Greener Slovakia

Strategy of the Environmental Policy of the Slovak Republic until 2030

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The Vision of a Healthy Environment and Sustainable Economy

Slovakia is currently facing many environmental challenges. Slovakia has problems with air quality, low levels of waste recycling, but also with the protection of ecosystems. Air pollution alone causes more than 5,000 premature deaths a year in Slovakia. Environmental problems have had an increasing impact on the economy, employment and comfort of the population. In addition, as all over the world, Slovakia has already been affected by the climate change with visible impacts, which will be seriously demonstrated in the future in the form of environmental, economic and health problems. According to estimates, in 2013 alone the economic losses from climate change extremes in Slovakia were worth more than EUR 1.3 billion.

A Current and Modern Vision is Required

The environmental challenges in Slovakia require a long-term vision and strategic direction. The need for a new, modern environmental policy strategy, which will reflect the actual situation and urgent problems of the environment, stresses the fact that the valid *Strategy - Principles and Priorities of the State Environmental Policy* was approved in 1993 and has not been updated since.

The presented **Strategy of the Environmental Policy of the Slovak Republic until 2030** (hereinafter referred to as ' Envirostrategy 2030 ') defines a vision until 2030, which takes into account a possible, probable, and the desired future development, identifies the fundamental systemic problems, sets the objectives until 2030 and proposes a framework for measures to improve the current situation, and it also contains basic result indicators that will enable a verification of achieved results.

The basic vision of Envirostrategy 2030 is to achieve better environmental quality and sustainable circulation of the economy, which is based on rigorous protection of environmental compartments and using as little non-renewable natural resources and hazardous substances as possible, which will lead to an improvement in health of the population. Environmental protection and sustainable consumption will be part of the general awareness of citizens and policy makers. Through the prevention and adaptation to climate change, the consequences will be as subdued as possible in Slovakia.

The Slovak Environment in 2030

The biggest environmental challenges in Slovakia, and hence areas that will be prioritized within the environmental policy by 2030, are issues such as waste management, air quality and habitat and species conservation, especially in forest, meadow and wetland ecosystems.

In terms of air protection, Slovakia will achieve its stated goals. Air quality in 2030 will improve and it will not have a significant negative impact on human health and the environment. This will be achieved by strong reduction in emissions compared to 2005 - SO_2 by 82%, NOx by 50%, NMVOC by 32%, NH_3 by 30% and $PM_{2,5}$ by 49%. Heating systems in households and urban transport will shift to more environmentally friendly alternatives. A

Green Fiscal Reform will be considered[1], which will move the burden of taxation towards environmental taxes in accordance with a "polluter pays" principle. Environmentally harmful subsidies and regulations, such as subsidies for mining and usage of domestic lignite will be removed.

In the area of climate change mitigation, Slovakia will reduce greenhouse gas emissions in the sectors of emissions trading by 43%, and outside these sectors by at least 20%, compared to 2005. An effective emissions trading scheme will continue. Adaptation measures will reflect the specifics of regions and respond to climate change to a sufficient extent.

By 2030, the municipal waste recycling rate, including the preparation for re-use, will be increased to 60%, and the land-filling rate will be reduced to less than 25% by 2035. A green procurement will cover at least 70% of the total number of all public procurements, and the support for green innovation, science and research will be at a comparable level to the EU average. The energy intensity of the Slovak industry will be closer to the EU average, and by 2020, the sustainability criteria for all renewable energy production sources will be developed and accepted. The production of electricity and heat from coal will be gradually reduced.

The protection of biodiversity will be improved and measures to prevent the deterioration of species and habitats will be taken. The system of protected areas and degrees of protection will be reviewed and simplified by 2024. The reassessment of protected areas and their protection zones will take into account international criteria for the allocation of management categories of protected areas under the IUCN, respecting property rights by the application of compensations. In the re-assessed national parks that are classified under IUCN management category II of protected areas, the core zone will be without a human intervention, which will reach 50% of the total area of the national park by 2025 and 75% of this area by 2030. Logging will be prohibited in non-interference zones and environmentally friendly land management will be preferred in areas with active management. The total value of forest ecosystem services will not decrease. Public and institutional control of logging will be increased. The protection and restoration of landscape features on agricultural land will be visible and organic farming will account for at least 13.5% of the total agricultural land.

Slovakia will achieve at least a "good status" of water, and water potential in regards to drainage and water treatment in agglomerations with more than 2,000 inhabitants will be 100% and in agglomerations with fewer inhabitants 50% by 2030. Green measures, along with the necessary technical infrastructure, will be included in the flood protection system. By means of water retention, better landscape planning and more responsible water management, we will help reduce drought and water scarcity.

Slovakia will do its utmost to eliminate environmental burdens, which will be a high priority. The process of geological survey and the extraction of minerals will take into consideration the opinion of local authorities and citizens, in accordance with the valid legislation.

1 The term "will be considered" is in the context of Envirostrategy 2030 understood as a reassessment of the measure / proposal that includes an analysis of the effectiveness and importance of measures, economic, social and environmental impacts, as well as financial analysis and other necessary analyses and documentations.

In cooperation with the central government authorities and their professional organizations, academia, non-governmental organizations and municipalities, the system of formal and informal environmental education and training for sustainable development will become more efficient. They will receive special attention through action plans for the implementation of the National Programme of Education and Training. Monitoring and evaluation of educational activities will be introduced. This will improve the extent and quality of collected data, particularly in the areas of water, air and waste, and it will improve the provision of information and data on natural resources. The data will be available to the public as far as possible, and they will be used to generate analyses and models that will form the basis for the formulation of new measures and policies.

How Can We Ensure This?

Sufficient state, public and private funding sources will be secured to ensure that all objectives and measures of the Envirostrategy 2030 will be fulfilled. If there are any increased costs, the State will provide sufficient resources for central government authorities and their professional organizations, as well as municipalities and the business sector. It will be administrated according to the priority areas and measures set in the Envirostrategy 2030. The measures will be prioritised on the basis of professional criteria, taking into account the principles of value for money.

Envirostrategy 2030 proposes the basic direction of future policies to improve the condition of the environment. The Ministry of the Environment of the Slovak Republic in cooperation with other responsible departments and their specialized and controlling institutions will monitor the fulfilment of these objectives and measures.

On the basis of the analysis of effectiveness, economic, social and environmental impacts, a system of state-owned land management in protected areas will be reviewed, in order to ensure integrated land management. The implementation of the Envirostrategy 2030 objectives and measures will be respected in the policies and legislative proposals of all departments. Active cooperation between departments, professional institutions, business sector, employers, regions, owners and land managers and non-governmental organizations will ensure an effective communication and solutions of environmental problems. All these bodies will be equal partners in the implementation of the Envirostrategy 2030 objectives and other partial strategies.

The Biggest Environmental Challenges in the SR

Identifying major problems helps prioritize proposals of new policies and spending in areas where we objectively achieve the worst results. With limited capacities and public resources this approach is a necessity. However the number of priorities should be limited because their impact and purpose may wear off in higher volumes.

The biggest environmental problems in Slovakia can include waste management, air quality and habitat and species conservation, especially in forest, meadow and wetland ecosystems. Based on internationally comparable indicators that measure the extent of results achieved in individual environmental areas, Slovakia mostly lags behind industrialised countries in waste management and air quality. The rate of municipal waste recycling is one of the lowest in the EU, while land-filling is still the dominant form of waste disposal, and its rate is one of the highest in the EU. Air quality has been decreased in the long term due to excessive dust, ground-level ozone, high concentrations of nitrogen dioxide and benzo (a) pyrene. However, in both areas there has been a gradual progress. Insufficient protection of rare habitats and species within forest ecosystems (such as capercaillie), balancing their protection with economic development, legal security of rare localities (e.g. beech primeval forests) and insufficient approximation of EU directives to the SR legal system in relation to nature protection and forest conservation, have been criticized by institutions such as the European Commission or UNESCO.

The state of the environment in Slovakia is positively influenced by the low water consumption per capita and its large reserves. The quality of drinking water from the public water supply is also sufficient. However, the problem may be contaminated water from own water wells. The low rate of connections to waste water treatment plants is also problematic. The overall quality of life is not a bigger issue than in other OECD countries, although there is room for improvement.

Environmental policy stringency in Slovakia has been assessed as above average compared to OECD countries, the key remains the competitiveness of Slovak companies. According to the World Bank, we lag behind other countries in the quality of regulations and law enforcement. Slovakia has also reached, in the long term, below-average results in research and development and patents and citations of scientific journals in the environmental field.

Sustainable Use and Effective Protection of Natural Resources

The Earth´s resources are scarce, therefore it is necessary to use them so that their consumption is not at the expense of future generations and the destruction of current ecosystems. The requirements of the economy often affect the environment in terms of both quantity and quality, which can lead to the emergence of environmental damage and other environmental problems. It is therefore necessary to set up policies that will prevent such situations, in order to achieve long-term sustainable consumption of natural resources, high quality of water, forests, land, but also each piece of landscape around us.

1 Enough Clean Water for Everyone

***A good condition and water potential of all water bodies through the restoration of river ecosystems will be accomplished. Agglomerations with more than 2,000 inhabitants equivalent will reach 100% and agglomerations with less than this number will reach 50% share of* drainage and water treatment by 2030. The water price will take into account the principle of reimbursement of costs for water services, including environmental and resource costs, in accordance with the "polluter pays" principle.**

Water is a strategic resource and natural wealth and it is indispensable for life and economy. With regard to climate change, its shortage becomes a key issue not only for developing countries, but also for many developed countries. For the coming period, therefore, at least a good state of water and efficient use of water resources will be a priority.

		2011	2012	2013	2014	2015	2016
The specific water consumption in households	**SK**	79,8	80,8	78,7	76,7	77,3	78,0
(litres/PC. per day)	**EÚ**	-	-	-	-	-	-
Population supplied from public water supply networks	**SK**	86,9	87,0	87,4	87,7	88,3	88,6
(%)	**V4**	95,6	93,8	95,7	-	-	-
Population connected to public sewers	**SK**	61,6	62,4	63,6	64,7	65,2	66,4
(%)	**V4**	74,0	75,2	76,7	-	-	-
Production of waste water	**SK**	105	111	130	103	101	-
(m^3 per capita)		-	-	-	-	-	-
The proportion of treated waste water to untreated	**SK**	98,0	96,6	98,0	98,5	98,8	99,1
(%)	**EÚ**	-	-	-	-	-	-

Note: Data sources for all indicators used in the document can be found in the List of used indicators

Water consumption in the Slovak Republic (SR) decreases annually and is one of the lowest in the EU. Slovakia has one of the largest sources of quality drinking water in Central Europe in the Danube Region, and at the same time, it belongs to countries that use only a fraction of their reserves each year. Due to the uneven distribution of groundwater resources in Slovakia, there are also areas with insufficient groundwater reserves (e.g. Krupina or Košice). Total water consumption has slightly declined in the long run, which may have a positive environmental trend, but it can also have a negative impact on the health of population and maintenance of basic

hygiene principles. Drinking water is a key factor in the environment, which affects the health condition of the population. Household water consumption has fallen below the sanitary minimum recommended by the World Health Organization in recent years. The reason may be the increase in prices of water, improvement of technologies using water, or purely statistically, due to higher use of individual wells of which their supply is not recorded in official statistics. Global climate change will put increasing demands on water supplies and therefore it is essential to ensure a sustainable consumption.

All public water supply networks comply with the hygienic limits and they currently supply 88% of the population. While the quality of drinking water from public water supply networks is regularly controlled and meets hygiene limits for its consumption, the quality of water from private wells does not always meet the requirements for safe drinking water, and its use can be risky.

The basic need for the functioning water bodies is their good functional state, which still some of them fail to reach. More than a half of surface water bodies achieve good ecological state or potential and almost all of them achieve good chemical status. Surface water bodies are in most cases in a good chemical and good quantitative state.

In Slovakia, less than two-thirds of the population is connected to public sewers. Despite the public sewer system already built, tens of thousands of citizens remain voluntarily unconnected. The development of this area, despite the progress, lags behind the development of public water supply networks. A half less of waste water is discharged into the water courses than in 1995. The share and absolute value of the discharged polluted waste water have been reduced. Approximately, half of the total waste water has undergone tertiary treatment.

1.1 The Prevention of Water Pollution

Illegally discharged waste water from households, commerce and services, but also from the industry or leakage from environmental burdens and agricultural activity, significantly pollute surface and ground water. Strengthening and streamlining of controls, documentation of legal waste water disposal and a threat of real effective sanctions will help limit these actions.

An application of good agricultural practices, countermeasures in agricultural landscape, preventing spillage from fields and drainage systems into waters are key measures, which help reduce water pollution caused by agricultural activity. Mandatory damping green lines and accompanying vegetation along the water courses are an effective measure to mitigate such pollution.

1.2 Increase in the Proportion of Treated Waste Water

A proportion of the population connected to public water supply and public sewers will be increased by building new infrastructure and by connection of citizens, who have not used this option yet. Where it is efficient, the public sewer system will be completed also in agglomerations with less than 2,000 inhabitants, even in locations that have had limited opportunities to apply for a financial contribution. A priority will be given to the locations in protected water management areas or in areas with extensive pollution.

In spite of the existing possibility, a number of inhabitants, due to various causes are still yet to connect to public sewers. A system of accounting and inspection will therefore be strengthened. Slovakia will thus increase the connection of population to waste water treatment plants, and by 2030, agglomerations with more than 2,000

inhabitants will reach 100% and agglomerations with a lower number of inhabitants will reach 50% of drainage and waste water treatment. The problem of cost-effectiveness is more visible in smaller municipalities than in larger agglomerations, which may also lead up to the construction of smaller and less efficient water treatment plants, which will improve the status of surface water.

If it possible in regards to the local and regional conditions, Slovakia will make use of the innovative (environmentally friendly) infrastructure (e.g. vegetation, membrane, container waste water treatment plants, etc.) and decentralized cleaning. Rainwater in Slovakia is mostly discharged through a unified sewer network into the waste water treatment plant, and thus part of the waste water. The optimization of the waste water infrastructure will enable rainwater and wastewater to be collected separately.

1.3 Elimination of Adverse Impacts on Water Courses

In terms of the impact on water status, there are three main groups of significant hydromorphological changes: a disruption of longitudinal connection of the rivers and the habitats, a disruption of transverse connection of wetlands and inundation with sewer and other morphological changes and hydrological changes. Potential negative impacts are also caused by new infrastructure projects. In connection with the implementation of new infrastructure projects, a principle of maintaining the flow of water courses will be applied, and in the case of existing barriers, an objective of their gradual removal will be pursued. The insufficient hydromorphological status is one of the obstacles to achieving a good ecological state of water courses. It is therefore essential to focus on the revitalization and re-naturalization of water courses and the adjacent riverine landscapes and to ensure the coherence of water courses, which is one of the basic conditions for the functioning of river ecosystems.

The prioritization of renewal of land improvement channels will be set, depending on their function and use. The land improvement facilitators, which are an important additional source of water, will be deployed, while unnecessary or inefficient drainage channels will be left without an intervention of their spontaneous revitalization. Land improvement channels can also drain water from areas, where it is necessary. For this reason, it will be important to assess where the operation and maintenance of channels is needed and where it is environmentally harmful. There can also be economic aspects, where ecosystem services of such areas are several times higher than other direct economic returns (e.g. earnings from the sale of hay). If they are harmful to the environment, their removal will be considered.

1.4 Adjustment of Sustainable Water Prices

The water pricing model will include environmental protection costs as well as costs for resources, in accordance with the "polluter pays" principle. Until now, environmental protection costs have been taken into account only partially, a rise in prices was mainly due to costs of producing and supplying drinking water through the public water supply network, drainage and waste water treatment. A price of water that is used in agriculture will guarantee an environmentally sustainable production of agriculture, even during the drought periods.

2 Effective Protection of Nature and Landscape

Slovakia will prevent the deterioration of protected species and habitats. By 2030, at least 15% of degraded ecosystems will be restored. The assessment and appropriate completion of protected areas scheme as well as drafting, approval and implementation of documents will provide protection opportunities for all significant species and habitats in the SR. A simplified system of protected areas and degrees of protection will enable a stricter protection and targeted care in accordance with international standards. **The core zone will comprise territories without human intervention, which land area, after assessment by 2024, will reach 50% of the total area of each national park management category II of protected areas under IUCN by 2025 and 75% of this area by 2030.** ***A*** **valuation and payments for ecosystem services will create conditions for their comprehensive and sustainable provision.** ***An integrated concept of landscape protection will be developed and implemented.***

A number of species are, due to human intervention, threatened with extinction. The mapped endangered species alone are estimated in tens of thousands in the world, and according to the IUCN, the endangerment in some groups is up to a half of the species in the group. In Slovakia, for example, it involves orchids, butterflies or amphibians.

The state of European significant species and habitats has shown gradual improvements, especially due to a better knowledge. Around one fifth of species and one-third of biotopes of European importance were in favourable conditions in 2013. The system of protected areas in Slovakia was not historically built on the basis of widespread professional discussion and international standards. For this reason, the protected areas cannot be easily categorized according to the IUCN management categories, for example, none of the Slovak national parks fulfil the condition of prevalence of areas without human intervention. According to the IUCN in category II, the national parks are categorized as large functional ecosystems of sufficient ecological quality, structure and function of which is very close to the natural state.

The protection does not only concern the endangered species in protected areas, but also the nature outside them, which has a major impact on ecological connectivity, health and quality of life. Slovakia has the third lowest uniformity in the distribution of urban green areas in the EU. According to the WHO, urban green areas have a positive impact on health and help towns better adapt to the adverse effects of climate change. There are large green areas in the Slovak towns, but at the same time, locations with the low occurrence of greenery.

2.1 Stopping the Loss of Biodiversity

Conditions to minimize the negative impacts of anthropogenic activity will be created, including the impacts of climate change, causing the reduction of biological diversity of plant and animal species and loss of habitats, and the law enforcement in the field of nature protection will be enhanced. The completion of the national part of the Natura 2000 network of protected areas and the systems of internationally important territories with appropriate protection, will further enhance the conditions for the protection of internationally and nationally important species and habitats and they will also increase the contribution of the Slovak Republic to halting the global loss of biodiversity. With the involvement of all relevant bodies and based on the OECD recommendations, a comprehensive strategy of protected areas will be developed, because the concept of nature conservation from

2006 has not yet been updated. The creation of the strategy will take into account the benefits and costs of various options and the most recent scientific knowledge and experience from abroad, while respecting the natural conditions and national specifics of Slovakia. By 2018, only a part of the conservation programs for protected areas were approved by the government (2 out of 8 national parks, 13 out of 41 special protection areas, 87 out of 642 sites of European importance). The remaining conservation programs for protected areas, that will contain measurable goals of their improvement and specific measures, will be completed and approved. The starting point for their creation and implementation will be valid international and national commitments and standards, prioritized on the basis of expert criteria, taking into account the principles of value for money. The zoning of national parks, along with their reassessment, will be implemented by 2024. Conservation programs will be updated and completed following the reassessment of protected areas.

By 2030, at least 15% of degraded ecosystems in Slovakia, such as the upper boundary of the forest, especially salt marshes, wetlands, peat bogs and lowland forests, which have been significantly affected by human activity, will be restored. In the case of agricultural use of these ecosystems, the most environmentally friendly processes will be used. The protection of primeval forests and their habitat, as well as an appropriate management of their protection zones will be ensured. The wetland restoration program and their ecosystem services, based on the participation of all concerned parties, will be implemented. In cooperation with owners and land managers, via utilization of all available resources, the protection and restoration of forests, meadows and pastures that represent the highest biodiversity ecosystems and the creation of agroforestry systems will be supported. The conservation of these ecosystems will be ensured in accordance with nature conservation documents and in the close co-ordination with the State Nature Conservation Organization and owners, land managers and land users, notably through the form of contractual care, in a manner that does not harm biodiversity and respects the specific conditions set out in the relevant documentation. In the case of a negative economic impact to owners and users, a system of contributions will be applied to cover increased costs.

Research in protected areas will be carried out in cooperation with specialized institutions and, in the case of interest, with the business sector, employers, municipalities and the third sector. The research will be implemented in conjunction with owners, land managers and land users. State organizations, in association with academic institutions, professional organizations and non-governmental organizations will regularly update the red lists of endangered species and habitats and propose measures to save them. Research, mapping, control and legitimate removal of invasive non-native species will be carried out, if it is justified, and if it can adversely affect native species and habitats. A knowledge obtained from the research of special protected areas will be applied in the planning of management measures, development of action plans, but also in implementation of measures.

An effective fight against environmental crime will be ensured. In the area of combating illegal hunting, poisoning, killing of animals, stealing and damaging plants and trafficking in endangered species, the cooperation of the relevant departments and organizations will be strengthened. For example, the fight against illegal harvesting of forest fruits, or an entry of motor vehicles, four-wheelers and motorbikes into forests, will also be intensified. The Police Force of the Slovak Republic will also participate in these goals. New regulations will be adopted at the national level in relation to trade in endangered species, based on the application practice, while problems with the implementation and enforcement of current national legal standards will be taken into account. The existing tools will be used more efficiently and they will be complemented by the possibility of applying them to the internet market as well.

Hunting and other activities will respect the needs of protected species and habitats. Hunting of decreasing, vulnerable and migratory species of protected animals will be carried out in accordance with the international obligations of the Slovak Republic.

2.2 Reform of the State Nature Conservation Institutions

An integrated management is optimal for the efficient operation and management of national parks and other protected areas.

The organizational structure and processes of the State Nature Conservation Organization (ŠOP SR) and governmental authorities for nature conservation will be more efficient and it will be more suited to the requirements of nature and landscape protection. A system for evaluating the effectiveness of measures in protected areas will be put in place. A nature guard service for forest, fishing, hunting and others will cooperate with the Police Force of the Slovak Republic more efficiently and closely. The integrated guard details and other competence details will be considered during the implementation of measures.

Funding and staffing of the ŠOP SR and other governmental authorities for nature conservation will be adequate for their tasks, and a comprehensive and sustainable system of funding for nature conservation organizations, primarily from innovative sources and the state budget, will be in place by 2030. The professional and personnel capacities of nature conservation organizations and law enforcement bodies will be developed, and the attained information will be put into practice. The possibility of transferring of a part of local competences and resources from ŠOP SR to a lower level will be reviewed. In the areas, such as felling authorizations in towns and villages, the transfer of competencies from municipalities to district offices will be considered and analysed.

2.3 Simplification of the System and the Maintenance of Non-Interference in the Area with the Highest Level of Protection

The system of protected areas and individual degrees of protection throughout the whole of area of Slovakia will be reviewed. In comparison with the EU, the Slovak Republic has a high proportion of protected areas to the total state area. However, these areas were not created in accordance with international standards in the past. They were often created without sufficient cooperation with owners and land users. The protection and conservation of those areas has not been in many cases sufficient. By 2030, with a view of effective nature protection, the entire framework of protected areas will be reviewed with the participation of all concerned parties, and according to the best practice of IUCN criteria and local needs. In the case of national parks, the review will be carried out, at the latest, by 2024. The integrity and representation of ecosystems, preservation of species of international and national importance and endangered species and habitats will be taken into account. The Ministry of the Environment will assess the effectiveness of the preservation of protected areas according to the framework made by the World Commission on Protected Areas IUCN. An optimization of the protected area system will be accomplished.

The most preserved natural habitats without the need for active conservation will remain or will be added to the so-called non-interference zones. Inclusion of these locations into the non-interference regime will take place with the authorization of an owner, by means of, for example, financial compensation or land exchange. In

addition, other private or state lands may be included with the consent of owners, users and the Nature Conservation Organization. Non-interference should not affect existing legal functional buildings.

National parks and their territorial demarcation will be reviewed and then adjusted in accordance with the IUCN criteria for the national park management category. The core zone will comprise territories without human intervention, which land area will reach 50% of the total area of each national park by 2025 and 75% of this area by 2030. The territory of the national parks around the non-interference zones will function as a protection zone. The non-interference and peripheral zones of national parks and other protected areas will be defined by zoning and properly marked. In national parks, where the protection will require human intervention, the non-interference area can be less than 50% of the National Park. Small-scale areas will either be fully classified as non-interference zones or they will be categorized among areas with active protection, or separated.

In the long run, it is also necessary to resolve ownership relationships in protected areas and gradually transfer them, as much as possible, to state ownership and administration by means of exchange, purchase and long-term lease, or contractual care and, if appropriate, also by an authorized delimitation - in the case of the state lands.

2.4 Evaluation and Sustainable Use of Ecosystem Services

Ecosystem services represent the benefits and gains that ecosystems provide to the population. By 2030, all ecosystem services will be taken into account equally and they will also be included in the national accounting system. Ecosystem services will be evaluated and quantified and they will be considered for investments and policy-making, as well as for assessment of impact activities on the environment. The creation of a comprehensive system for assessing ecosystem services and their sustainable use as well as the possibility of their monetizing will be supported. Payments for ecosystem services will create sufficient incentives for their maintenance. The research and evaluation of ecosystem services is generally in its early stages. For example, estimates of the ecosystem services of the national parks of Veľká Fatra, Slovak Paradise and Muránska planina and the survey on the willingness to pay for a visit to the Tatra National Park have been carried out.

In the framework of agriculture, environmentally friendly practices will be applied using agri-environmental instruments. By 2030, the impact of agriculture on the preservation of biodiversity in farmed lands, especially within the framework of protected areas, will be reviewed. Procedures, which maximally enhance the quality of ecosystem services will receive a primary support in these areas. Promoting biodiversity can contribute to the ecological balance, for example, birds of prey can be a suitable alternative to chemical protection in the elimination of rodents and small field pests. The status and possibilities for an improvement of nature conservation will be explored in cooperation with agriculture, forestry, fisheries, tourism and other departments.

2.5 Development and Implementation of an Integrated Concept for the Protection of Nature

An integrated concept of nature protection will be developed on the basis of the European Landscape Convention. Characteristic forms of landscape in accordance with the historical and natural context will be preserved and revitalized. In cooperation with municipalities, based on the recommendations of experts from Infra Eco Network Europe, the so-called roadless areas, which are essential for the conservation of species and habitats that require extensive unspoiled locations, will also be included in the concept. In addition to nature

outside of special protected areas and landscape elements, this concept will also apply to the urban planning and it will regulate land use in and around towns. It will apply a landscape revitalization program to restore ecosystem functions, ecological connectivity and the ecological stability of the landscape. This will increase the diversity of the landscape and avoid further fragmentation with respect to corridors linking ecologically important territories, which are necessary for migrating species, particularly, large carnivores. The official hiking and cycling routes will be maintained in a usable form. The State will look for the way and possibilities of financing and maintaining official hiking and cycling routes as an important part of ecosystem services. The protection, planning and management of the landscape with the participation of the public, municipalities, third sector, owners and land managers will be ensured, respecting the competencies of municipalities and self-governing regions.

A town planning will ensure a balanced relationship between the needs of the population, economic activity and the environment. The measures proposed in the nature and landscape protection documentation and in town environmental stability systems will be an obligatory basis for the town planning and land consolidation processes. The protection of elements of territorial systems for ecological stability will be ensured. A documentation containing proposals for landscape elements, including land consolidation projects and urban planning, will be integrated, and it will include the concept of green infrastructure. The impact on the landscape will also be assessed under Environmental Impact Assessment (EIA) processes and, in the case of policies and strategic documents, the Strategic Environmental Assessment will be applied. The fragmentation of animal populations will be prevented and appropriate preventive, mitigating and remedial measures will be put in place to secure animal migration corridors and tackle their collisions with infrastructure, by building wildlife overpasses in places with the most frequent occurrence of wild animals roadkill.

The urban greenery will have sufficient space to maintain local microclimate regulation, rainfall retention, and wind speed reduction in urban environment. The mere planning and implementation of construction projects in towns should take into consideration - how to minimize the loss of greenery and trees. Types of plant species in urban areas will be selected, so that they have a minimal negative impact on human health, and the consideration will also be given to decrease the potential for non-native species and their spreading to other locations. A greening of the urban environment will primarily use native species. The share of greenery in towns, weighted by the number of inhabitants, should increase to at least 40% in the nationwide average, and all inhabitants of regional towns should have access to greenery within 10 minutes. The maintenance of urban greenery and green infrastructure will take into account not only the financial and aesthetic aspect, but also a positive health effect, maximizing impacts on local microclimate regulation, rainwater harvesting efficiency, and sustainability of further maintenance, nature protection requirements, insect pollinators' requirements and recreational needs of the population.

3 Sustainable Land Management

Controls of compliance with restrictions in areas threatened by nitrates will be strengthened. A gradual recovery of the landscape elements on agricultural land will take place. Organic agricultural production will occupy at least 13.5% of agricultural land. By 2030, conditions will be created to resolve the status of the so-called white areas.

Intensification of agriculture, especially the use of fertilizers, has a major impact on the environment. Substances that get into soil with fertilizers, leak from the soil and have a negative impact on water and air quality, threaten biodiversity, disturb the ozone layer and contribute to global climate change.

		2010	2011	2012	2013	2014	2015	2016
Efficient use of nitrogen	**SK**	67,3	73,8	62,7	66,1	83,3	68,8	-
(%)	**OECD**	55	-	-	-	-	-	-
Total area of arable land per capita	**SK**	0,261	0,26	0,261	0,261	0,261	0,26	0,26
(hectare per capita)	**EÚ**	0,258	0,258	0,257	0,258	0,257	0,255	-
Consumption of nitrogen supplied in industrial fertilizers *(kg/*hectare*)*	**SK**	55,4	62,5	65	72,9	74,5	70,1	76,9

Slovakia identified about one-third of its area **as a zone threatened by nitrates.** The area of Western Slovakia is relatively more vulnerable due to significant sources of groundwater but recently, in terms of nitrate content, the groundwater quality has stabilized. Compared to the EU countries, Slovak soil contains relatively small amount of nutrients, which leads to higher consumption of industrial fertilizers. The average consumption of industrial fertilizers in Slovakia is lower than in most EU countries and reaches about 40% of consumption in 1990. The trend of nitrogen consumption through industrial fertilizers has been increasing in recent years. Although the situation has improved by more than a half compared to 1990, the leaking nitrogen has a negative impact on the environment.

The condition of almost 99% of agricultural land fund is hygienically satisfactory. Contaminated soil occurs predominantly in areas of the industrial activity, the proportion in mountain and foothill regions has been in the long term solid. Recently, there has been a trend of deterioration of physical features of the soil. A soil compaction has been problematic. From a chemical point of view, especially in intensively farmed soils, there has been an increase in the presence of acid soils. An absence of agricultural drain and poor soil absorption, due to the preference of industrial fertilizers, results in rapid fluctuations of water levels during heavy rainfall and the lack of water for crop growth. This reduces agricultural production and increases the risk of water scarcity, droughts, floods and water erosion, which threaten more than a third of the land.

Organic farming accounts for approximately 9.5% of all agricultural land. Ecological or organic farming produces food without the use of synthetic pesticides and fertilizers and with good animal welfare. By this way, grains, pulses, different kinds of vegetables or fruits and medicinal plants are grown in Slovakia. There is also a strong representation of organic farms, especially cattle, sheep and goat farms. Slovakia still lags behind in organic pig and poultry farming, most of the production is used for the export, as a raw material for further processing. It is

estimated that up to 75% of crops and 90% of flowering plants depend on pollinators. However, they are currently seriously threatened, mainly by human activities, which are primarily related to the use of pesticides and the cultivation of monocultures and energy crops (oilseed rape, maize) but also due to climate change.

3.1 Supporting more environmentally friendly practices in agriculture

Organic farming will account for at least 13.5% of land in 2030, the same as in the Czech Republic. In particular, large agricultural areas will require consistent crop rotation, depending on their nutrient requirements, irrigation and depth of rooting. Deep ploughing and contour ploughing will increase the absorption capacity of the soil and prevent erosion. Poor ploughing of fall lines causes the drainage of the most fertile top soil through the rain water. Measures will be taken to reduce the compaction of agricultural soil due to agricultural machinery, in order to promote soil biodiversity. The laws will be strictly followed and the consequences for non-compliance will be drawn.

Diversification of crops will prevent the loss of nutrients in the soil, desertification, and it will function as a pest prevention. The traditional local varieties that are better able to adapt to the local climatic conditions will be preserved and protected. Genetic technologies, genetic engineering and modern biotechnology must not restrict the biological diversity of species of organisms and micro-organisms in nature, nor disturb the balance of the natural biological chain. At the same time, the protection of pollinators and habitats suitable for the growth of their populations will be increased.

The full-area monitoring will be carried out to determine and assess the presence of pollutants in the soil. A stricter control of the sale and use of industrial substances in agriculture will be introduced. A consumption of pesticides will decrease in agriculture and its continuous decline will be ensured. These decisions will be supported by expert analyses, which will be consulted with concerned parties. At the same time, in areas that are vulnerable to nitrates, the control of compliance with the action program will be reinforced, and measures to increase organic matter in soils will be taken. Drainage projects in municipalities will specify quantification of impact of agriculture on increased nitrate levels in waters. In regard to sustainable land management, the fertilization by treated and environmentally friendly sewage sludge will be used more widely.

An involvement of the general public in the establishment of the SR's position within the framework of the EU approval process for the release of genetically modified organisms (GMOs) into the environment will be enhanced. The Slovak Republic will follow, in regard to GMOs, the precaution principle and will require a review of the possible long-term effects of GMOs on health and the environment, including non-target organisms, before they are released on the market. Particular attention will be paid to GMOs that could cause unwanted cross-breeding with the wild related species.

3.2 Protection and Restoration of Landscape Elements on Agricultural Land

By 2030, a gradual restoration of landscape elements will take place on agricultural land. Woody plants and grassland will be preserved or returned to agricultural land. Field groves, dense strips of the wooded area, solitary trees and other landscape elements serve both as a corridor, windbreak, anti-erosion measures, and at the same time, as an area with various protected plant species and animal shelters.

Vegetation on the agricultural lands fulfils an important natural-ecological, anti-erosive, biological and landscaping function. It is also crucial for flood protection and the promotion of sustainable use of natural

resources. Non-forest woody vegetation helps enhance the ecological stability of the landscape, biodiversity, connectivity of natural elements of the landscape, it is a form of bio-corridors and interacting elements and it increases the landscape's traversability for wild animals. Agro-forestry systems, which will be supported, can also have a positive impact. The conservation of river bank and watercourse vegetation and regular care of woody plants, for example, by building short-term ecological areas - lines consisting of a mixture of non-woody plants is very important.

New woody windbreaks and accompanying vegetation of domestic species will be planted to reduce water and wind erosion and soil dry-up. Mandatory damping green lines with natural vegetation along water courses, preventing the outwash from the fields and drainage systems to waters, help increase the proportion of retained water in the country and at the same time, reduce the pollution of waters by agricultural activity and a risk of water erosion.

3.3 Addressing the Status of White Areas

By 2030, the conditions for the status completion of the so-called white areas will be created in order to harmonize the type of land held in the land register with the actual state of the land, or the land use to be the same as the land type in the land register. The white areas comprise agricultural land which does not meet its original purpose, a land that has long been absent from agricultural activity and a land that is covered by trees, bushes or their mixtures, meeting the criteria of the forest. Inconsistencies in their record and use must be removed. Appropriate management and farming that is best suited to the area will be established on the white areas in conjunction with owners, users, or land managers, and preventive tools will be created to avoid the creation of such areas in the future.

4 Production of Forest Environmental Services

Logging will continue in a sustainable way. Logging will be prohibited in non-interference zones, and environmentally friendly land management will be preferred in areas with an active management. The total value of forest ecosystem services will not decrease. The public and institutional control of logging will be increased.

Forests have a major impact on the water regime in the country, they prevent erosion, protect the soil, maintain air quality and protect biodiversity. In addition, they pave the way for tourism, recreation and improve health of the population. The functions of forests are represented by benefits and effects that they provide, while the forest production functions are functions that result in the benefits, especially of material nature. The non-productive functions of forests are soil protection, water management and climatic functions, social functions - medicinal, cultural, educational and recreational, as well as a protective function of the environment and water. These forest functions should not be undermined by a production function, which is historically associated with the wood production. Their balance will be achieved in a way that the forests will continue to evenly maintain all these functions for the society. In recent years, there has been a growing awareness of the importance of forest functions that do not produce any direct financial value, however, they provide a vital importance for people and the environment.

		2010	2011	2012	2013	2014	2015	2016
The area of forestry land from the total area of the SR	**SK**	41,0	41,0	41,0	41,1	41,1	41,2	41,1
(in% of total area)	**EÚ**	-	-	-	-	-	41,0	-
Defoliation of trees	**SK**	38,6	34,7	37,9	43,4	37,9	34,5	40,3
(in%)	**EÚ**	22,7	24,2	20,5	20,5	22,5	24,1	
The intensity of use of forestry resources	**SK**	82,5	78,7	67,9	65,4	78,0	77,0	77,0
(in%)	**OECD**	58,5	59,1	57,9	57,1	63,4		59,19
The proportion of wind on the actual logging	**SK**	18,2	17,4	12,1	14,3	53,4	36,2	12,71
(in%)								
The proportion of spruce bark beetle on the actual logging	**SK**	27,8	18,2	15,2	15,5	6,9	13,1	29,25
(in%)								
The actual logging	**SK**	9 860	9 467	8 232	7 837	9 417	9 143	9 321
(thousand m^3)								

Slovakia grows more wood than it harvests. The intensity of logging, and therefore the proportion of actual harvesting and growth of wood, is in the longer term higher than in other OECD countries, and this trend has been increasing over the last 10 years. To a large extent, it is caused by accidental logging due to calamities of various factors (wind, drought, insects or fungi) and, to a lesser extent, by illegal logging. The stock of timber from deciduous trees has been increasing in comparison with the timber from coniferous trees, which has been decreasing since 2010, due to the deterioration of coniferous forests caused by harmful factors. At present, it is possible to talk about the historically highest stock of wood in forests in Slovakia in a century, and it can be said that the current stock of timber is at its peak and due to the progressive change of age structure of forests, its gradual decrease is expected.

The main determinants of adverse health condition of Slovak forests include climate change and related weather fluctuations (especially wind), insect pests and human impact, of which intervention results in ageing and poorly diversified, and thus mostly vulnerable, forests. The defoliation is also an indicator of forest damage, which means loss of leaves in trees. More than a third of trees in Slovakia are in a high degree of defoliation, where at least a quarter of their leaves are damaged. This has been in the long term more than the European average. Kysuce, Orava and the Spiš-Tatra region are areas with the long-term worst health status of forests. In Slovakia, 10.5 thousand hectares of primeval forests and their remains have been preserved.

4.1 Sustainable Timber Harvesting

Forest conservation programs will obligatorily contain conditions for the protection of species of animals, plants, fungi and their habitats relating to the protection of wooded land, for each individual part of woodland, where the compliance with the law on protection of nature and countryside is applicable. Processing of timber due to damage caused by harmful factors in forests will be subject to reporting obligations within specified limits, and it may be stopped or restricted.

Owners or forest managers will continue to be motivated towards an environmentally friendly management. In order to minimize the negative impact of timber harvesting on ecosystems, environmentally friendly forest management will be pursued, restriction on planting of non-natural woody monocultures and clearcutting and large-scale logging will continue, and growth of diversity and cultivation and planting of native wood species will be enhanced.

Tools to eliminate the surface run-off will be applied on forest roads and their regular maintenance will be carried out. Unnecessary and unused forest roads will be reassessed for their impact on soil erosion and, if necessary, disrupted. Forest owners will be allowed not to log, if they decide themselves, and if it will not endanger surrounding wooded land, property or health.

4.2 Maintaining the Prohibition of the Logging in the Area with the Highest level of Protection and Near Rivers

In the non-interference zones, the absolute prohibition of harvesting and processing (also salvage felling) of timber will be maintained, except for the cases that threaten human health and property, clean-up of access roads and walkways and possible threats to water courses. There will be no other exception to timber harvesting. Reimbursement of the cost for implementing these measures will be secured from the resources of the body that applies the non-interference regime. Forests will be left to self-management and the natural regeneration of ecosystems will be promoted. Effective protection of existing vegetation along water courses will be in place and at the same time inadequate logging of timber, which could endanger the water-holding capacity of the landscape will be prohibited. Logging in protected areas, where active management will be applied, with the exception of commercial forests, will be implemented in accordance with the conservation requirements of species and habitats defined in the nature conservation documentation. In areas with active management, environmentally friendly land management will be preferred.

4.3 Effective Control of Timber Harvesting

The integrated guard will be set up to monitor the implementation of the harvest in individual locations as well as the fulfilment of other obligations, and capacity, authority and law enforcement will be improved. Integrated guard details and competence details will be considered when implementing a measure. The integrated guard will be in cooperation with the Police Force of the Slovak Republic, and it will impose fines on the spot when an infringement is detected, submit proposals to the law enforcement authorities and cooperate with them and check the legality of harvested and transported timber. Traceability of wood origin and legality of logging will be improved (for example, timber-haulage trucks may be equipped with GPS with available data on the Internet, or timber handling warehouses will have a camera system). A mobile app for the public will be developed to control the logging and transport of timber. The origin of the timber will be monitored and the fines for illegal logging will be significantly increased, with the possibility of a prohibition on logging in the repeated demonstration of illegal harvesting. Enforcement of the EU regulation laying down the obligations of operators who place timber and timber products on the market (EUTR).

The Regional Police Headquarters of the Police Force designated for the detection and investigation of environmental crime will be involved in the control and elimination of unlawful procedures related to logging and transport of timber.

Transparency and public control in forestry management field will increase, which will lead to a more efficient administration of public resources and the prevention of illegal logging. The data already available to the State, of which collection and update is financed from public funding, will be publicly available. Logging permits, including records of changes, will be publicly available with a link to a map available on the Internet, such as, for example, in Bulgaria. The control of forests owned by the State and local authorities will be even stricter. They will have an obligation to disclose orders, invoices, contracts, financial statements, tax returns, etc. on the internet to ensure that the public can control the management of public property. Municipalities will disclose the entire request for felling trees in their administrative proceedings, including information about tree species and reasons for felling. Municipalities will be obliged to disclose data on the management of funds, which might be obtained, if the felling license includes an obligation of financial compensation.

5 The Rational Use of the Rock Environment

By 2030, Slovakia will endeavour to eliminate environmental burdens, as a high priority. Safe disposal of environmental damage will be fully covered by its contributors. Effective work with local authorities and the public will continue during the geological survey. Health protection from the risks of soil contamination and nature preservation will be considered as a priority. *A legislative obligation, to carry out an engineering geological survey before setting up structures in the slide areas and prior to the realisation of strategic large-scale and line constructions will be introduced.*

It is necessary to carry out a wide range of geological works to ensure a sustainable development of the society, and to protect the rock environment with the necessary coordination of the geological environment potentials and the geological hazards and risks they entail. Strategic raw materials and investments also have important economic and social aspects. The geological environment represents natural resources and opportunities that can be provided for the positive development of society. These include, in particular, natural raw materials, sources of ordinary and natural mineral groundwater, geothermal sources, fertile soils and good foundation soils.

	2013	2014	2015	2016	2017
The proportion of remediated environmental burdens *(%)*	43,6	43,9	45,5	45,1	45,5
The proportion of reclaimed, closed and abandoned extractive waste disposal sites *(%)*	12	12	12	12	12
The proportion of remediated slide area on the total of the registered slide area in the Slovak Republic *(%)*	3,5	3,5	3,5	3,5	3,5
Researched environmental burdens (figure)	3	8	143	7	7
Remediated environmental burdens (figure)	7	6	27	3	7
Monitored environmental burdens (figure)			161	242	311

Slovakia has reserves of mineral raw materials on 587 deposits, of which approximately one-third is usable. 31 deposits of energy raw materials, one ore deposit and 173 non-metalliferous minerals and construction raw materials deposits are used of the registered reserves.[2] The Ministry of the Environment of the Slovak Republic maintains records of exclusive deposits in the Slovak Republic and annually compiles a record of non-reserved mineral deposits.

Environmental burdens pollute the rock environment, groundwater and soil and pose a serious risk to human health. These are generally areas that have been contaminated by industrial, military, transport, agricultural and extractive activities, as well as by bad waste management. There are 1758 locations with environmental burden

2The figure at the end of 2017. Mineral reserves are regularly updated and therefore reported data may not be valid at a later date.

in Slovakia, of which 147 are with the highest priority of the solution. Up to a half of the high risk areas are landfills, while the most polluted areas are mainly related to the chemical industry.

5.1 Strengthening of a Transparent Geological Survey

Geological surveys funded from both public and private sources will continue to be publicly disclosed. The awareness of affected municipalities and the public at all stages of the geological survey, from preparation to exploration as well as the extraction of minerals itself, will be improved and strengthened. Utilizing public resources will minimize duplication of geological work. It will be mandatory to carry out an engineering geological survey before setting up structures in the slide areas and prior to the realisation of strategic large-scale and line constructions.

When carrying out the geological work, the objectivity, transparency, efficiency and independence of the EIA process will be increased. The opinion of local authorities and the affected public will be taken into account when assessing the EIA. Persons and bodies responsible for proposals for the designation of exploration areas and exercising control, must not be in conflict of interest.

Fundamentally, the implementation of control mechanisms will be improved and sufficient financial and capacity monitoring needs will be ensured. Controls will be increased and intensified, fees for exploration areas and fines for non-compliance with the regulations will increase. If an inspection reveals a repeated breach of the geological law, the exploration area will be abolished. The requirements for entities that may be holders of the exploration area will be tightened and avoidance of speculative conduct in identifying exploration areas will be ensured. Companies that have debts towards the State will not be granted an exploration area.

5.2 Effective Monitoring and Minimization of Geological Hazards and Risks

The solution of slope deformations and other geodynamic effects, environmental burdens, environmental damage, monitoring of geological factors and closed and abandoned extractive waste dumps will be prioritized according to the degree of danger to life, health, drinking water resources, protected areas, dwellings, property and other economic activity. The priority will be the remediation of areas with underground and surface waters that are at risk. All verified risk and remediation information will be provided to the public, as well as to the local authorities and concerned businesses. The prevention of risks of sliding will be improved by cooperating with town planning authorities and building authorities, and the education and awareness-raising activity, by providing information on the risks of sliding to the professional and lay public, will be strengthened.

5.3 Minimization of the Impact from Mineral Extraction on the Environment

If the damage caused by extraction activities is confirmed, the responsible party will have an obligation to compensate the affected public, for example, in connection with excessive noise, dust or vibrations. An authorization of mining and extractive activities will be subject to the BAT conditions - the Best Available Techniques.

Hydraulic fracturing of rocks will be directed to a complete ban. These activities increase seismic risks, the risk of water pollution, and they also decrease the possibilities of subsequent elimination of causes. This objective is in line with both European and Slovak climate goals and commitments.

5.4 Remediation of the Riskiest Areas

Environmental burdens caused by industrial, extractive, military, transport and agricultural activities will be remediated. Closed and abandoned extracting waste deposits have been created during the exploration, opening, preparation and mining of minerals, including their treatment, refining and storage. They are currently abandoned and have been left without proper maintenance and monitoring by an unknown owner or operator. Major risks include their possible collapse due to static disruption, adverse chemical composition of deposited material, and spillages of leaking acidic wastewater from tips and tailings. The impact of geological contamination on the health status of the population is high. The health hazard is caused by an excess of potentially toxic elements.

The prevention of risks arising from closed and abandoned extractive waste dumps will consist of an update of the inventory and classification of potentially hazardous locations of extractive waste dumps, preventive and post-remediation monitoring, exploration of hazardous and potentially hazardous locations of extractive waste dumps, remediation of priority extractive waste dumps, technical and safety supervision of tailings, notification of the public and local authorities about the risks arising from the extractive waste dumps.

Climate Change and Air Protection

Climate change means a change of the long-term nature in a particular area, which may be due to an increase in average temperatures, more frequent occurrences of extreme natural phenomena, or a drop in rainfall. Climate change, in particular, causes a greenhouse effect. This effect arises from the passage of short-wave solar radiation through the atmosphere. After impact on the Earth's surface, the radiation is absorbed in the atmosphere (small part), or reflected and absorbed by the Earth's surface and atmosphere (the larger part). The absorbed portion is transformed into long-wavelength radiation.

The problem is that increased concentration of greenhouse gases also increases the amount of heat trapped, thereby changing the energy ratios in the atmosphere. This process is progressing faster than ever in history, and the main cause of the current changes are human activities, mainly burning of fossil fuels, as well as other activities. Global climate change is a worldwide problem, but there are measures that can mitigate and even prevent its impact on Slovakia. In our environment, this is especially the case for reducing greenhouse gas emissions, protecting and revitalizing ecosystems, reducing and mitigating the risk of floods and soil erosion. The current challenge is also to prevent and reduce the consequences of drought and other unwanted impacts of climate change.

6 Climate change preventions and reduction of its impacts

By 2030, greenhouse gas emissions in the non-ETS sectors will decrease by 20% in Slovakia, compared with 2005. Green fiscal tax reform will be considered together with an increase in environmental taxes. Publicly funded projects will be assessed in terms of green infrastructure. Emission zones will be introduced in towns and transport solutions without negative climatic impacts will be encouraged. Under the Adaptation Strategy, local authorities will introduce specific measures.

To reduce the progress of climate change, it is necessary to introduce mitigation measures aimed at limiting the amount of greenhouse gases into the atmosphere and increasing carbon sequestration. In order to better adapt to climate change, adaptation measures need to be taken at regional and local levels.

		2009	2010	2011	2012	2013	2014	2015	2016
Total greenhouse gas emissions to GDP	**SK**	0,36	0,35	0,34	0,31	0,31	0,28	-	-
(in kg/1000USD)	**OECD**	0,34	0,34	0,34	0,34	-	-	-	-
Total greenhouse gas emissions per capita	**SK**	8,5	8,6	8,5	8,0	7,9	7,5	7,6	-
(in t/PC.)	**OECD**	12,8	13,1	12,9	12,7	12,6	12,4	-	-
The amount of greenhouse gas emissions *(in million tonnes)*	**SK**	45,7	46,6	45,5	43,3	42,9	40,7	41,3	41,0
The amount of greenhouse gas emissions in the non-ETS sectors (% change compared to 2005)	**SK**	- 8,1	-5	-11,2	-14,7	-19,4	-24,4	-23,2	-23,7

By 2030, average temperatures are expected to increase in each season. As a result of climate change, the occurrence of extreme events is increasing. The main document, in the mitigation field, will be the Low-Carbon Strategy of the Slovak Republic until 2030 with a view to 2050, where efficient and cost-effective measures will be proposed, especially in the areas of transport, energy efficiency, industrial production and power engineering. One of the instruments for climate change mitigation will be the implementation of measures in specific areas based on the action plan of the updated Adaptation Strategy of the Slovak Republic on the Adverse Impacts of Climate Change, as well as on the action plan to address the consequences of drought and water scarcity.

The amount of released greenhouse gases during the last twenty-five years has fallen mainly due to the transformation of the economy and the introduction of more stringent national legislation. The energy productivity of the Slovak economy has been able to catch up with the OECD average relatively quickly, which can also be due to decreasing consumption of energy raw materials. While GDP has grown over the past two decades, gross domestic energy consumption has been steadily declining. The areas with the highest number of produced emissions are energy, industry and transport, their volume has been declining only slowly.

6.1 Continuation of Greenhouse Gas Emission Allowance Trading

The Emissions Trading Scheme (EU ETS), which in Slovakia covers about 50% of the total annual greenhouse gas emissions, will continue to be a key pillar for cost-effective greenhouse gas emission reductions in industry, energy and air transport. The EU ETS scheme is based on a "cap-and-trade"“ system with a set of continuously reduced annual ceiling for the volume of released emissions. The scheme aims to reduce greenhouse gas emissions by 43% by 2030 compared to 2005.

Slovakia has an option to sell about 55% of its annual emission ceiling under the EU ETS scheme, and also if the surplus in non-ETS sectors is reached, it can sell the annual allocated allowances to cover emissions produced in these sectors. The proceeds from the sale of all emission allowances will be used for the fulfilment of environmental targets in the area of climate change, and to ensure the reduction of greenhouse gas emissions of the national economy, or to support climate projects and measures in developing countries. Slovakia will make the best use of support mechanisms that are laid down in the revised Emissions Trading Directive to achieve the climate change targets.

6.2 Implementation of Sustainable Solutions in Transportation

Fuel prices should reflect their environmental impacts. Fossil fuels will therefore gradually balance the tax burden on petrol and diesel, with a view to ensure competitiveness and promotion of alternative fuels, along with infrastructure building. When determining appropriate rates, it will be necessary to consider the impact on the business environment. In the procurement of new means of transport and transport solutions, it will be necessary to analyse their impact on climate and air quality, taking into account cost-effectiveness or value-for-money principle. Long-term solutions will be preferred. Promoting sustainable solutions in transport involves an effort to make changes in the overall division of transport work. In freight transport, it includes a shift from road freight transport to railway or water transport, and in passenger transport, a shift from individual car transport to public transport, cycling and walking.

6.3 Development of Green Infrastructure

In the implementation of new projects and in the reconstruction works, the principle of "environmentally friendly solutions" will be applied, based on the use of green infrastructure. Project proposals will include a mandatory analysis of possible application of such solutions. An example of such projects can include: greening of public spaces and roofs, increasing rainwater harvesting, linking up transport projects with nature, expanding urban parks and urban green areas, and promoting biodiversity in urban areas. Building green infrastructure in agricultural land can also help adapt to climate change.

6.4 Development and Implementation of Adaptation Strategies at the Level of Local Authorities

Towns and their institutions already have room for incorporating adaptation measures into strategic documents. In order to increase the efficiency of their implementation, legislative changes will be made to adequately ensure the preparation of adaptation strategies at the level of regions and towns with clearly defined measures and sufficient funding, and in particular to ensure their projection into urban planning. The law, based on the Adaptation Strategy of the Slovak Republic on Adverse Impacts of Climate Change, will set priorities for individual locations of adaptation. Low-population villages will cooperate with either bigger local authority or two or more will combine efforts towards the preparation of action plans. Adapting measures will be adjusted to the region according to geographical conditions.

6.5 Prevention and Mitigation of the Climate Change Impacts by Protecting Ecosystems and Their Services

The importance of protecting ecosystems and their services in the area of climate change is underlined by many UN and EU international documents, including the Paris Agreement. Sustainable solutions support not only carbon storage and water retention, but also to conservation and restoration of ecosystems, landscape restoration, flow of water courses, connection of fragmented ecosystems, and they provide an opportunity to improve the standard of living and health of the population. Agriculture, forestry, the business sector as well as healthcare and territorial development remain key sectors. It will be necessary to reconcile various strategies that address climate change and the preservation of ecosystems, and remove inconsistencies.

7 Protection Against Floods Consequences

Slovakia will ensure the protection of human life and health, property, environment, cultural heritage and economic activity from floods, drought and water scarcity, using all available measures and resources. Greater use will be made of green measures, which together with the necessary technical infrastructure will be an integral part of the flood protection system. Damage will be prevented by alleviating root causes and also by compliance with urban planning created on the basis of flood maps.

Global climate change increases extreme weather fluctuations. In Slovakia, it is mainly in the form of extreme heat and frequent torrential rains which result in flooding. The floods are natural and often desirable in protected areas, as a part of the environment, therefore it is necessary to distinguish where it is environmentally appropriate and economical to combat this natural force.

In general, flood damage is several times higher than investment in flood protection. In the last 20 years, the recorded average annual cost of flood damage in Slovakia has reached approximately €70 million, the highest being in 2010, when the damage and the cost of security and rescue work reached more than half a billion Euros. The most vulnerable area is Eastern Slovakia. Up to two-fifths of all flood events have occurred in the Prešov region.

7.1 Intensification of the Use of Green Measures

Where it is applicable and efficient, green measures will be preferable to slow down the flow of water from the landscape into water courses, increasing the retention capacity of river basin or promoting natural water accumulation. Green measures will be implemented across the whole country area, not only in the water course, but also in urban, agricultural and forest land. In circumstances of a new or upgrading existing technical infrastructure, the mitigating environmentally friendly measures will also be implemented.

The revitalization of watercourses, wetlands, opening of dead branches and functional inundation will be top priorities. In selected areas, a space for the river and natural river processes will be created, to reduce run-off. Flood protection measures will not carry or increase the risk of flooding in areas below the water course.

7.2 Completing the Necessary Infrastructure

Slovakia will implement flood protection measures to ensure the protection of human life and health, property, environment, cultural heritage and economic activity, as set out in the flood risk management plans. These plans will be reviewed and updated every 6 years. Finances will be consistent with plans to target areas identified as being at significant risk for floods. Plans will be based on accurate data combining the likelihood of floods, the vulnerability of area and cost effectiveness.

From a sustainability point of view, the maintenance of existing measures, including non-structural (forecasting system, monitoring), will be maintained for the population in a given area. The State will ensure sufficient financing of the maintenance of existing flood protection measures in order to fulfil their protective function without safety risks and without negative environmental impact on the surrounding environment. For each flood protection measure, the State will ensure effective maintenance and operation throughout the planned duration of the construction, as well as the maintenance of monitoring and forecasting system.

Slovakia will thoroughly assess and justify the necessity of the realization of water engineering structures and evaluate the potential of all flood control measures in the country and their revitalization, which may lead, among other things, to an increase in the protective capacity of existing structures. Further measures will be proposed based on an assessment of the effectiveness of the green and technical infrastructure. These data will take into account all impacts on the landscape, water bodies, biotopes and population, and will not only focus on the flood protection. At the same time, the financial efficiency of different types of measures will be compared.

7.3 Prevention of Damage by Addressing the Causes of Flooding

Preventing the detrimental consequences of floods will primarily be the concern for ecosystems and the landscape as a whole. Measures to mitigate floods will be coordinated not only by watercourse administrators, but also by other relevant bodies in the country. Land management in urban, agricultural and forest land will be conducted in a way to prevent rapid drainage of rainwater. At the same time, attention will be paid to the increasing area of hard surfaces, especially in the built-up area of towns and villages. The development of the last decade, together with the compaction of agricultural soil, its inappropriate management and unsuitable forest interventions, caused that the water is quickly drained away from the country during rainfall. This unfavourable situation needs to be stopped and reversed.

The analysis of the causes of floods will be more accurate and will be focused on the specific removable causes identified in the river basin. Subsequent corrective actions will be implemented at local, regional or national level. These may be minor measures such as bridge reconstruction, removal of barriers in water courses, or national measures, such as management of built-up area, forests or agricultural land. The State and governmental authorities will determine at what level, what remedial measures will be put in place, taking into account cost effectiveness, efficiency and sustainability.

According to the analyses, the State will be able to assess the impact of care for forests, agricultural or urbanized land on the occurrence of floods in Slovakia. The database of causes and consequences of flood events will help other targeted preventive measures. If the originating body of the flood event can be determined, they will be responsible for the remedy or compensation. The principle of responsibility will lead to better flood prevention.

7.4 Refusal of Constructions in Flood Risk Areas

Strenuously observed urban planning will be an effective tool to prevent flood damage. Construction and inappropriate activities on a flood plain will not continue to be permitted. For this purpose, accurate and freely available flood hazard and risk maps, which are updated every 6 years, will be used.

Construction work and other activities should not increase the flood risk. Consideration will be given to the introduction of a requirement for an investor to retain and effectively handle the rainfall on their own land in a way that does not endanger neighbouring lands and other person´s property. Incentives that deteriorate a state in the flood area will be removed.

The State, according to the ‘user pays‘ principle will find a way to involve the population at risk, in financing their flood protection. One option is the financing from the property flood insurance coverage. Other options are the introduction of a local tax only for this purpose. In addition, it may be a matter of introducing a contribution to implemented flood control measures or an obligation to implement measures on own holdings to reduce the general risks of floods. This will ensure the long-term and more direct financing of flood protection.

8 Solution to Droughts and Water Scarcities

Better planning in urban, agricultural and forest land will lead to more efficient water management. Water resources, such as rainwater and water reuse, will be used effectively. Retention of water will alleviate the consequences of the drought and lack of water in the country.

In recent years, drought in Slovakia has become a significant negative phenomenon. Long droughts that alternate with heavy rainfalls that cause torrential floods are on the increase. Slovakia has sufficient water resources to ensure water for the population, industry, and agriculture, even though they are unevenly distributed in the country. Lowland regions in Slovakia with intensive agriculture are most at risk by droughts. It is therefore necessary to pay increased attention to the protection of water resources and to strengthen international cooperation, including involvement in drought projects and programs.

8.1 Landscape Intervention Planning with Regard to the Protection Against Water Scarcity

The construction of a new building should not significantly impede the original functioning of the location with regard to the accumulation of rainfall. Therefore, it is necessary for every structure to implement mitigating or compensating technical or environmentally friendly measures in order to secure a replacement for the original scheme. The solution are, in particular, measures to ensure increased infiltration on built-up areas or evaporation from the formed vegetation.

Better planning will also be applied to agricultural or forest land. Increase in water retention capacity of the soil and reduction of water erosion through the use of suitable agrotechnical practices, cultivation of suitable crops, restoration of field groves, division of large lands into smaller or formation of tapping agricultural drains will be implemented in agricultural landscapes. In forest area, natural potential for water retention will be harnessed, and vigilant control and enforcement of measures to eliminate water run-off from forests will be ensured.

8.2 Improvement in the Area of Water Re-Use

In support of this area from public sources, renovations or construction of buildings, sufficient information should be provided on the possibilities and preference of the use of service water (e.g. rainwater) in flushing, cleaning works or, with regard to the quality of the re-used water, also for irrigation. Slovakia will support the implementation of innovative technologies for rainwater retention and re-use of water in an urbanized environment for utility functions. Owners, land managers and land users would therefore be able to take all available measures to retain water from the surface run-off in the landscape concerned for its subsequent use, with regard to its quality characteristics. Relevant legislation will be adapted to ensure that the rainwater harvesting is maximized during agricultural and forestry activities. Effective control and enforcement of these measures will be ensured.

8.3 Water Retention in the Landscape

Priority will be given to the environmentally friendly ways of harvesting and maintaining of water in the landscape. These include preventive measures for the retention of water in the landscape, which means effective technical tools in water management, as well as other green measures. The right approach will enable the restoration of

ground water reserves. Slovakia will evaluate the potential of all water-retention measures in the country and their revitalization, which may lead to an increase in the accumulation capacity of water reservoirs. Further measures to ensure sufficient water accumulation for addressing the effects of drought and water scarcity will be suggested by comparing the actual capacity of reservoirs and the actual volume of harvested water. Drying up of the landscape will also be addressed by innovative and environmentally friendly approaches. In forest land, the focus will be put on the natural potential of the forest for water retention, and at the same time, an appropriate management method with respect to local natural conditions and forest categorization will be applied. In urban areas, we can talk about ecologically favourable green infrastructure, such as green roofs or rain gardens. Building of small dams, cascades or polders in forests can help to meet the set objectives, and also to create suitable conditions for the accumulation of water in the form of reservoirs. In water courses, where appropriate, the use of more environmentally friendly technical measures, such as the construction of ponds, small lakes and reservoirs will be carried out.

9 Clean Air

Air quality in 2030 will be significantly better and will not have a significant adverse impact on human health and the environment. This will be achieved by reducing the amount of emissions compared to 2005 - SO_2 by 82%, NO_x by 50%, NMVOC by 32%, NH_3 by 30% and $PM_{2,5}$ by 49%. The coal-fired production of electricity will be gradually reduced. Domestic heating and urban transport will shift to more environmentally friendly alternatives. The application of the BAT conditions in the industry, in the energy sector, but also in agriculture and other smaller industries will be* strengthened. *The National Programme for the Reduction of Pollution will focus on cost-effective measures to reduce emissions. Air protection will be governed by the "polluter pays" principle. Consideration will be given to the introduction of a scheme for emission allowance trading for air pollutants. The air pollution tax system will be set up efficiently and motivationally.

The development of civilization and industry also brings polluted air, which has a major impact on the health of the population. Solid particulates in the atmosphere are a risk factor, especially for the development of cardiovascular and respiratory diseases. Particularly the smallest particle fractions are the cause of many premature deaths in Europe and in Slovakia. They have irritant effects on the respiratory system even in short-term exposures. When inhaled, they penetrate to the lower respiratory tract and can penetrate into the blood, causing health problems, especially in sensitive population groups.

			2005	2010	2011	2012	2013	2014	2015
Exposure of urban population to $PM_{2,5}$ pollution		**SK**	-	22,8	26,7	22,7	17,2	19,7	19,0
(μ g/m^3)		**EÚ**	15,5	18	18,4	16,8	15,9	15,2	14,5
Average share of population exposed to excessive $PM_{2,5}$ *(in%)*		**SK**	43,3	33,8	38,8	38,8	34,5	24,3	-
Total emissions	**SO_2**	**SK**	0	-22	-23	-34	-40	-49	-24
	NO_x		0	-16	-24	-26	-28	-29	-33
	NMVOC		0	-16	-18	-25	-34	-38	-35
	NH_3		0	-13	-17	-14	-15	-12	-12
	$PM_{2,5}$		0	-27	-23	-23	-22	-25	-22

(% change compared to 2005)

Heating with little efficient combustion equipment for burning solid fuels, including biomass, contributes the most to high concentrations of particulate matter. Emissions from internal combustion of car engines and combustion processes in industry also contribute to high concentrations in the air. Transport is responsible for large concentrations of nitrogen oxides. Most premature deaths due to exposure of the population to pollutants are due to exposure to fine dust particles.

9.1 Consideration of the Introduction of a Scheme for Emission Allowance Trading for Air Pollutants

National emission reduction commitments for 2030 are very ambitious for Slovakia. The instruments that are currently in place (emission limits, technical requirements and operating conditions) are not sufficient. The National Programme for the Reduction of Emissions will be the key document for achieving emission reduction commitments and will determine effective measures to meet emission ceilings. The proposed measures will regulate mainly the areas with the highest emission reduction potential, such as transport, household heating, agriculture, industry and energy. An effective measure may also be a scheme for emission allowance trading, which will help reduce emissions of the pollutant concerned, where it is environmentally, socially and economically the most advantageous. This system would replace the current charging system and it would be introduced for pollutants which are the most problematic for Slovakia in terms of achieving the set targets. The incentive charge system will remain in effect for other pollutants.

9.2 The Implementation of the Best Available Techniques (BAT) for Small Installations

The laws on the protection of air quality and integrated prevention already require the implementation of the Best Available Techniques (BAT) for the construction of new sources or substantial change of a source. In industrial production falling under the integrated permitting, the Best Available Techniques are implemented on an ongoing basis, which is associated with a significant reduction in emissions. Industrial activities, which for their capacity do not fall under the integrated permitting, lack the reference documents on the Best Available Techniques. The reference documents will therefore be mainly processed for medium-sized combustion plants.

9.3 Promotion of More Efficient Combustion Equipment and Heating Systems

Support will be given towards a shift of households from the use of old solid fuel heating appliances, which significantly contribute to air pollution, to more efficient combustion appliances. Emission standards and energy efficiency of combustion appliances, including used fuel, will also be controlled for small combustion installations. Illegal waste incineration in home furnaces will be controlled by independent authorities and sanctioned to avoid air pollution and damage to the health of the population. At the same time, legislative and support mechanisms will be put in place to replace older, less energy efficient heating appliances that do not meet the latest emission standards. A market regulation with heating appliances to 0.3 MW will be implemented, only appliances that meet the emission criteria will be on the market. If the technical and economic efficient district heating is available, the existing infrastructure of the heating plant should be used preferably.

9.4 Gradual Reduction of the Coal-Fired Electricity Production

Coal burning releases emissions of solid pollutants, sulphur oxides, nitrogen and carbon oxides that create negative pressures on local air quality and population health. The production of electricity and heat from coal will lead to a gradual phasing out, with a positive trend of total coal reduction, which is one of the key goals of the transition to a low-carbon economy. The mechanisms resulting from the revised Emissions Trading Directive and other mechanisms will be used, as far as possible, for the gradual reduction of the production of electricity and heat from coal.

9.5 Increasing the Low-Emission Transport

A mechanism for the promotion of low-emission transport based on electro-mobility and other alternative fuels with minimum impact on air quality and other low-emission forms of mobility will be created. Transport, in

particular passenger cars, has the increasing share of total greenhouse gas emissions, but also other pollutants, especially, nitrogen oxides. It accounts for almost half of all emissions of nitrogen oxides. Low-emission public passenger transport and town cycling will be preferred in residential areas. Inter-urban transport will promote low-emission public passenger transport, in particular, railways, tramways and electric buses. Municipalities will be able to charge passenger cars by means of congestion charges and create conditions for the reduction of individual car transport, for example, by creating zones of the transport tranquillity. In addition, there will be differentiated emission zones in towns with access for vehicles meeting the emission classes. The tax system already favours low-emission transport. In the context of the tax system, the discussion to support environmental objectives in the transport area, will be focused on the higher taxation of transportation that imposes a burden on the environment.

Green Economy

Global climate change and finite resources require innovative approaches to economic adjustment. The economy of the 21st century is an economy with the highest reuse of used materials, efficient material consumption and sustainable energy consumption that does not create additional environmental pressures. To achieve this goal, public and governmental authority approaches need to be changed, which will require increased emphasis on environmental education and data collection and processing to better formulate measures.

10 Towards the Circular Economy

By 2030, the municipal waste recycling rate, including its preparation for re-use, will be increased to 60% and by 2035, the land-filling rate will be reduced to less than 25%. Slovakia will use green public procurement at least in 70% of the total value of the public procurement. It will increase support for green innovation, science and research. Disposal of food waste for supermarkets will be prohibited.

Waste and its mismanagement burdens the environment twice. The direct negative impact is its land-filling and possible risk of environmental contamination, the secondary burden is in the form of pressure to use new sources, which may be in some cases non-renewable. Therefore, it is important to build the Slovak economy on the principles of the circular economy and sustainable use of natural resources.

		2010	2011	2012	2013	2014	2015	2016
Domestic material consumption per capita	**SK**	13,3	13,5	11,9	11,4	12,6	12,7	12,8
(tonnes per capita)	**EÚ**	14,1	14,6	13,6	13,2	13,3	13,1	13,4
GDP / domestic material consumption	**SK**	0.9	1,0	1,1	1,2	1,1	1,1	1,1
(EUR/kg)	**EÚ**	1,8	1,8	2	2	2,1	2,2	2,2
The municipal waste recycling rate	**SK**	9,1	10,3	13,3	10,8	10,3	14,9	23,0
(%)	**EÚ**	38,3	39,6	41,5	42,2	43,7	45,0	45,3
Waste production per capita	**SK**	1728	-	1558	-	1643	-	1951
(kg)	**EÚ**	4871	-	4944	-	4931	-	-
The landfilling rate (excl. mineral waste)	**SK**	55	-	53	-	51	-	-
(%)	**EÚ**	29	-	28	-	25	-	-

The Slovak economy consumes more resources than its natural capacity. The ecological footprint of the Slovak economy is thus still negative. Although Slovakia's resource requirements are lower than in OECD countries, consumption still exceeds our capabilities. The proportion of industry in Slovak GDP is relatively higher than in the OECD countries. The total material consumption per capita, excluding the period of great recession, is increasing. In addition, the Slovak Republic lags behind most of the EU countries in green innovations, and green procurement contracts make up only a fraction of the total public procurement.

Slovakia has great potential to improve the use of existing resources. The rate of municipal waste recycling is one of the lowest in the EU, while land-filling is still the dominant form of waste management and its rate is one of the highest in the EU. Slovakia produces relatively less waste than other EU countries, but recycling is

significantly lower. Two-thirds of municipal waste and more than half of all waste are deposited in landfills, which is significantly higher than in the EU. The trend of declining waste landfill and increasing recycling is very weak and will not change without stricter measures. There is also a need for consistent separation and recovery of biodegradable municipal waste. The economy thus loses significant volumes of materials that could be used secondarily.

A tighter waste management policy brings the risk of illegally deposited waste (illegal dumps), the removal of which is often costly. There are thousands of locations with illegally deposited waste in Slovakia, which degrade a given area, threatens the health of population and ecosystems and poses further future risks. Most waste in such landfills is mixed municipal and construction waste.

10.1 Support of the Circular Economy

During the 2016 Transition to Green Economy conference in Bratislava, which took place in the framework of the Slovak Presidency of the Council of the EU, it was agreed that Slovakia will promote green innovations and the cooperation of Slovak and foreign universities, scientific institutions, private and third sectors and towns and villages. Support for co-operation between ministries and the third sector will be broad. Emphasis will be put on prevention of waste generation, creation of conditions for the priority use of residues and recovered waste from industry to reduce the use of natural materials, ecological design of products and lack of technologies for the treatment of certain types of waste. Clusters will continue to be built. At the same time, companies will be informed about the possibilities of support programs, and the administration of grant applications and project implementations will be simplified.

Stimulating green innovations will also increase the proportion of green procurement. Slovakia will ensure that the green public procurement covers 70% of the total number of public procurement contracts. Green public procurement will be mandatory for central government authorities, self-governing regions, and municipalities and from the beginning for selected product groups, and it will gradually expand to reach the target set by 2030. Electronic public procurement will ensure simple and transparent provision and monitoring of green public procurement.

Consideration will be given to the deposit system expansion of single-use drinks containers and the limitation of the use of disposable plates and other containers. Information campaigns and instruments for businesses and households will improve the prevention of waste generation. At the same time, the creation of re-use centres will be supported, where citizens will have the opportunity to hand in items which can still be used or repaired and re-used.

After agreement on reducing the amount of plastic bags consumed, voluntary agreements will also be extended to other products and services that place a disproportionate burden on the environment. It is also necessary to introduce such concepts for the promotion of environmentally friendly products, which can influence the stage of consumption and use of products, such as the award of environmental labels, which would give manufacturers a competitive advantage.

10.2 Gradual Increase of Fees for Waste Landfill

The landfill fee will fully take into account the environmental costs associated with soil, water or air contamination, or other economic costs. Raising landfill fees is a good incentive to sort waste, prevent waste and create pressure to increase recycling. It has been shown that a higher fee is likely to gradually reduce the landfill rate, but it must be suitably complemented by other measures. Fees for the disposal of municipal waste in a landfill in Slovakia are one of the lowest in the EU. In order for the measure to be effective, the municipalities will include in the municipal waste fee, the full costs of municipal waste management within the scope of the applicable legislation. Measures will also be taken to ensure that only waste that has previously undergone some form of waste treatment, corresponding to the higher priorities of the waste hierarchy is landfilled. Subsequent consideration will be given to introducing other fees to support measures that are higher in the waste hierarchy. These measures will exert pressure to increase recycling capacity. The SR will support the research and development of recycling technologies not only in the field of municipal waste, but also in industrial waste, as well as the construction of recycling capacities for commodities recycling capacity of which is missing or insufficient. This will enable the recycling of waste from separate waste collection that would otherwise end up in landfills or incinerators.

10.3 Introduction of Incentive for Waste Collection Depending on the Actual Quantity of Waste

Gradually, incentive for the collection of municipal waste, based on the waste volume, will be introduced in municipalities. The quantity waste collection is an option in Slovakia, which only a few municipalities have chosen. Municipalities, based on their preferences, will gradually introduce one of the forms of quantity waste collection (different sizes of sacks or containers, frequency of collection, regular monitoring of produced waste, etc.). As an intermediate step of switching to a quantity waste collection, the system of discounts on a flat-rate basis can be used according to the type of waste separation. Quantity waste collection can significantly reduce the amount of mixed municipal waste produced, by generating direct financial incentives for citizens to increase separation. Since the fee is based on the amount of waste that is actually produced, the more the citizen separates, the less mixed waste he produces and the less is paid in fees.

Once a convenient and motivational system for waste producers is completed, they will be provided with necessary information and compliance monitoring in order to facilitate waste separation. It is necessary to build simple waste separation facilities and infrastructure for the efficient operation of the quantity municipal waste collection. Adequate and clear waste separation options for municipal waste and tools to ensure the functionality and prevention of the system circumvention must be available. At the same time, the functionality of extended producer responsibility system will be improved, its administrative burden will be reduced and the control of concerned entities will be increased.

10.4 Increase in the Prevention of Illegal Dumping of Solid Waste Based on the "Polluter Pays" Principle

The use of preventive measures to prevent the emergence of illegal dumps will increase. Municipalities will cooperate closely with the police to increase the presence of police on the incriminated locations. The establishment of an environmental police will be considered. At the same time, cleaning up of the location will be enforced, which will reduce the profitability of such actions. Consistent punishment of offenders will reduce illegal

dumping. Especially, illegal waste incineration will be closely monitored. Resulting successful interventions will be published.

Effective penalties will be introduced for waste producers, or designated persons responsible for the illegal placement of waste, and who even upon a notice have not removed illegal dumps. Legislation will extend the responsibility of property owners for illegally disposed waste, if the landowner fails to make arrangements with the municipality for the prevention of illegal waste dumps on their land (e.g. by permitting the installation of camera traps etc.). If a municipality or a private landowner does not remove an illegal waste dump even after a notice from a governmental authority, the competent state organizations will remove it at the expense of the landowner or the municipality, according to the waste dump location. This will increase the motivation of municipalities to implement preventive measures and consistently track and punish polluters. If a municipality proves to prevent the creation of illegal dumps, their removal at the own expenses, sufficient education of the citizens, and disproportionate costs of removing illegal dumps will incur, the municipality will be able to apply for financial or other state assistance. Legislation will extend the responsibility of property owners for illegally disposed waste, if the landowner fails to make arrangements with the municipality for the prevention of illegal waste dumps on their land (e.g. by permitting the installation of camera traps etc.).

10.5 Prevention of the Production of Biodegradable and Food Waste

Slovakia will limit food waste production by 2030. Restaurants and supermarkets will be obliged to make use of the food, for example, by charity donation of the food that fulfils food safety requirements. If they are no longer suitable for consumption, they will be able to compost them or energetically utilize (e.g. by selling at a reduced price for feeding purposes, except for the feeding of wild animals). As in other EU countries, it will be possible to sell such food in special facilities.

Slovakia will remove "best before" food labelling and introduce uniform "use by" foods after the date of minimum durability may still be suitable for consumption, if they are well stored. Labelling "minimum durability" increases food waste production and is therefore abolished in most European countries. Other legislative restrictions and unnecessarily stringent standards that can lead to the generation of waste from still usable foods will also be reviewed. Last but not least, it is necessary to provide information campaigns and behavioural measures aimed at changing human behaviour in regard to food waste in order to prevent its production.

The prevention to limit the biodegradable waste will be encouraged, with an emphasis on biodegradable municipal waste. Households will be able to compost comfortably the waste they produce. A sufficient network of collection and recovery facilities for separated biodegradable kitchen and restaurant waste will be built. Particular attention will be paid to the collection and treatment of green waste (e.g. from gardens, parks or meadows). At the same time, bio-waste disposal options will be increased, for example, only those biogas plants will be able to apply for public support which will collect separated biodegradable waste for biogas production, while the biogas by-product will meet the criteria for use as a secondary nutrient source in agriculture.

11 Economic and Clean Energy

By 2030, the energy intensity of the Slovak industry will be closer to the EU average. By 2020, criteria for the sustainable use of all renewable resources will be developed. Energy prices will include all external costs. Legislative and financial support will focus on resources that meet sustainability criteria and do not have negative environmental impacts. At the same time, transparency and public awareness of the energy and energy projects will increase. The share of renewable energy sources in energy production, energy consumption in transport, energy savings and greenhouse gas emissions drop will be in line with the European and national energy and climate plan of the SR by 2030.

Slovakia is still almost entirely dependent on imported energy raw materials from abroad and the use of renewable energy sources (RES) is below the EU average. Excluding lignite mining, domestic mining is minimal and a trend of gradual reduction is expected. Hydroelectric plants have the largest share of total electricity production from renewable energy sources, which produce one-sixth of the total electricity. Slovakia still remains one of the most energy-intensive economies, especially given the structure of industry, as it consumes almost 80% more energy per unit of GDP than the EU average. However, between 2000 and 2015, energy intensity was reduced by 51%, most in the EU. In comparison with the Visegrad Group countries (V4), the energy intensity of Slovakia is the lowest in the long term.

		2009	2011	2013	2015	2016
The development of energy intensity	SK	260,7	250,3	237,1	214,7	208,9
(kg oil equivalent/1 000 EUR)	EU	135,5	130,3	128,2	120,4	[3]
The proportion of RES in energy consumption	SK	9,4	10,3	10,1	12,9	12,0
(%)	EÚ	12,4	13,2	15,2	16,7	17,0
The proportion of RES in electricity consumption	SK	17,8	19,3	20,8	22,7	22,5
(%)	EÚ	19,0	21,7	25,4	28,8	29,6
The proportion of RES in transport	SK	5,3	5,5	6,0	8,5	7,5
(% of total transport fuel consumption)	EU	4,6	4,0	5,9	6,7	7,1

Economic and environmental aspects need to be taken into account for sustainable energy use. Coal and nuclear power plants need large sources of cooling water for their operation. Inefficient biomass combustion can lead to increased pressure on protected areas, ecosystems in unprotected land, and woody plants outside the forest. Wind power stations have to be sensitively placed in locations with good wind potential, but outside of the migratory routes of birds and bats, and outside of the locations that are significant in terms of history or culture. Nuclear power has not solved the problem of safe storing of high-level radioactive waste and spent fuel, which needs to be separated from the environment for a very long time. Water power plant interventions in the water course and its ecosystems and impacts on biodiversity need to be evaluated and sensitively compensated. When using geothermal energy, it is necessary to focus on the reinjection of water into the same aquifer of groundwater.

3 Data are not available.

11.1 Improving Energy Efficiency

Despite increasing energy efficiency, Slovakia still has the potential for energy savings and energy efficiency, as energy intensity is still almost twice as high as the EU average due to the economic structure of our economy. However, maintaining the trend of reducing energy intensity will be a challenge, given the cost-effective energy saving potential. Setting energy efficiency targets for industry must reflect Slovakia's commitments towards the EU, while reflecting the real potential and potential of industrial enterprises. Public sources in the energy sector will focus more on the cost-effective areas of energy efficiency of construction and housing. The basis will be the promotion of significant and in-depth renovation of buildings. Sufficient resources will be provided to meet energy efficiency commitments, including comprehensive building renovation. Support for new financial instruments will allow for a higher share of private funding to achieve energy efficiency targets, for example, in the form of concessions, delegated management, guaranteed energy service (GES).

11.2 Developing Renewable and Environmentally Friendly Energy Sources

In the area of energy production, renewable energy production will be preferred, which by its nature does not burden the environment and contributes to the long-term sustainable development of the Slovak Republic and to the environment compared to traditional sources of energy. Rules and criteria will be developed for each renewable resource in regard to their sustainable use. They will respect regional potential, economic advantage, impact on the energy system, impact on protected areas, protected species of plants and animals and opinion of the concerned public, municipalities and regions. Similar criteria have already been developed in the past for the use of wind energy and biomass for energy purposes covered by EU funds. The rules will be binding on all upcoming projects and should not only concern publicly funded projects.

Support from public sources and further legislative support for RES will only be acceptable for sources that do not demonstrably impair the quality of the environment. All these projects will provide the public with sufficient information and will undergo mandatory environmental impact assessments. The impacts of water power plants on the hydrology of river ecosystems will be mitigated by the removal of barriers on water courses, for example, by modifying release schedules with the release of appropriate flow rates with regard to habitats. Solar power stations will be, in the implementation of mitigating measures, mainly located on the roofs of buildings, car parks, brownfields or lower quality soils and not on high quality soils and habitats of national and European importance. In regard to the geothermal energy, it is necessary to focus on reinjection of water into the rock environment and to minimize outlets into surface streams. The setting of protection zones of geothermal sources, and subsequently their compliance, respectively conditions of use by geothermal users will be determined by law. Sustainability criteria will not apply to projects that have already started.

11.3 Removal of Environmentally Harmful Subsidies and Regulations

Public support for environmentally harmful activities will be phased out. Damage to property, health and the environment should be fully borne by the polluter. The environmental impact of energetics will be evaluated, taking into account the environmental, regional and development plans of the areas concerned. For example, coal burning is a long-term serious environmental and health burden.

A large part of the Slovak electricity sector is dependent on large centralized sources that require higher electricity transmission and distribution costs. It is therefore necessary to remove administrative and legislative barriers that limit the use of regional and local renewable resources and limit the ownership of municipalities, local firms, residents and their associations.

11.4 Improvement of the Public Awareness of Energy and Energy Projects

In regard to the power generation sources, the public must be informed in a timely and accurate manner of the possible effects and potential consequences of the failure of power stations, respectively, about an emergency event that may have an impact on the environment and health. The functioning and participation of municipalities and the public concerned in the process of authorizing the construction and operation of energy production resources by petition options will be streamlined. Institute of environmental impact assessment of power plants on the environment will be strengthened, in particular in the process of dealing with the comments of the public concerned. The outcomes of the assessment will include expert justifications and analysis and will be binding for the next authorization process.

In terms of maximizing the public interest, the scope of information secrecy will be reviewed. Where there is a risk to the security, confidentiality will be maintained with professional and analytical justification. Where environmental and health protection interests prevail, there will be increased public awareness (e.g., the volume and composition of discharged waste water from power plants or radioactive waste generated). At the same time, a public consultation will be launched on the topic of safe separation of radioactive waste from the environment and impact on its compartments. An analytical study will be prepared focusing on a safe and long-term solution to this problem.

12 Economic Instruments for a Better Environment

By 2030, the possibility of expanding environmental taxes in individual regions will be considered in Slovakia, and accordingly, selected measures will be applied in order to increase their total amount. The control of polluting equipment and application practices for issuing penalties will be improved. Pollution penalties will increase to such an extent, that the exceeding of limits will no longer be economically attractive.

With the economic boom there is also a greater burden on natural resources. Despite the fact that Slovakia is a developed economy, the tools to sanction interventions in natural resources are used to a small extent. The revenue from environmental taxes in Slovakia is among the lowest in OECD countries and implicit energy taxation is the second lowest in the EU. In addition, in the current situation, the penalties imposed for environmental pollution are a low incentive for a polluter to switch to less harmful technologies and to remedy their actions in order to fulfil the set limits. It may be that the total fine is only a small part of the profit that can be achieved at the expense of exceeding the set limits.

		2009	2010	2011	2012	2013	2014	2015	2016
Revenues from environmental taxes	**SK**	1,9	1,8	1,8	1,7	1,7	1,8	1,8	1,8
(in % of GDP)	**EÚ**	2,4	2,4	2,4	2,4	2,5	2,5	2,4	2,4
Implicit energy taxation	**SK**	101	93	102	102	100	114	118	122
(in euros / tonne oil equivalent)	**EÚ**	201	199	215	218	221	235	233	235

12.1 Consideration of the Environmental Tax Reform

Consideration will be given to the introduction of fiscal neutral environmental tax reform, including the overall tax reform. The tax burden will be shifted to environmentally harmful activities. One option is to abolish unfounded excise duty exemptions or introduce new taxes to reduce pollution. Conditions will be created to prevent the risk of carbon leakage from ETS areas to areas without emission limits and control. Carbon taxation in the transport, construction, agriculture and waste incineration sectors, along with the Emissions Trading Scheme, would be a cost-effective tool for reducing greenhouse gas emissions. At the same time, a mechanism will be established to take into account the production of air pollutants. The production of basic pollutants, in particular dust particles from individual fuels, should also be taken into account in the transport sector. At the same time, the taxation of harmful elements used in consumer products, such as batteries and gases will be reviewed.

12.2 Improvement of the Control and the Reassessment of Pollution Penalties

Controls of environmental pollutants will be more effective and their results published. Current pollution control does not allow sufficient screening of installations and their current release of pollutants, as the polluter is informed in advance. Pollution charges should be raised to a level that is motivating towards cleaner technologies. The technological and operational causes of pollution will be taken into account in the application of pollution penalties. In regard to the air pollution, a control system for combustion appliances in households, services and small businesses will be introduced.

13 Environmental Education and Learning for People of All Ages

In cooperation with central government authorities and their professional organizations, academia, non-governmental organizations and municipalities, the system of formal and informal environmental education and training for sustainable development will become more efficient. They will receive special attention through the action plans for the implementation of the National Programme of Education and Training. Any participant will gain the knowledge and skills needed to promote the principles of sustainable development.

Environmental education and training has been in the long term an underestimated social need in Slovakia. It lags behind the needs of today's society. Despite the wide possibilities of realization of the environmental education and training, it is necessary to state that the environmental awareness of citizens in Slovakia is insufficient and does not lead to a change of behaviour and values in the context of sustainable development. Most citizens think that the quality of the environment in Slovakia is lower than in other EU countries. However, according to surveys, up to three quarters of Slovaks consider nature to be an element that increases their sense of national pride, but only half of respondents are willing to actively participate in civic initiatives aimed at improving the quality of life in the country.

A formal environmental education in Slovakia is concentrated in school-type facilities and it is coordinated by the Ministry of Education, Science, Research and Sport of the Slovak Republic. It is included in the objectives, performance and content standards of the innovative state educational program, in which it is defined as a cross-cutting theme. It can be implemented as part of the curriculum content of the school subjects, through separate projects, seminars, teaching blocks and, last but not least, it can form a separate subject within the framework of optional lessons.

Education needs to be started at a very early age, as children do not have negative environmental habits that need to be eliminated. Quality environmental education and training and education for sustainable development not only increase the environmental awareness of the population, but also build an active approach to the environment by developing the skills that are necessary for sustainable development, such as systemic thinking, foresight, strategic thinking, critical thinking, normative competence, as well as an integrated approach to problem solving.

13.1 Improvement of Environmental Education in Formal Education

Environmental education and training for sustainable development will be given special attention in the action plans for the implementation of the National Programme for Education Development. The interdepartmental working group for the coordination of the National Programme for Education Development will monitor the fulfilment of objectives and priorities, set up effective forms and methods, and oversee the incorporation of the 2030 Agenda objectives into environmental education and training for sustainable development.

In the process of moving towards sustainability, education is an absolute priority. Appropriate conditions will be created for such education, which will provide the learners with knowledge, attitudes and skills that will support the creation of values, which will enable them to take a stand and contribute to the objectives set out in this strategy, as well as to problem solving of environmental and sustainability issues.

A regular analysis of the current status of environmental education and training in both formal and informal education will evaluate its effectiveness. The analysis must include attained goals, used content, forms and methods, including mapping of all educational activities and good practice examples in environmental education and training.

13.2 Heading Towards the Responsible Production, Consumption and Nature Conservation Through Informal Learning

Sustainable consumption should reflect the natural capacity of the economy. It is therefore necessary to move towards sustainable consumption and minimize the environmental footprint. The state will support informal learning activities and conditions for the development of third sector and municipal training activities, which will include, among other things, training of company managers, environmental consulting, education for the wider public in terms of conscious reduction of consumption. Thanks to educational activities and a nationwide campaign, the civil society (public and private sector and non-governmental organizations) as well as municipalities, will have a very good overview of voluntary environmental policy instruments, such as the eco-label or participation in the environmental management and audit scheme, which demonstrate lower environmental impacts.

To improve the future direction, there will be consistently realized measures of the departmental concept for environmental education and training of The Ministry of the Environment of the SR until 2025. An intensive, nationwide campaign to promote responsible and conscious consumption of products, including foodstuff, with a low carbon and environmental footprint, will be organized in collaboration with other government departments. Educational activities will focus on responsible consumption, active participation and waste prevention. Emphasis will be placed on waste management education, which will involve the participation of Producer Responsibility Organizations (PROs) and the third sector. Without knowing how to prevent waste production through prevention, reduction, recycling and reuse, other measures in this area will only have partial results. Particular attention must be paid to responsible consumption in transport, catering and clothing, as they represent a significant part of global greenhouse gas production,while at the same time, consumers have a direct impact on these areas.

Simultaneously, a network of state and non-state environmental education centres will be created with a target state that will be comparable to European countries. At the level of state, regional and local authorities, a mechanism will be created to complete the network of environmental and educational centres in all regions, as well as information and visitor centres in protected areas, based on the principles of fair, open and transparent tendering.

The awareness of local bodies about the benefits of local nature conservation will be improved, as well as information and promotion activities on nature conservation and care, including educational support, training and research. In the context of the European Landscape Convention, an information campaign, work with the public, cooperation with the media and educating professionals and local authorities will be ensured. Public access to information on environmental burdens will be improved, thus encouraging the involvement of the public, especially local communities, in their solution.

13.3 Improvement of Environmental Awareness Through Cultural and Natural Heritage and Tourism

Soft forms of tourism with low impact on nature can help the population's environmental awareness and also represent a source of nature conservation revenue. The acquired knowledge of nature conservation and biodiversity will contribute to greater interest in maintaining and improving the current state. The ways on how tourism could contribute via payments for services that come from landscape management will be examined.

Support, maintenance and use of exhibition and museum premises, open air museums, objects of cultural and natural heritage, environmental education centres, nature schools, forest schools with the aim of raising awareness of the natural and cultural values of the area will increase. Geoparks will be developed in a sustainable manner according to the approved and valid geopark building government concept. The aim is to increase attractiveness of the tourism and introduction of new elements. In establishing nature trails with the themes of nature conservation, forestry and geology, but also global environmental education, expert advice will be promoted.

14 Better Data for Better Decision Making

The scope and quality of the data collected will be improved, particularly in the areas of waste, water, air and biodiversity. The collected and updated data should be to the maximum extent harmonized at national and international level, and publicly available in a machine processable form. Subsequently, they will be able to be used again to create analyses and models that will form the basis for formulating measures.

Extensive data about various areas of the environment is already available today. However, they are often inadequate, either for their quality or because they do not cover all the required areas, and there is a need to introduce measurement of new indicators. The problem is also their lack of interconnection, lack of consistency, often duplication of collection and excessive administrative burden for businesses. Future policies and measures should be formed on the basis of actual data and analyses.

14.1 Improvement in the Range and Quality of Data Collection

Current data on groundwater potential do not take into account the possible consequences of climate change and thus potential real declines of resources. Data collection is performed only quarterly, with current policies requiring up to hourly collection statements on 300 groundwater monitoring objects. In order to secure data collection, the property-law settlement of the monitoring objects will be completed. In order to reduce the number of incomplete or unreported data, the control of the registration of water consumers and the actual quantities of surface and ground waters, as well as locations with not enough availability of sufficient volumes of water for the population throughout the year, will be strengthened. International cooperation will be intensified in the field of drought monitoring. Slovakia will support the research, development and modelling to determine the priorities for water supply during prolonged drought and identification of hazardous locations with fast run-off of water from the landscape. In regard to the water, data on a diffuse water pollution, emissions from diffusive sources of pollution or data from monitoring of some non-scheduled substances in water fauna are also missing. In the context of surface water, the elements, such as emerging chemicals, residues of drugs, pesticides etc., should be tracked.

Air quality assessment is carried out by monitoring ambient air pollutant concentrations, and by modelling in areas, which are not covered by monitoring. The current national network of 38 monitoring stations will be expanded to cover previously unmonitored regions and areas that are at risk of pollutant transmission from neighbouring countries.

Engineering geological mapping, monitoring and surveying of the most risky slope deformations will be carried out. The data will be used to create models of affected locations, to analyse the risk of environmental damage and the risk of harm to the population. Environmental and probable environmental burdens will be surveyed in the highest risk locations. Risk analyses of confirmed burdens and feasibility studies for the remediation of selected locations will be completed. Subsequently, work plans to eliminate environmental burdens for locations that fall under the state responsibility, will be prepared. The state will ensure post-remediation monitoring from publicly-funded sources and it will inspect post-remediation monitoring funded from private sources.

The collection of the current energy consumption data will help ensure a sustainable, secure and economical supply of electricity from large central, but also smaller renewable energy sources installed in the locations of consumption. This will make energy processes more efficient with a view to the future development of electromobility and electricity storage with a positive impact on the environment.
A consistent data collection and monitoring of habitats and species of national and European importance will be ensured. The results from the studies of biota and ecosystems will be the basis for responsible and informed decision making of the government authorities for nature conservation, with the aim of restoring ecosystem functions of the landscape.

The collection and processing of data relating to waste will also be improved, and a new comprehensive waste management information system will be set up. The current data collection system, its quality and the possibility of evaluation are considered to be very unsatisfactory. The introduction of quality data collection and evaluation is necessary to improve the functioning of the waste management system. It is necessary to introduce the monitoring of the flow of individual waste streams, to evaluate the fulfilment of objectives and impacts of the implemented measures, as well as the use of analyses and models that are absent from waste management.

To ensure a relevant database, it will be necessary to use and develop the existing tools for harmonized public data sharing of governmental authorities in the framework of electronisation of public administration, national spatial data infrastructure and the Open Government Partnership`s initiative. The popularization and use of outcomes of basic and cross-sectional environmental data will increase.

14.2 Use of Data and Analysis for the Development of Measures

Environmental measures should follow analyses and models that are based on accurate data. This approach will increase the accuracy of estimates and impact of measures and it will help reduce unwanted side effects of improperly set policies. For this purpose, an available central electronic system will be set up, covering all environmental compartments.

The analysis, models and other data should be, to the maximum extent, publicly available in processable form, so that they can be used by other government authorities and the public. Open access will improve data usability and creative processing. For more targeted set-up of local policy, the environmental data will also be publicly available in applicable form at regional and municipal level. High-quality and up-to-date data will also ensure better and more reliable fulfilment of cross-border and international legislative commitments and expectations of the Slovak Republic in several areas.

Institutional Framework

The Strategy for the Environmental Policy of the Slovak Republic until 2030 was based on international, European and national legislation and applicable strategic documents, as well as from the study of the European Environment Agency that was focused on the analysis of global megatrends, and the follow-up assessment of global megatrends from the point of view of the Slovak Republic. The knowledge from the building of scenarios up to 2020 for biodiversity and climate change was also used. Current international and national policies and strategy papers are listed in Appendix 1. Envirostrategy 2030 regulates the negative impacts on the environmental compartments, and it should be followed by ministries, private sector and public sector.

EU environment policy is based directly on the articles of the Treaty on the Functioning of the European Union, as well as on its measures and winding-up legislation. In 2013, the EU adopted the 7th Environmental Action Program (EAP), which governs the EU's environment policy by 2020. The EAP sets out a long-term vision for the EU's 2050 objectives and includes three priority areas for action:

1. natural capital: to protect, conserve and enhance fertile soil, seas, fresh waters, clean air and biological diversity;
2. resource efficient economy: ensure full implementation of the EU environmental package and EU energy package; improve the environmental performance of products and reduce the environmental impact of consumption;
3. human health and well-being: to safeguard citizens from environmental impacts and risks to their health and well-being; air and water pollution, excessive noise and toxic chemicals are among the major environmental concerns.

Envirostrategy 2030 and its proposed measures are in line with the 2030 Agenda for Sustainable Development of the United Nations (UN). By adopting Government Decree No. 273/2018 B.1 of 13 June 2018, the national priorities of the Slovak Republic in regard to the implementation of the Agenda 2030 will be elaborated in the upcoming Vision and National Development Strategy of Slovakia until 2030. The 2030 Agenda is the most comprehensive set of global priorities for sustainable development so far, and it was approved by the international community at the UN in September 2015. The integration element is reflected in Agenda 2030 as a link of all three dimensions of sustainable development: economic, social and environmental. Envirostrategy 2030 is also in accordance with existing strategies, such as the adopted Economic Policy Strategy for 2030 and the approved Pilot Version of National Investment Plan for 2030. Envirostrategy 2030 will also be in compliance with the upcoming National Regional Development Strategy of the SR.

The 2030 Agenda contains the main 17 sustainable development goals (SDGs), worked into 169 related sub-targets. While the primary objective of the Millennium Development Goals was to eliminate extreme poverty and hunger in developing countries, the motto of the 2030 Agenda for Sustainable Development is "no one will be left behind", and the pledge to fulfil its goals is expected also from developed countries. The 2030 Agenda is not legally binding, but its honouring is a natural duty of developed countries. Achieving the environmental objectives of the 2030 Agenda also includes active participation of the Slovak Republic at the international level, in accordance with the activities of international organizations, as well as actions, such as exploring breakthroughs and possibilities of Slovak involvement in the implementation of SDGs in third countries, where the Ministry of Environment already cooperates in various projects. The Ministry of the Environment of the SR is interested in

continuing its efforts and extending its cooperation, in particular by reinforcing the involvement of national experts in the implementation of projects in third countries, intensifying the exchange of "best practices" and supporting the increasing representation of national experts in international organizations.
Measurable and verifiable targets and criteria are important for assessing the achievement of the necessary and desired changes. Envirostrategy 2030 takes over the already measurable targets of the SR by 2030, and it adds targets that are in compliance with the 2030 Agenda. It assigns indicators to the targets which are to be found in the individual chapters. It proposes the targets and indicators in areas where they are missing.

The Ministry of the Environment of the SR is responsible for the preparation and implementation of most of the Envirostrategy 2030 measures. This concerns measures in the field of: water protection and the consequences of floods, nature and landscape protection, biodiversity and protected areas, rational use of the rock environment, climate change and air protection, the circular economy, including waste management, green public procurement or green innovations, environmental assessment and energy impacts, economic instruments for the environment and environmental education. The Ministry of Agriculture and Rural Development of the SR in co-operation with The Ministry of the Environment of the SR will be responsible for measures in land management with impact on the environment. The Ministry of Transport and Construction of the SR has the competence in the area of clean and sustainable transport and the Ministry of Finance of the SR, particularly, in the area of environmental taxes. The Ministry of Economy of the SR is, in cooperation with the Ministry of the Environment of the SR, responsible for the rational use of the rock environment, energy, the circular economy, climate change and air protection. The Ministry of Agriculture and Rural Development of the SR, in cooperation with the Ministry of the Environment of the SR, will be responsible for the implementation of measures in the field of forestry and agriculture, and the Ministry of Education, Science, Research and Sport of the SR in environmental education and training. The Ministry of the Environment of the SR, in cooperation with the Ministry of Interior of the SR, will address measures to combat environmental crime. The Ministry of the Environment of the SR will cooperate with the Ministry of Health of the SR on measures that are relevant for public health. The Ministry of the Environment of the SR will deal with the area of data and its publication in cooperation with all government departments, according to its material scope, and in cooperation with the Deputy Prime Minister's Office for Investments and Information and the Office of the Government Plenipotentiary for Civil Society.

In order to improve the state of environment, it is also necessary to improve institutional cooperation.

- In the field of agriculture and forestry, there remains a lack of clarity between the protection of habitats of protected areas, which is the responsibility of the Ministry of Environment of the Slovak Republic, and the economic use of forests, which is the responsibility of the Ministry of Agriculture and Rural Development of the Slovak Republic. Protecting biodiversity and promoting ecotourism should be a priority in protected areas.
- Cooperation between the concerned government departments and organizations in the area of combating illegal hunting, harvesting, poisoning and trafficking in endangered species will be strengthened. Government departments dealing with the CITES convention and environmental crime, apart from the Ministry of the Environment of the SR, include: the Ministry of Finance of the SR (customs authorities), the Ministry of Interior of the SR (police and district offices), the Ministry of Justice of the SR (public prosecutor's office and courts) and the Ministry of Agriculture and Rural Development of the SR (veterinary authorities, plant-health care, anti-poaching initiatives).
- The Ministry of Education, Science, Research and Sport of the SR, in cooperation with other relevant government authorities, including the Ministry of Agriculture and Rural Development and the

organisations within its scope, are responsible for environmental education. Therefore, it will be important to coordinate the government departments and their professional institutions and determine the responsibility of the Ministry of the Environment of the SR. Other professional institutions of government departments, environmental non-governmental organizations and other relevant organizations, especially at regional and local level, will be involved in the process.

- Closer cooperation is also needed in the area of environmental impacts of transport. The accurate quantification of the environmental impacts of passenger car traffic and line constructions is missing. In order to solve these problems, it is therefore necessary to improve cooperation between the Ministry of Transport and Construction of the SR and the Ministry of the Environment of the SR, especially when preparing strategic plans and policies.
- In the area of assessment of environmental impacts of energy, it will be necessary to extend cooperation with the Ministry of Economy of the SR and the Ministry of the Environment of the SR. The Ministry of the Environment of the SR authorities should be able to better control the environmental impacts of energy and set environmental criteria for energy projects.
- Interaction with the Ministry of Health of the SR is needed to strengthen cooperation in identifying the negative and positive impacts of selected environmental quality components on health (water, air, soil, protected areas, and climatic conditions). This can help to better address the proposed measures in tackling various degrees of environmental quality, and to protect and restore the unspoiled natural environment.
- In conjunction with the Ministry of Interior of the SR, the Ministry of the Environment of the SR will participate in procedures for ensuring the activities of municipalities in the wake or occurrence of exceptional events related to the emergence of slope deformations. In cooperation with the Ministry of Transport and Construction of the SR, geological hazards will be mapped in areas, where collisions of traffic constructions with landslides or other geodynamic phenomena can be minimized or eliminated.
- With the Ministry of Interior of the SR and the Office for Public Procurement, effective cooperation will be established, to efficiently and mandatorily apply green public procurement, which will enable the best electronic monitoring and progress assessment.
- Effective cooperation will be established with the Ministry of Finance of the SR in the setting of system and enforcing the "polluter pays" principle in the areas of tax legislation (fees, excise duties, environmental taxes, etc.)
- In the area of organic farming, cooperation and adjustment of agricultural policy will be improved between the Ministry of Agriculture and Rural Development of the SR and the Ministry of Environment of the SR.
- In the field of water protection and water management, flood control measures and the prevention of the negative consequences of water scarcity and drought, the cooperation and observance of the environmental objectives of the Slovak Republic in the government departments of the Ministry of Agriculture and Rural Development of the SR, the Ministry of Transport and Construction of the SR and the Ministry of Economy of the SR will be improved. Appropriate measures need to be applied throughout the whole river basin of water courses, including observance of the principles of integrated landscape management.

List of indicators

	SOURCE	DEFINITION
Enough clean water for everyone		
The specific water consumption in households	MOE SR	Amount of water supplied to households (i.e. water invoiced to households) per capita per unit of time.
Population supplied from public water supply networks	MOE SR/Eurostat	Share of population supplied with drinking water from public water mains.
Population connected to public sewers	Eurostat/OECD	Share of population connected to public sewers.
Production of waste water	Eurostat	Production and discharge of waste water per capita.
The proportion of treated waste water to untreated	MOE SR	The proportion of treated waste water to the total amount of waste water discharged to water courses.
Sustainable land management		
Efficient use of nitrogen	MoA SR/EPI	Proportion of nitrogen that a plant can take on total nitrogen in the soil.
Total area of arable land per capita	ÚGKK SR/OECD	Arable land in hectares per capita.
Consumption of nitrogen supplied in industrial fertilizers	MoA SR	Total annual nitrogen consumption in industrial fertilizers in kilograms per hectare of agricultural land.
Balance of all forest functions		
Gross loss of a vegetation higher than 5 meters	EPI	Loss of tree cover between 2001-2014 based on satellite images.
Change of forest area	Enviroportál	Share of forest land in total area of SR by cadastre.
Defoliation of trees	Enviroportál	Defoliation is the percentage of leaves or needles loss in trees. The indicator assesses the health status of forest ecosystems and its development based on the proportion of defoliated trees in the 2 - 4 damage levels (defoliation greater than 25%).
The intensity of use of forestry resources	OECD	It records the ratio of annual logging and growth of new forest.
The proportion of wind on the actual logging	MoA SR	Proportion of accidental logging due to wind on the total actual logging.
The proportion of spruce bark beetle on the actual logging	MoA SR	Proportion of accidental logging due to spruce bark beetle on the total actual logging.
The actual logging	MoA SR	Total recorded annual logging, including accidental logging.
Sustainable use of the rock environment		
The proportion of remediated areas on the total number of locations with registered environmental burdens in the SR	Enviroportál - ISEZ	Proportion of remediated areas on the total number of locations with registered environmental burdens in the SR.
The proportion of reclaimed, closed and abandoned extractive waste disposal sites	SGIDŠ -GeoIS	Area proportion of reclaimed, closed and abandoned extractive waste disposal sites in the total area of the registered, closed and abandoned extractive waste disposal sites.
The proportion of remediated slide area on the total of the registered slide area in the Slovak Republic	SGIDŠ -GeoIS	The proportion of remediated slide area on the total of the registered slide area in the Slovak Republic

Surveyed and probable environmental burdens	MOE SR	Number of surveyed environmental burdens and probable environmental burdens
Remediated environmental burdens	MOE SR	The proportion of remediated environmental burdens
Monitored environmental burdens	MOE SR	The proportion of monitored environmental burdens
Prevention and mitigation of the impacts of climate change		
Total greenhouse gas emissions to GDP	OECD	The data refer to the total emissions of CO2, CH4, N2O, HFC, PFC, SF6 and NF3 in relation to GDP. The data do not include indirect CO2 (emissions generated by solvent decomposition and releases to land in agriculture).
Total greenhouse gas emissions per capita	OECD	Greenhouse gas emissions measured in kilograms, compared to the number of inhabitants in the country.
The amount of greenhouse gas emissions	MOE SR/SHMÚ	Total volume of emitted greenhouse gas emissions in Slovakia
The amount of greenhouse gas emissions in the non-ETS sectors	Eurostat/MOE SR/SHMÚ	Overall change in sectors that are not covered by the ETS (e.g.transport, buildings, agriculture, waste) compared to 2005.

Clean air		
Exposure of urban population to $PM_{2,5}$ pollution	Eurostat	Expressing the potential concentration of the substance inhaled by the urban population. The limit value set by the European Environment Agency is 25 µg / m3; The World Health Organization reports 10 µg / m3.
Average share of population exposed to excessive $PM_{2,5}$	EPI	The proportion of total population exposed to higher concentrations of the substance than recommended by the World Health Organization (10 µg / m3).
Total emissions	EEA/SHMÚ	Percentage change in total emissions released in all sectors in Slovakia according to individual pollutants.
Towards the circular economy		
Domestic material consumption per capita	Eurostat	Total material consumption in the economy in tonnes divided by the number of inhabitants.
GDP / domestic material consumption	Eurostat	Performance of the economy measured by gross domestic product divided by the total consumption of materials in the economy in kilograms.
Ecological footprint	NFA	An ecological footprint is a measure of human demand for Earth's ecosystems. It compares human demand with the Earth's ecological capacity. It represents the amount of biologically productive land and sea needed to regenerate the resources that the human population consumes, and the Earth's ability to absorb and cope with the corresponding waste without harm. It monitors individual countries, their resources and how much they actually consume. Difference between domestic resources and consumption is the ecological footprint of a given country in the world environment.
The municipal waste recycling rate	Eurostat	The proportion of recycled municipal waste to the total amount of municipal waste generated. The figure for 2015 comes from Eurostat, the Ministry of the Environment of the SR uses a

		different methodology and declares about 20% of municipal waste recycling.
Waste production per capita	Eurostat	An amount of waste generated in kilograms divided by the number of inhabitants.
The landfilling rate (excl. mineral waste)	Eurostat	The proportion of total landfilled waste to total waste generated (including industrial waste).
Economic and clean energy		
The development of energy intensity	Eurostat	The share of gross energy consumption and GDP measures the energy consumption of the economy and its average energy efficiency.
The proportion of RES in energy consumption	Eurostat	The share of renewable energy in total energy consumption.
The proportion of RES in electricity consumption	Eurostat	The share of renewable energy in total electricity consumption.
The proportion of RES in transport	Eurostat	The proportion of renewable resources in total fuel consumption in transport.
Economic instruments for a better environment		
Revenues from environmental taxes	Eurostat	Volume of total environmental tax revenue expressed as a percentage of GDP.
Implicit energy taxation	Eurostat	The share of energy taxes and total energy consumption in a given year.

List of abbreviations and glossary of terms

BAT	The best available techniques, best available techniques and technologies
Non-interference area/territory without human intervention	An area in which it is forbidden to carry out activities that interfere with the non-interference development of the territory, in particular interventions in forest vegetation, vegetation and soil cover and water courses, capture or killing of animals, application of chemicals, placing of buildings or driving by a motor vehicle - apart from cases of a direct threat to the life and health of people, national security risks or exercise of state supervision or other control activities.
Records of exclusive and non-reserved mineral deposits of the SR	According to § 29 par. 4 of Act no. 44/1988 Coll. on the Protection and Utilization of Mineral Resources (Mining Act), as amended, the records of exclusive deposits and the balance of mineral reserves of the Slovak Republic. The Ministry also draws up annual records of non-reserved mineral deposits of the Slovak Republic.
Brownfield	A brownfield is a property (land or building) that is not effectively used and is neglected or even contaminated. It is a property that cannot be used effectively without the renewal process.
Cap	A system for introducing a ceiling for greenhouse gas emissions and trading
CITES	A Convention on International Trade in Endangered Species of wild fauna and flora
Good water status	Pursuant to Directive 2000/60 / EC on water - the objectives of the Directive, which are to maintain or improve the status of all water bodies to at least a "good" status.
EEA	European Environment Agency
EIA	Environmental impact assessment
Population equivalent (PE)	a unit of measure; represents the amount of biodegradable organic pollution expressed by the five-day biochemical oxygen demand indicator (BOD5), which is equivalent to 60 g of BOD5 produced by one inhabitant per day. (Act No. 364/2004 Coll.).
Ecological footprint	An ecological footprint is an indicator that is closely related to the concept of sustainable development. It represents the area of so-called ecologically productive land (it includes land and water) that a person (or school, town, state, mankind) needs every year to secure all resources and to dispose of waste using conventional technologies. An ecological footprint is a measure of human demand for Earth's ecosystems. It compares human demand with the Earth's ecological capacity. It represents the amount of biologically productive land and sea needed to regenerate the resources that the human population consumes, and the Earth's ability to absorb and cope with the corresponding waste without harm.
Ecosystem services	Benefits and gains provided by ecosystems such as water, food, wood, soil formation, air and water purification, flood and drought protection, crop pollination and more. According to the European Commission, ecosystem services in the Natura 2000 network bring annual benefits of between € 200 and 300 billion. Euros. In addition, in these territories, visitors spend 1.2 to 2.2 billion days a year, representing additional recreational benefits of up to € 9 billion. Euros (even without taking into account the economic benefits for local entities from the consumption of goods and services by visitors).
Energy productivity	Is the ratio of GDP generated at constant prices to gross domestic energy consumption.
EPI	Environmental performance index
ETS (EU ETS)	European Emission Trading Scheme
EUTR	Regulation of the European Parliament and of the Council of 995/2010 laying down the obligations of operators who place timber and timber products on the market imposes an obligation on competent national authorities and market participants to avert and prevent the entry into the internal market of timber from illegal logging or timber products , where each Member State is obliged to establish central registration, designate one or more competent authorities responsible for the implementation of the EUTR and determine penalties for timber marketing offenses.

Geopark	A geopark is a territory of scientific importance not only from a geological aspect, but also from the point of view of its archaeological, economic or cultural character of European importance. In addition to the potential for scientific research, it is focused on the environment, including education, it can be an important aspect for local economic development towards new economic activities of the region, artistic and educational value. The basic goal of building geoparks is a functioning and sustainable form of popularization and knowledge of the most important geotopes.
EVVO	Environmental education and learning
GMOS	Genetically modified organisms
HDP	Gross domestic product
ISEZ	Environmental burden information system
IUCN	International Union for Conservation of Nature
Soft forms of tourism	Green or soft tourism. Its most important type is a rural tourism. It also includes hiking, cycling and so on.
Small-scale areas	Protected areas, nature reserves, national nature reserves, natural monuments, national natural monuments and protected landscape elements.
MDV SR	The Ministry of Transport and Construction of the Slovak Republic
MH SR	The Ministry of Economy of the Slovak Republic
MoA SR	The Ministry of Agriculture and Rural Development of the Slovak Republic
MOE SR	The Ministry of Environment of the Slovak Republic
NFA	National Footprint Accounts
Nh3-Ammonia	Binary nitrogen compound. At normal pressure and temperature, it is a toxic, corrosive, colorless gas with a characteristic pungent, sharp, strongly irritating odor.
NMVOC	Non-methane volatile organic compounds (NMVOC)
NO_x	Nitrogen oxides. They are: nitrous oxide N^{I}_2O, nitric oxide $N^{II}O$, nitrous oxide $N^{III}_2O_3$, nitrogen dioxide $N^{IV}O_2$ (dimerizes to N_2O_4) and nitric oxide $N^{V}_2O_5$. Nitrogen oxides are produced as an undesirable product in high-temperature incineration installations during any high-temperature combustion in air.
O3	Ozone
OECD	Organization for Economic Cooperation and Development
OSN	United Nations Organisation
OZV	Producer Responsibility Organizations
PM2,5	Small solid dust particles (less than 2.5 μm) scattered in the air, which are so small that they easily enter the lungs and blood circulation. Their increased concentration can cause serious health problems.
PZKO	Air quality improvement programs in air quality management areas
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment - is an impact assessment of major development concepts, territorial planning documentations and legal provisions
SO_2	Sulfur dioxide is one of the two main sulfur oxides. It's a colorless, stinking, poisonous gas. Its density is 2.26 times more than the air
SR	Slovak Republic
Slope deformation	It is one of the most significant events of exogenous geodynamic processes. Based on the Atlas Map of Slope Stability of the Slovak Republic, there were 21,190 registered slope deformations registered in Slovakia in 2006, which disturb the territory with an area of 257.5 thousand. ha, which represents 5.25% of the area of Slovakia. The largest share of slope deformations has landslides, of which it was registered 19 104 in 2006 and represent a total of 90.2% of all registered slope deformations. The main natural causes of slope deformations are climatic factors in combination with the erosion of water courses, groundwater emergence and buoyancy effects of groundwater.

SGIDŠ -GeoIS	State Geological Institute of Dionýz Štúr – Geological information system
ŠOP SR	State Nature Conservancy of the Slovak Republic
Structure of Industry in Slovakia	The current structure of the Slovak industry can be found at the following links: Eurostat, Statistical Office SR
PM EMISSIONS	Atmospheric particulate matter
ÚGKK SR	Geodesy, Cartography and Cadastre Authority of Slovak Republic
WHO	World Health Organization
µg	microgram
Green measures	In particular, it is mainly environmentally friendly water retention measures, such as the protection and expansion of functional flood plains; preservation, restoration and replenishment of river bank vegetation, wetlands and forests in flood plains; preservation and restoration of field groves, hedge rows and strips in the agricultural land; green roofs and walls; community gardens; creating biodiversity-rich parks, green areas and corridors; small reservoirs for collecting rainwater; grassy areas in public areas allowing water to enter the soil, etc.

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