established in part. In view of the high heating value of oil products, several business companies are involved in the collection of oil product waste for further use thereof as fuel. The majority of oil product waste is burned at the Brocēni Cement Factory. The processing capacity of oil product waste at the factory is approximately 1,000 tons per month. Some business companies provide treatment and refinement services of ship waste water polluted with oil products.

Over 1,000 tons of infectious waste were produced in the country in 2000. This type of waste is disinfected in special facilities or burned. Medical waste from dental surgeries and outpatient clinics are normally buried in dump sites.

### **Main problems**

1. Lack of a system for the collection, temporary storage and processing of hazardous municipal waste that would conform to environmental requirements.
2. Waste and packaging processing possibilities and capacities are not sufficient.
3. Regeneration of used oils not provided for.
4. The end-of-life vehicle management system is not streamlined and these vehicles are often abandoned.
5. Due to the low environmental awareness among residents waste is usually dumped in places unfit for this purpose and sorting of waste is insufficient.

### **National Environmental Policy goals**

1. To limit waste production and to reduce quantities of buried waste by promoting to processing or reuse thereof.
2. To implement a regional municipal waste management system.
3. To ensure that as much waste is reintroduced in the economic system as possible.

4. To provide for the burying of waste in a way that is safe for human health and the environment.
5. To facilitate waste processing as close to its place of origin as possible.
6. To facilitate the introduction of sorted waste collection system in municipalities.
7. To provide residents and entrepreneurs with information and to raise their awareness about waste management issues.

### **Audit Results**

During the audit we found out that the EU legislation adoption process was started in 1997. The state legislation in the sphere of waste management has been harmonized. The EU accession covenant foresees a few differences regarding waste transported for utilization, packing recycling and waste burying-grounds. The Used Vehicles Directive and Electric and Electronic Waste Directive have been fully transposed in 2004. According to the Waste Management Country Plan for 2003 - 2012, 10 regional waste burying-grounds have to be built by 2009. The building will most likely be delayed due to the lack of resources and their late allocation to these projects. Out of the 558 dumping-grounds that were functioning in 1997, only 245 are being used in 2003. The Ministry of Environment did not show the closed household waste dumping-grounds re-cultivation plans coordinated with the Ministry of Regional Development nor the financing source for closing and re-cultivating the existing dumping-grounds. All types of household waste are not being sorted in the state, but waste sorting is being implemented step by step, taking into account the limited recycling possibilities and the low solvency of the population. During the 12 years of the renewed independence of the state, a concrete action plan to stimulate the development of waste utilization as an industry still has not been developed. There is a lack of interest and initiative from the municipalities to use waste utilization as a possible solution for the unemployment problem. Municipalities are not looking for ways to cover the costs of modernizing and expanding the currently existing utilization plants.

Legality checks of waste management projects realization and waste dumping-grounds recultivation costs have been performed by selection, checking the expenditure of the North Vidzeme region pilot project, Maliena region project, and the Riga Regional Environment Board's recultivation project.

According to the financial memorandum 2001/LV/16/P/PE/006 approved in Brussels on 14 September 2001, the cost of the North Vidzeme pilot project totals 8.774MEUR, 3.954 MEUR of which are indirect costs (costs of the project preparation phase). The financing sources for the 4.820 MEUR approved for the project realization are as follows:

- 70% or 3.374 MEUR = ISPA co-financing;
- 6.2% or 0.302 MEUR = Latvia co-financing;
- 4.5% or 0.215 MEUR = investment from municipalities;
- 19.3% or 0.929 MEUR = a loan from the Nord Invest Bank.

The deadline for project implementation is December 2006. Household waste management in North Vidzeme region involves Cesis, Limbazi, Valmiera and Valka districts. In the period of 1998-2002 the pilot project preliminary study and

preparation works have been carried out with a total cost of 3.52 MEUR, financed from:

- state investment programs: 2.55 MEUR;
- municipality investments: 0.60 MEUR;
- gift from the Danish Environment Protection Agency: 0.37 MEUR.

In the project realization phase agreements have been signed about building a waste burying-ground and recultivating 12 dumping-grounds with a total cost of 3 998 799 UER, and waste collecting vehicles have been purchased for 816 824 EUR. After checking the use of 3.5 MEUR (documentation and legality) in the Ministry of Environment, non-profit state organization “Vides projekti” and the North Vidzeme Waste Management Organization Ltd, the auditors found that:

- during the project preliminary study phase in the Ministry of Environment the signed agreements were not being registered and work was not being recorded;
- the supporting documentation for the gift from the Danish Environment Protection agency was lacking;
- due to the technical and recording disorder in the household waste dumping-grounds, a reliable statistical information about waste management in the state is missing.

At the time of the performed check, the Investment Department of the Ministry of Environment was administering 32 environment related projects, including 15 projects co-financed by the EU structural funds with the planned costs of 207.8 MEUR. There is no distribution of supervision tasks for certain projects realization among staff members, and there are drawbacks in the control of economic and effective use of funds in the preparation phases of the projects. The capacity of the Regional Environmental Boards does not ensure a good quality performance of their functions. According to the estimates of the Danish Environment Protection Agency consultants, the number of environment inspectors in the state has to be doubled. Considering the wide spectrum of activities, the inspectors work in supervising household waste management is insufficient.

### **Conclusions:**

1. Legislation of the Republic of Latvia in the area of waste management has been harmonized with the EU Directives; however, the implementation is not fully coordinated and controlled. The capacity of Regional Environmental Boards does not provide for full execution of their duties.
2. Deficiencies in technical exploitation of household waste dumping grounds do not reflect the actual situation in the state.
3. Most local governments do not observe the provisions of Waste management Country Plan 2003 – 2012 regarding development of household waste management plans and binding regulations and agreeing them with the regional environmental boards.
4. There is not financially secured system of collecting dangerous household waste established in the state, as well as support to household waste sorting.

5. The Ministry of Environment has not developed and agreed with the Ministry of Regional Development plans for recultivation and sources of funding for closed household waste dumping-grounds.

**Recommendations:**

The State Audit Office considers it necessary to:

- introduce changes in laws and regulations laying down the responsibility of the Ministry of Environment for the control of waste movement, qualitative recording, development of waste processing and sorting system in the state;
- ensure development of regional waste management plans which include time schedules of closed dumping grounds re-cultivation and funding agreed with the Ministry of Regional Development;
- develop system of information exchange between the Ministry of Environment, Customs and Border Guard regarding issues within their competence that would confirm the coming of waste in the destination and report on its flow across the state borders;
- review the provisions of subordinate bodies with environmental inspectors;
- ensure analytical accounting of measures, source and utilization of founding of environmental projects administered by the Ministry of Environment.

# **Air Pollution**

## **Situation in Latvia**

Air quality in Latvia is affected by stationary and mobile emitters of polluting substances as well as transboundary flow of air pollution which can be compared in terms of volume to pollution originating in the territory of Latvia. Air quality, chemical composition of precipitation, and substance sediments in soil and water are affected by emission of polluting substances into the air. Air pollution causes or contributes to environmental phenomena such as acidification, eutrophication, formation of air-ground ozone and accumulation of hazardous chemical substances in living organisms. Both wet (as precipitation) and dry (as spays) sulphur and nitric compounds cause the formation of sediments which change the pH levels of precipitation and environment, and affect both ecosystems (soil, surface waters, woods) and buildings and cultural monuments. As a result of reduced volumes of industrial production and measures taken to raise energy efficiency, there has been a significant reduction in the volumes of air polluting substances produced by stationary sources of pollution. In the meantime, as the number of transport vehicles and traffic increases, so do the volumes of emitted substances, in particular emission volumes of nitric oxide, since cars made in the 1980s and 1990s without exhaust purification systems predominate among vehicles registered in Latvia.

Pollution by nitric oxide, carbon monoxide and solid particles (dust) affects human health significantly, in particular in cities. Air-ground ozone which forms in the lower atmospheric layers in photochemical reactions between nitric oxides, volatile organic compounds and other chemical substances and as a result of solar radiation, causes harm to human health and vegetation. The formation of ozonic pollution in the territory of Latvia is largely related to transboundary flow of pollution.

The system of air quality criteria is a rather complex one, nevertheless regulatory limit values are related to human health and preservation of ecosystems. Temporary permissible excess values have been established for separate indices, expressed as average concentrations per year, day, eight-hour or one-hour period. A limited number of instances where limit values are exceeded within a certain period of time has been set for several indices. An index for public information and alert level has also been established in Latvia; if this index is exceeded, public information must be broadcast promptly and measures taken to improve air quality.

The Latvian Hydrometeorological Agency carries out air quality monitoring and initial assessment. Nitric oxides, solid dispersed particles and air-ground ozone have been found to be the most significant threats to air quality.

Precise information about the actual air quality can be obtained by direct and continuous measurements; such measurements are costly, however. Air monitoring stations were therefore obtained within the limits of available funds and gradually installed, mainly in places where pollution levels represented as wide territories as possible and also in former locations of air sampling posts which no longer complied with regulatory requirements in terms of their parameters.

Air quality measurements are carried out in eight Latvian cities: Riga, Liepāja, Daugavpils, Ventspils, Rēzekne, Jelgava, Olaine, Valmiera and a borderline district in

which air quality is affected by Mazeikiai. Important information within the air quality assessment framework is also provided by air monitoring stations for continuous measurements owned by Riga and Ventspils municipalities.

Additional observations are also made by positioning diffuse sample analysers in eighteen Latvian cities to measure levels of sulphur and nitric oxide in the air. An analysis of benzene levels has also been carried out in individual sites in co-operation with Danish specialists.

The results of observations for the period from 1998 to 2002 show that:

- no cases have been found at any observation station where levels of sulphur dioxide would exceed regulatory indices for the protection of human health and ecosystems;
- levels of nitric dioxide as found in the central area of Riga exceed the limit value for human health protection of  $40 \mu\text{g}/\text{m}^3$ , which will become effective in 2010 pursuant to Cabinet regulations. The highest levels of nitric dioxide in the central area of Riga are found from 10:00 am to 08:00 pm, while in the district of Ķengarags these levels peak during morning and evening hours, which serves as proof of the impact caused by intensive road traffic;
- levels of air-ground ozone have been regularly found to exceed the eight-hour limit value for human health protection;
- in the central area of Riga, levels of solid particles less than 10 microns ( $\text{PM}_{10}$ ) exceed both the average annual concentration, taking into account permissible excess values, and the annual average concentration for human health protection. Cases where pollution levels are exceeded are also found in other Latvian cities (street sanding in the winter period is one of the causes for higher levels of dust in the air during spring months);
- in Riga, the average annual level of benzene exceeds the limit value for human health protection;
- levels of lead compounds and carbonic oxide which exceed air quality standards have been found rarely;

For air quality monitoring and management purposes the territory of Latvia has been divided in two regions (Western and Eastern) and an agglomeration (Riga). Taking into account the requirements laid down by regulatory acts, a long-term air quality improvement programme must be developed and implemented by the Riga City Council and other municipalities, if required, and public awareness raised about air quality issues.

The situation with air is also affected by the quality of used fuel. Quality standards for petrol and diesel should comply with European Union standards, but control of fuel quality is still insufficient. The use of fuel oil (black oil) as fuel in combustion units has been reduced significantly by using other types of environmentally friendly fuel instead. Black oil with high content of sulphur (over 1 per cent) is still used in Latvia, however.

Latvia has adopted EU requirements for control of volatile organic compounds in filling stations and oil bases and activities involving the use of organic solvents. These requirements will be implemented in Latvia in accordance with the established transition periods.

Public welfare is affected by diffusion of offensive odours produced by factories, terminals or agricultural activities. Since currently there are no regulatory enactments that regulate the diffusion of odours and permissible levels and approved methods for odour measurements, these issues will have to be dealt with in the immediate future.

Recognition of the fact that the reduction of ozonic concentration in the stratosphere is a global environmental problem has resulted in the adoption of the Vienna Convention for the Protection of the Ozone Layer (1985), the Montreal Protocol on Substances That Deplete the Ozone Layer (1987) and other documents. Latvia is party to the Vienna Convention and the Montreal Protocol.

Implementation of the Montreal Protocol is expected to result by 2050 in the regeneration of the ozone layer at the levels of 1980. Ozone depleting substances are being taken out of the production of sprays and foam materials since 2000 and a system formed for the collection and reuse of cold carrier (Freon- 12) pursuant to the Programme for Phasing Out the Use of Ozone Depleting Substances.

Nevertheless ozone depleting substances are still used in refrigerating equipment (Freon-22), laboratories (tetrachlorocarbon), production of medicine, grain processing, cargo processing before dispatch and for quarantine purposes (methylbromide). According to provisions of the Montreal Protocol, these substances may be used, in the absence of appropriate alternative solutions, for laboratory needs, cargo processing before dispatch and quarantine, and as reagents or raw materials for the production of other substances.

In Latvia it is planned to phase out the use of ozone depleting substances in accordance with the timetables established by the Montreal Protocol and regulations of the European Union.

### **Main problems**

1. Air quality limit values (volumes of nitric oxide, solid dispersed particles, air-ground ozone) exceeded in major cities.
2. Significant levels of air pollution caused by transboundary flow, including several stationary sources of pollution near Latvian border.
3. Air quality conditions are not taken into account in traffic planning.
4. It is difficult for general public to obtain information on air quality and its impact on human health.
5. Public opinion is not sufficiently respected in constructing new objects which cause pollution.
6. There are no regulatory enactments and regulatory measures that restrict diffusion of odours.
7. Air pollution with compounds of heavy metals (arsenic, cadmium, mercury, nickel) and polycyclic hydrocarbons has not been assessed adequately.

### **National Environmental Policy goals**

1. To ensure air quality which conforms to standards and long-term goals, to improve air quality in places where it is not satisfactory, with particular attention paid to major cities and manufacturing enterprises.

2. To improve international co-operation in order to reduce levels of transboundary air pollution significantly.
3. To reduce the risk of eutrophication in water bodies caused by air pollution.
4. To make an air quality assessment for compounds of heavy metals (arsenic, cadmium, mercury, nickel) and polycyclic hydrocarbons in order to develop new standards.
5. To provide for the fulfilment of Latvian international obligations with respect to restricting the use of ozone depleting substances.
6. To develop and implement regulatory enactments restricting diffusion of offensive odours.

# **Energy from renewable resources**

## **Situation in Latvia**

Both local (wood pulp, peat, water resources, wind energy) and imported energy resources (oil products, gas, coal) are used in Latvia for energy production purposes. In 2002 the total energy consumption in Latvia was approximately  $2 \times 10^{17}$  J, of which approximately 60 per cent were produced using imports of energy resources.

In recent years the percentage of gas, environmentally the friendliest fossil fuel, has increased significantly, amounting in 2002 to 30 per cent of the consumption levels of primary energy resources in Latvia. Of the local energy resources, wood pulp fuel is used the most, which amounts to approximately 22 per cent of the consumption levels of primary energy resources, while the quantity of power produced by Latvian hydroelectric stations and wind power stations amounts to approximately 7 per cent. Depending on the quantity of precipitation, Latvian hydroelectric stations provide 60 to 70 per cent, while cogeneration plants provide approximately 25 per cent of the quantity of electric power produced in Latvia. The remaining required quantity of electric power is imported.

Technologies and installations are still used in power industry that contain environmentally hazardous substances. Transformers and condensers containing hazardous organic compounds, including polychlorinated biphenyls, are in operation.

In recent years the number of small hydroelectric stations has increased considerably, with electric power purchase policy contributing to the process. However, the construction of new small hydroelectric stations and renovation of the old ones affects biodiversity. Blocking of fish migration routes which makes it impossible for fish to reach their spawning grounds is also viewed in a negative light.

Water level fluctuations in the water reservoirs of hydroelectric stations affect the survival prospects of fish spawn laid by species spawning on the coasts negatively. Specially protected biotopes and species are also degraded, changes occur in the landscape, microclimate and ground water levels, which has a direct negative impact on the water quality in river basins. The variety of flora and fauna is also changing, flooded places become marshy and bank erosion takes place as a result of large fluctuations in the water level.

## **Main problems**

1. The burning of various types of fuel for energy production purposes without required permits and equipment, which increases air pollution significantly.
2. Lack of regulatory enactments that would stimulate the production of alternative power and the implementation of environmentally friendly technologies.
3. Unreasonable use of highly productive energy instead of lower quality energy.
4. Failure to employ efficient technologies for the use of biomass.
5. Natural processes disturbed in natural ecosystems as a result of the operation of hydroelectric stations.
6. The negative effect of power distribution networks on natural ecosystems.

7. Insufficient awareness of the community about the effect of power industry on the environment and on biological fuel production capacities.

#### **National Environmental Policy goals**

1. To contribute to the sustainable development of power industry.
2. To increase the use of local renewable resources.
3. To include environmental costs in the price of energy.
4. To ensure a more efficient use of energy resources by implementing modern and environmentally safe technologies.