



Ministerstvo životního prostředí

**Ministry of Environment**

**The State Environmental Policy of the Czech Republic**

**2012 – 2020**

**(Summary)**

## Contents:

I. Our objective .....	2
II. Background.....	3
a) Analysis of external influences (only in CZ version).....	
b) State of environment in the Czech Republic and predictions up to 2020 .....	4
III. Methodology for priority setting .....	5
Summary of key issues	
IV. Key policy areas and objectives .....	7
<b>1. Protection and sustainable use of resources</b> .....	8
1.1 Water protection and improvement of water quality .....	8
1.2 Waste prevention and minimization, waste reuse and recovery .....	9
1.3 Protection and sustainable use of soil and geological environment .....	10
<b>2. Protection of climate and improvement of ambient air quality</b> .....	11
2.1 Reduction of greenhouse gas emissions and negative impacts of climate change.....	11
2.2 Reduction of ambient air pollution .....	12
<b>3. Protection of nature and landscape</b> .....	14
3.1 Protection and strengthening of ecological functions of landscape .....	14
3.2 Maintenance of nature and landscape value.....	14
3.3. Improvement of environment in urban areas .....	16
<b>4. Safe environment</b> .....	17
4.1 Risk prevention.....	17
4.2 Protection of environment against negative impacts of environmental disasters .....	18
V. Implementation part (only in CZ version)	
VI. Instruments (only in CZ version)	
VII. International co-operation (only in CZ version)	
VIII. Indicators (only in CZ version)	
IX. Evaluation (only in CZ version)	

## I. Our objective

The State Environmental Policy of the Czech Republic sets a framework for an effective protection of environment in the Czech Republic until 2020.

The main objective of the Policy is to ensure a healthy and high-quality environment for citizens living in the Czech Republic, to significantly contribute to a more effective use of resources and minimize negative impacts of human activities on environment, including cross-border impacts, and thus contribute to the improvement of quality of life in Europe and globally.

The Policy focuses on the following areas:

- Protection and sustainable use of resources including protection of natural resources, water protection and its improvement, preventing generation of waste and ensuring its maximum recovery while limiting negative impacts of waste on environment, protection and sustainable use of land and geological environment.
- Climate protection and improvement of ambient air quality aiming to reduce greenhouse gas emissions and negative impacts of climate change on the territory of the Czech Republic, to reduce air pollution, to promote effective use of nature friendly renewable sources of energy and energy efficiency and savings.
- Protection of nature and landscape primarily comprising of protection and strengthening of ecological functions of landscape, preservation of nature and landscape values and improvement of urban environment.
- Safe environment including prevention of impacts of environmental disasters (floods, droughts, hillside instabilities, erosion etc.).

As the EU Member State, the Czech Republic will aim to fulfil its commitments set in the EU environmental legislation, and will remain an active and reliable partner in formulating new legislative, non-legislative and strategic EU documents at all levels within the European structures.

The Czech Republic will actively develop bilateral and multilateral environmental cooperation in order to support solutions of various national, regional and global environmental issues as well as promotion of Czech expertise and environmental technologies.

### **The main principles of the State Environmental Policy**

The Policy applies primarily the following guiding principles:

- *Policy integration principle* - the State Environmental Policy is of a cross-cutting nature and therefore its objectives shall be integrated into other policies (i.e. energy, transport, agriculture, etc.).
- *Prevention principle* - Prevention is the most important principle in the field of environmental protection. Timely introduction of preventive measures is more effective and economical than potential damage rectification especially when irreversible pollution of environment is concerned, or in cases of depleted natural resources, damaged human health and ecosystems. Application of preventive measures plays an important role also in the case of natural disasters.

- *Precautionary principle* - In the case of irreversible damage to health or environment preventative measures are still taken to avoid economic losses.
- *Polluter pays principle*<sup>1</sup> - anyone who causes damage to environment should bear the costs related thereto. One of the aims of applying this principle is the inclusion of negative externalities<sup>2</sup> into the polluters' costs.
- *Principle of cost-effectiveness* - the best possible relation between resources used in the given activity and the achieved results.
- *Increasing public awareness* of environmental issues.
- *Principle of international responsibility* - compliance with commitments from the EU membership, international agreements and membership in organizations such the United Nations or Organization for Economic Co-operation and Development and play an active part in the development co-operation.

## II. Background

The interconnection between economic, social and environmental policies is becoming even more significant at present and therefore requires even stronger co-ordination of relevant sectors and cooperation on regional, national, European and global level.

In order to achieve effective protection of environment and at the same time encourage economic growth and social policy, the environmental protection policy needs to be interlinked and coordinated with other policies and strategic documents (in particular climate protection policy, energy policy and raw material strategy, security strategy and other policies from the agricultural, transport and health sector). The implementation of the State Environmental Policy will contribute to the economic growth and competitiveness mainly by increasing resource and energy efficiency. The implementation of the policy will also contribute to the promotion of environmental technologies and innovations, by supporting the research and innovation potential of Czech corporations and their position on the domestic market and abroad. At the same time, the policy must resonate with the social cohesion policy, as household and individual behaviour also influences the state of environment and vice versa.

The Policy respects the main national and international documents, mainly: the Strategic Framework for Sustainable Development of the Czech Republic<sup>3</sup>, the revised EU Sustainable Development Strategy (EU SDS) of 2006, the Europe 2020 Strategy from 2010<sup>4</sup> and its relevant flagships, in particular "A Resource Efficient Europe".

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<sup>1</sup> This principle is based on Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage as well as on Article 174 of the Treaty establishing the European Community.

<sup>2</sup> Externality is an economic term denoting external effect of a certain economic decision, or activity, i.e. a portion of such effect, incurred by party other than its originator. Externalities may denote costs or benefits or others subjects which are not subject to payment: the originator cannot appropriate these benefits (i.e. positive externalities), and in the opposite case, the costs (negative externality) cannot be automatically enforced against him. An example of a negative externality is pollution of environment caused by economic activities; an example of a positive externality may be education or non-production functions of forests.

<sup>3</sup> approved by the Government in 2010.

<sup>4</sup> European Commission Communication "Europe 2020 - A strategy for smart, sustainable and inclusive growth" of March 2010.

On the national level the Policy is in line with the National Reform Programmes (NPR) and its annual updates. The Policy acts also as the main reference document for the strategic preparations for the new EU programming period 2014-2020.

It also responds to the recommendations formulated by the Organisation for Economic Co-operation and Development (OECD) towards the Czech Republic in 2005 in its Environmental Performance Review, state and development of the environment<sup>5</sup> and follows the main related international strategic work - in the EU (e.g. the preparations of the EU 7<sup>th</sup> Environmental Action Programme), United Nations, OECD – in particular in the field of green growth and resource efficiency.

## **The state of environment in the Czech Republic and its predictions up to 2020**

The quality of environment in the Czech Republic considerably improved over the last 20 years, however there are still areas in which further actions need to be taken. Especially in the field of **ambient air quality**, which represents a risk to human health and ecosystems in the most affected areas, mostly in larger urban agglomerations and industrial regions. The most significant issues are concentrations of particulate matters (PM<sub>10</sub> and PM<sub>2,5</sub>) and immission limits for benzo(a)pyrene and ground-level ozone, which are among other factors caused by growing traffic intensity and consumer behaviour of households (e.g. unsuitable local heating).

It is predicted that by 2020, a significant reduction in solid polluting substance emissions should take place (i.e. of SO<sub>2</sub>, NO<sub>x</sub>, VOC, CO and NH<sub>3</sub>). In the case of SO<sub>2</sub>, it is anticipated that by 2020 the emissions will drop by more than 40 % in comparison with 2009. NO<sub>x</sub> emissions will drop by more 45 % by 2020. Relatively small reduction is anticipated for VOC emissions, by a mere 25 %, due to a continuous growth in car transport.

The **water quality** has been improving gradually, especially due to reduction of pollution discharged by point source polluters. A significant factor influencing water quality is the ratio of population connected to water supply systems and sewerage networks, which terminate in waste water treatment plants; their number has nearly doubled since 1990, especially in connection with more frequent construction of waste water treatment plants with tertiary treatment stage. The amount of treated wastewater reached 97 %. The number of inhabitants connected to drinking water supply is also increasing, 93% of population is supplied by drinking water of high quality. Nevertheless further investment is needed in the field of sewerage and wastewater treatment as well as water supply.

The total **waste** production decreased between 2003 and 2011 by 15,0 % (year-to-year decrease by 3,6 %). The Czech Republic belonged in 2010 to the EU countries with the smallest production of municipal waste. However, the most common method of waste disposal is landfilling – 97,0 % in 2010 from the selected methods of waste disposal (59.5% of all municipal waste landfilled). On the other hand a good performance is noted in recycling - in 2011, 69,7% of the total amount of produced packaging waste was recycled, which is above the EU average.

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<sup>5</sup> OECD Environmental Performance Review: Czech Republic.

Due to changes in landscape use and climate change the **resistance of ecosystems** decreases.

Greenhouse gas emission dropped between 1990 and 2009 by 32 %. Model simulations anticipate gradual increase of average annual temperature by 0.3 °C per decade. The total aggregated annual rainfall volumes should not considerably change in the coming years, however the rainfall distribution over the next ten years and during individual years will be a significant factor, as well as its uneven territorial distribution. Changes to landscape may bring higher risk of water and wind erosion and reduced retention capacity of land, which will thus become more exposed to flooding. Similarly, more frequent instances of droughts caused by insufficient rainfall are anticipated (the so-called meteorological drought), as well as increased evaporation due to higher temperature (the so-called agricultural drought).

### III. Methodology for priority setting

When determining the priority areas and the related objectives and measures, the following was taken into consideration:

- Evaluation of the state of environment and its predictions (briefly described in Chapter II) and evaluation of the State Environmental Policy 2004 – 2010. The aim is to react on the most crucial environmental problems.
- The most important commitments from the national and EU environmental legislation up to 2020.
- Commitments from selected multilateral environmental agreements which are the most relevant in terms of improving environment in the Czech Republic, as well as our activities in the selected international organizations.

#### Summary of key issues:

The most **important and urgent problems to be tackled in the short and medium term period:**

- Ambient air quality is the most pressing issue, especially with regard to the above-the-limit concentration of dust – PM<sub>10</sub>.
- Due to the changes in landscape use and climate change, the ability of ecosystems to resist external effects is being reduced, especially in relation to extreme events / weather, such as downpours, longer period of droughts or strong winds.
- Another key priority is also effort to improve landscape retention capacity, ability to adapt to increasing intensity of natural disasters and strengthening ecological stability of landscape.
- A persisting issue in the Czech Republic is the fact that the most common waste disposal method is landfilling. Reduction of landfilling and increase of waste reuse and recovery (material and energy) belongs to the key priorities.

- Urban wastewater treatment, improvement of drinking water supply and achieving a good ecological condition of waters remain an important priority.
- In terms of nature and landscape protection, a priority is to reduce impacts of landscape fragmentation including river systems, ensuring protection and limiting loss of plant and native animal wildlife, as well as managing issues related to non-native invasive species.
- Protection of soil, which is one of the most endangered natural resources in the Czech Republic.
- Adoption of preventive measures to avoid impacts of natural disasters.

Other important issues of a **medium term or long term character**:

- Reduction of greenhouse gas emissions and achieving the share of energy generated from nature friendly renewable sources according to the EU climate and energy legislative package.
- Improvement of energy efficiency performance.
- Reduction of soil contamination and erosions of farming and forest land.
- Regeneration of brownfields.
- Reduction of negative impacts of noise on population.

The last group of priorities covers areas, which do not experience negative trends, however it is important to maintain their good condition.

- Maintenance of heavy metals emissions and persistent organic substances below the 1990 levels and their continuous reduction.
- Alleviation and preventing consequences of mining.
- Economic and efficient management of water consumption in urban areas.

#### IV. Key policy areas and objectives

Policy areas	Objectives
<b>1) Protection and sustainable use of resources</b>	1.1 Water protection and improvement of water quality
	1.2 Prevention and minimizing of waste, waste reuse and recovery
	1.3 Protection and sustainable use of soil and geological environment
<b>2) Protection of climate and improvement of ambient air quality</b>	2.1 Reduction of greenhouse gas emissions and negative impacts of climate change
	2.2 Reduction of ambient air pollution levels
	2.3 Effective use of nature friendly renewable resources of energy
<b>3) Protection of nature and landscape</b>	3.1 Protection and strengthening of ecological functions of landscape
	3.2 Maintenance of nature and landscape values
	3.3 Improvement of environment in urban areas
<b>4) Safe environment</b>	4.1 Risk prevention
	4.2 Protection of the environment against negative impacts of environmental disasters



## 1. Protection and sustainable use of resources

Sustainable management and consumption of resources has been given increasing attention on national and international level. It is a cross-cutting issue affecting all priority areas of the State Environmental Policy, as resources comprise of not only natural resources (water, wind, soil, solar and geo-thermal energy, land, raw materials, etc.), but also food or waste. This chapter focuses only on some of them - water, waste, soil and mineral resources. Other resources are covered in the following chapters.

### 1.1 Ensuring water protection and improvement of water quality

The key legislative framework is the EU Water Framework Directive<sup>6</sup>. The main aim is to achieve a good status of all surface and groundwater and prevention of their deterioration, which is to be achieved by relevant measures for individual river basins – e.g. introduction of the best available technologies for wastewater treatment, revitalization of rivers and prevention of diffuse pollution or removing contaminated sites and ecological burdens, etc. The Policy will focus also on objectives covered in other water directives – e.g. in the field of urban wastewater treatment, nitrates, bathing water and others.

An important role plays also cooperation within the framework of the International Commission for the Protection of the Elbe River, the Commission for the Protection of the Danube River, the Commission for the Protection of the Oder River against pollution and the United Nations Economic Commission for Europe (UNECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the Protocol on Water and Health.

#### Objectives:

*1.1.1 implementation of the monitoring programmes for surface and groundwater for evaluation of all measures implemented under the Water Framework Directive, as a fundamental instrument for assessment of their efficiency*

*1.1.2 Achievement of at least a good ecological status or potential and good chemical status of bodies of surface water<sup>7</sup>, achievement of good chemical and quantitative status of bodies of groundwater<sup>8</sup> and ensuring protection of water in protected territories defined in accordance with the Water Framework Directive*

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<sup>6</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

<sup>7</sup> "Good surface water chemical status" means the chemical status required to meet the environmental objectives for surface waters established in Article 4(1)(a), that is the chemical status achieved by a body of surface water in which concentrations of pollutants do not exceed the environmental quality standards established in Annex IX and under Article 16(7), and under other relevant Community legislation setting environmental quality standards at Community level."

<sup>8</sup> "Good groundwater chemical status" is the chemical status of a body of groundwater, which meets all the conditions set out in table 2.3.2 of Annex V."; "Quantitative status" is an expression of the degree to which a body of groundwater is affected by direct and indirect abstractions."

## **1.2 Prevention and minimizing of waste, waste reuse and recovery**

The compliance with the waste management hierarchy<sup>9</sup> as defined in the EU legislation will be followed. However, landfilling poses a continuous problem in the Czech Republic as it represents the most often used method of waste disposal. In 2010, the total of 59.5 % of all municipal waste had been deposited at landfills, and it continues at similar rate.

Prevention is one of the most fundamental approaches within the framework of the waste management hierarchy. Increasing environment awareness of public ranks among the main instruments for achieving this goal.

Reduction of waste production focuses on the use of the best available technologies, maximum recovery of waste in the manufacturing process where waste may replace raw materials on input, promotion of waste-free technologies with the aim to reduce production of waste especially in manufacturing processes.

Increased material and energy recovery of waste seeks to achieve the highest possible degree of re-use, material and energy recovery and other use of already produced waste. The aim is to achieve such waste re-use or recovery, which would minimize negative impacts on environment. This involves replacement of natural resources and raw materials or replacement of primary energy sources with waste. In order to achieve these objectives, it is not only necessary to support waste recovery but also to promote such product design which will be the most economical in terms of materials used, and simultaneously which will allow maximum recovery of waste so generated.

The OECD Council Recommendations on material flows and resource productivity adopted in 2004-2008 will be taken into consideration too.

The waste management sector includes also cross-border movement of waste to and from the Czech Republic. It is regulated by respective EU legislation. The waste transport is permitted in the form of administrative procedure in such way to minimize environmental risks. The Czech Republic is also a party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Disposal, whose aim is to reduce movements of hazardous waste between states at the global level, and specifically to prevent transfer of hazardous waste from developed to less developed countries for disposal and recovery.

### **Objectives:**

*1.2.1 Reduction of the share of landfilling on the total waste disposal processes*

*1.2.2 Increase of material and energy recovery of municipal and similar waste*

*1.2.3 Prevention of waste production*

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<sup>9</sup> Within the framework of waste management the following hierarchy of waste management shall be observed:  
a) prevention , b) reuse, c) recycling, d) recovery, e) disposal.

### 1.3 Protection and sustainable use of soil and geological environment

In the last several years the annual loss of agricultural land reached approximately 5 000 hectares a year, i.e. about 14 hectares a day, according to the Czech Office for Surveying, Mapping and Cadastre. More efficient legislative and economic instruments and increased utilization of brownfields will help to decrease the loss of arable land and geological environment. Implementation of a set of organizational, agro-technical, bio-technical and technical measures will be required in order to slow down the erosion process causing soil degradation. The most common land erosion in the Czech Republic is water erosion. One of the main causes of accelerated soil erosions is inappropriate farming using unsuitable crops on land with potentially high erosion.

An alarming negative factor is soil and geological environment contamination by pollutants primarily discharged as a consequence of human activity (e.g. industrial and calcic fertilisers, plant protection preparations, sludge from wastewater treatment plants and sediments mined from river beds, lakes and reservoirs). The objective is therefore to reduce negative impacts of contaminated sites affecting environment and human health as well as soil and minerals, or possibly removal of contaminated sites suffering from old ecological burdens included those prior to the privatisation process, old Soviet Army sites, still some of the sites with old ammunition from the World War II, etc.

Energy security and self-sufficiency belongs to the key national priorities of the Czech Republic, taking into account its limits, ensuring sufficient supply of electricity, heat and fuel to the population and to the production sector. Therefore it is also essential to minimize negative impacts of mining and its impacts on environment and ensure protection and sustainable use of the geological environment. A necessary part of the modern approach to site cultivation after mining is to increase the share of natural areas and the application of the cultivation methods using succession.

The Policy includes international commitments of the Czech Republic in addressing issues related to soil and geological environment erosion within the framework of the United Nations Convention to Combat Desertification (UNCCD) and its Ten-year strategic plan for the period 2008 - 2018.

#### **Objectives:**

- 1.3.1 Reduction of permanent claims of agricultural land and basement rock*
- 1.3.2 Reduction of exposure of agricultural and forest land and geological environment to erosion*
- 1.3.3 Reduction and regulation of contamination and other soil and mineral degradation caused by human activity*
- 1.3.4 Sanitation of contaminated sites including old ecological burdens, remaining sites with old ammunition and remedy of ecological damage*
- 1.3.5 Elimination and prevention of consequences of mining and mineral extraction activities*

## **2. Climate protection and improvement of ambient air quality**

### **2.1 Reduction of greenhouse gas emissions and negative impacts of climate change**

The anthropogenic emissions of the main greenhouse gases as they have been defined in the United Nations Framework Convention on Climate Change (UNFCCC) (carbon dioxide, methane, nitrogen oxide, fluorinated greenhouse gases) are being monitored and published within the framework of the National Greenhouse Gases Inventory System of the Czech Republic.

The EU has declared its commitment to reduce greenhouse gas emissions by 2020 by at least 20% in comparison with 1990 using the EU climate-energy package as the main instrument. The commitment in the package for the Czech Republic is to reduce emissions by 21 % in comparison with 2005 in industrial and energy installations which take part in the EU Emissions Trading System (EU ETS), and commitment to limit by 9 % the growth in emissions in other economic sectors outside the EU ETS (in comparison with 2005) within the framework of the shared effort to reduce greenhouse gas emissions.

A persisting problem for the Czech Republic, as well as many other EU Member States, remain relative high specific greenhouse gases emissions per inhabitant. Therefore another objective is to reduce emissions per inhabitant to at least the average value for the entire EU-27 in 2005 by 2020, which was at the level of 10.5 t CO<sub>2</sub>eq. Given the specific emissions of 12.7 t CO<sub>2</sub>eq per inhabitant in the Czech Republic in 2009, this objective corresponds to the reduction of specific emissions per inhabitant by approximately 17 % by 2020.

An important factor for the reduction of greenhouse gas emissions is the support of nature friendly renewable sources of energy and energy savings. Promotion of measures to increase energy efficiency by introduction of more energy efficient technologies leads to energy savings as well as contributes to the energy self-sufficiency.

With regard to negative impacts of climate change, the Czech Republic faces the biggest threats in terms of more frequent extreme meteorological and hydrological events. The primary objective will be the implementation of adaptation measures in water management and setting up optimal relations between water regime and landscape structure.

A comprehensive approach must be taken in defining and implementation of these adaptation measures (i.e. purpose-driven linkage between various agro-technical, bio-technical and technical measures into one functional structure that focuses on the increased accumulation of water on the territory, lowering of peak flows during flooding, improved preparation of the terrain in areas suffering from floods and reducing erosive washing away of arable and forest land) and coordination of individual activities across all involved sectors and entities.

#### **Objectives:**

*2.1.1 Improvement of adaptation to climate change*

*2.1.2 Reduction of greenhouse gas emissions within EU ETS by 21 % and limiting emissions growth outside the EU ETS to 9 % by 2020 in comparison with 2005*

## 2.2 Reduction of ambient air pollution levels

The Czech Republic continues to tackle the issue of immission limits in terms of protection of human health, ecosystems and vegetation as specified in the national and EU legislation. The most problematic appears to be the exceeded limits for suspended particles – dust (PM<sub>10</sub> and PM<sub>2,5</sub>) and target immissions limits for benzo(a)pyrene. Suspended particles affect human health in dependence on their size, chemical composition and shape. These particles often tie to their surfaces substances with carcinogenic or mutagenic effects such as heavy metals or polycyclic aromatic carbohydrates (such as benzo(a)pyrene).

The main sources of the above mentioned polluting substances (dust particles, benzo(a)pyrene) are primarily transport (e.g. re-suspension, exhaust emissions), household heating (obsolete boilers using solid fossil fuel) and industrial sources (metallurgy, coking plants, energy sector and other sources). Besides direct emissions into the atmosphere, particles enter air also via so-called re-suspension - a renewed suspension of insoluble particles after they have been precipitated. However, a significant part of suspended particles comes from precursors (primarily from NO<sub>x</sub>, SO<sub>2</sub>, NH<sub>3</sub> and VOC).

Ground-level ozone is created only by secondary reaction of precursors, which include primarily VOC and NO<sub>x</sub>.

Due to long-distance transmission of air polluting substances across country borders, the Czech Republic will emphasize co-operation within the framework of the United Nations Economic Commission for Europe, UNECE – i.e. from the Convention on Long-range Transboundary Air Pollution (CLRTAP) and its the protocols.

In order to ensure fulfilment of the national or international targets the focus will be put on the key sectors that significantly contribute to the emissions of individual monitored substances, giving emphasis to the application of the best available technologies.

### Objectives:

*2.2.1 Improvement of ambient air quality in locations with exceeded immission limits and maintenance of air quality where the limits are not exceed*

*2.2.2 Fulfilment of the national emission ceilings in force from 2010 and reduction of the total emissions of SO<sub>2</sub>, NO<sub>x</sub>, VOC, ammoniac (NH<sub>3</sub>) and fine dust particles (PM<sub>2,5</sub>) by 2020 in line with commitments of the Czech Republic<sup>10</sup>*

*2.2.3 Maintenance of emission levels of heavy metals and persistent organic substances below the 1990 levels and their further reduction*

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<sup>10</sup> Percentual target reduction of emissions will be adjusted in relation to the approved wording of the document entitled Potential to reduce emissions of pollutants in the Czech Republic by 2020

## **2.2 Effective use of nature friendly renewable resources of energy**

This priority emphasizes effective use of nature friendly renewable sources of energy. Increased use of renewable energy resources is necessary both for the gradual shift from the dependence on fossil fuels and in order to strengthen the energy security of the Czech Republic. The most significant renewable sources for the Czech Republic is biomass and to some extent photovoltaic and thermo-solar systems, wind turbines and small hydropower stations. However construction of each of the facilities utilizing renewable energy sources and related infrastructure, with the exception of smaller household and public building installations, which are also dislocated on the Natura territory, must be subject to the biological evaluation process in line with the Act No. 114/1992 Coll., on Protection of Nature and Landscape, as amended, or eventually subject to other evaluation processes as may be required by the relevant legislation.

### **Objectives:**

*2.3.1 Fulfilment of the 13% contribution of energy from renewable sources on the gross total energy consumption by 2020*

*2.3.2 Fulfilment of the 10% share of energy from renewable sources in transport sector by 2020 while reducing NO<sub>x</sub>, VOC and PM<sub>2,5</sub> emissions from transport*

*2.3.3 Compliance with commitments to increase energy efficiency by 2020 (note: for EU as a whole this represents 20%)*

### **3. Protection of nature and landscape**

#### **3.1 Protection and strengthening ecological functions of landscape**

The most significant phenomena with a negative impact on the ecological stability of landscape is its increasing fragmentation, including fragmentation of river flows related to the settlement developments, transport and other infrastructure, lowered retention capacity of landscape, rapid changes in land use, unsustainable use of natural resources, intensive way of farming and in some cases, etc. Therefore, it is necessary to ensure that essential ecological functions of landscape are maintained, both by preserving existing ecologically stable areas and by promoting and linking these functional areas within landscape as a whole.

Efforts must be made to restore the natural water regime of landscape, which requires a comprehensive approach using erosion control, revitalization and flood control measures and adapt landscape management accordingly.

Ecosystems provide a wide range of services that directly or indirectly significantly contribute to the maintenance and improvement of quality of life. One of the methods of expressing the value of natural components of environment, respectively the value of natural processes in relation to environment in which they take place, is to assign, through a defined process, an economical (financial) equivalent to the so-called ecosystem services, which are mediated by those processes.

Strengthening of ecological functions of landscape may be achieved through a set of efficient legislative, economic, administrative and organizational measures that promote natural functions of landscape and preserve related ecosystem services.

Cooperation of all concerned administrations and entities is a necessity as these issues are often of a cross-cutting nature (especially agriculture, transport, planning processes, etc.), at the national and international level (incl. the European Landscape Convention). An integral part of measures that are designed to maintain and restore ecological functions of landscape and ensure its sustainable use is increased general public awareness of the importance of ecological functions of landscape.

#### **Objectives:**

- 3.1.1 Increase of ecological stability of landscape*
- 3.1.2 Restoration of landscape water regime*
- 3.1.3 Reduction and mitigation of landscape fragmentation*
- 3.1.4 Sustainable management of agricultural land and forests*

### **3.2 Maintenance of natural and landscape values**

The Czech Republic belongs within Europe among territories with relatively high variety of plant and animal species and natural habitats, which form a fundamental component of ecosystems. This is mainly due to its geographical location on the boundary of Hercynian, Carpathian, Polonian and the Pannonian bio-geographical regions. It is estimated that there are in the Czech Republic at present more than 35,000 species and over 3,000 types of vascular plants. The variety and number of plant and animal species however constantly evolve and change over time. On one hand, the number of species is increasing, mainly due to undesired spread of non-native and often invasive organisms, but also as a result of natural variations favouring thermophilic species as a result of changing climate. On the other hand, scientific studies confirm strong threats to biodiversity and species extinction on a global scale, with losses occurring 100 times to 1,000 times faster than what the natural rate of decline would normally be. A similar situation exists in the case of the Czech Republic with presently about a third of endangered species on its territory. A number of natural habitats are at risk as well, especially those whose character depends on traditional farming methods (pasture, prairie grasslands, light forests) and as a result of intensive land use.

Protection of areas with large numbers of protected and native species of plants and animals, with well-preserved natural habitats and functioning natural processes or aesthetically valuable landscape is largely ensured through protected areas (including Natura 2000), which represent the most valuable parts of natural landscape and heritage in the Czech Republic. It is therefore necessary to pay attention to the maintenance of ecosystem links and functions of landscape (e.g. connectivity threatened by increasing landscape fragmentation) and protection of specific areas with significantly high levels of biodiversity, such as (in addition to protected areas) former military zones and training grounds, areas affected by mining and others.

Protection of species, habitats and entire ecosystems, their mutual interconnections and sustainable management are not only supported by the national but also EU legislation and relevant international agreements.

A very specific area of nature and landscape conservation lies in geographically non-native, especially invasive species of plants and animals. On a global scale, biological invasions are considered to be one of the most important factors (along with damage and loss of biotopes) that threaten biodiversity. In the Czech Republic there is a number of invasive species that seriously threaten native species and habitats (such as knotweed, giant hogweed, American types of crayfish, Northern raccoon or American mink). It is therefore important to limit the use of untested species and also to introduce measures addressing risk assessment and risk management, including addressing the already present biological invasions. The legislative environment and systemic steps in place to resolve this problem on the European scale still need to be addressed.

#### **Objectives:**

*3.2.1 Protection of the most valuable parts of nature and landscape*

*3.2.2 Reduction of native species and habitats loss*

*3.2.3 Reduction of negative impact of non-native invasive species on biodiversity*



### **3.3. Improvement of environment in urban areas**

Urban settlements represent a specific part of landscape which includes mainly built-up areas, including public spaces and public green areas, industrial and logistic centres, recreational complexes, but also transport and technical infrastructure - a network of roads, highways, railways, canals, artificial lakes, mining and other areas influenced by human activities.

In urban landscape the ecological functions need to be maintained as well. They form a prerequisite for a healthy environment, in particular public green areas. Among the biggest problems of urban landscape belong unfavourable microclimate (higher average temperatures - heat island effect), unbalanced water balance, rapid surface runoff (markedly drier environment), water pollution (sewer overflows, storm water runoff), air pollution (high dust particulate emissions and harmful substances).

In order to ensure high-quality environment the Policy focuses on strengthening ecological functions in settlements, including support of green areas taking into account specific requirements for their use and their functional form.. They positively influence the microclimate (humidity regulation, collecting dust particles), provide ecological stability and biodiversity of environment and provide space for the realization of natural processes, have a positive effect on psychological well-being of people (having aesthetic value and reducing noise pollution).

Reinforced coordination of relevant sectors is essential (i.e. housing development, public facilities, infrastructure, transportation, vegetation and greenery, services, manufacturing and trade, culture, and recreation).

#### **Objectives:**

*3.3.1 Improvement of green areas in urban settlements*

*3.3.2 Improvement of brownfields regeneration with positive impact on quality of environment in settlements*

*3.3.3 Efficient water management in urban settlements*

## **4. Safe environment**

### **4.1 Risk prevention**

The key activities to minimize impacts of environmental risks include mapping and categorization of areas at risk, monitoring of those areas, adopting legislative measures regulating activities in the affected areas and supporting the implementation of measures mitigating these natural risks.

In the area of preventing creation of contaminated sites and prevention of environmental damage, the crucial activity is to maintain a continuous record, respectively removal of contaminated sites, which leads to easier use of brownfields after the contamination is removed. Monitoring exposure and effects of pollutants from rehabilitated environmental damage on human health and environmental monitoring of environment at these reclaimed areas is directly related to these objectives.

At the same time, it is necessary to implement provisions of multilateral environmental agreements aimed at protecting health and environment from harmful effects of chemical substances, such as the Stockholm Convention on Persistent Organic Pollutants and the Rotterdam Convention on the Prior Informed Consent Procedure in international trade in certain hazardous chemicals and pesticides. The Policy also focuses on the application of the best practices of international organizations such as the OECD, UNEP and WHO. The Czech Republic will also actively participate in the preparation of a new global agreement on mercury and will ensure its ratification and implementation at the national level.

Safe transport and handling of hazardous waste reduces risks connected with transports of hazardous waste. The Czech Republic will continue to follow the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and its Strategic Plan for 2011-2020. Reducing illegal disposal and handling of hazardous waste, particularly through more effective controls designed to increase compliance with legal obligations that are imposed on this sector, is necessary to ensure a high level of environmental protection and to determine the actual management of hazardous wastes and its impact on environment.

In the area of reducing risks related to dangerous chemical substances, the Czech Republic reached the levels required by the EU legislation, which sets out requirements for the protection of health and environment from the negative effects of dangerous chemical substances.

In accordance with the EU policy, prevention of serious accidents caused by hazardous chemical substances and efforts to limit the impacts of such accidents for human health and environment represent a very important area of action. Given the large number of facilities with hazardous activities, which may result in an industrial accident with transboundary effects, it is supremely important to actively participate in the framework of the UNECE Convention on the Transboundary Effects of Industrial Accidents.

The use of genetically modified organisms (GMOs) and genetic products is in the Czech Republic regulated by relevant legislation to protect human and animal health, environment and biodiversity. Management of GMOs and genetic products is subject to permission defined in the legislation. The Czech Republic will also continue to implement other international obligations, for instance the Cartagena Protocol on Biosafety.

Another important factor with negative impact on human health and ecosystems is noise, caused mainly by traffic. As a result of the increasing intensity of road traffic, noise is becoming one of the major environmental problems especially in urban areas.

The Czech Republic will continue to implement measures to exclude consumption of controlled substances that deplete the ozone layer, in accordance with the objectives of the Montreal Protocol on Substances that Deplete the Ozone Layer and relevant EU legislation.

**Objectives:**

*4.1.1 Prevention of impacts of natural disasters (floods, droughts, slope instabilities, rockslides, erosion, strong winds, emanation of radon and methane)*

*4.1.2 Prevention of anthropogenic risks*

**4.2 Protection of environment against negative impacts of environmental disasters**

The main causes for crisis situations are natural disasters (especially floods, severe water shortages, long inverse situation, heavy snow, landslides, strong winds, spread of invasive plants and animals) and threats caused by human activities, (especially large-scale leakages of hazardous substances, serious industrial accidents, terrorism and critical infrastructure failure).

Prevention or mitigation of impacts of such disasters are the main objectives of the so-called environmental security. The main task ensuring maintenance of environmental security is adoption of a complete system of specific legislative, technical, organizational and information measures that reduce the risk of crises and their negative impacts. The emphasis must be placed on a system of preventive mitigation and especially adaptation measures that are most effective and economically efficient.

The basic document for environmental crisis management remains the Crisis Plan of the Ministry of Environment (including case studies and operational plans).

**Objective:**

*4.2.1 Prevention and mitigation of impacts of critical situations on environment*