

Improving Access to Green Funding in CEE and Ukraine

Country fiche on Access to Green Funding

SLOVAKIA

March 2014



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Overview of financing in the following areas:

1. Financing for Sustainable Energy

Focus: This subsection will cover energy-related dimensions with focus on energy efficiency improvements and investments in renewables.

1.1 Strategies and national financial mechanisms regarding low-carbon economic development

A strategic document for the energy sector in Slovakia is the **Energy Policy Act (2006)**, which sets out the main goals and frameworks for industry development from a long-term perspective (25 years). The Energy Policy is a part of the national economic strategy of Slovakia. The **Energy Security Strategy (2008)** aims to achieve competitive power engineering, ensuring the safe, reliable and effective supply of all energy forms (*EEA 2011*).

Some of the identified drivers of environmental sustainability in the **National Reform Programme 2011–2014** include energy efficiency improvements, reductions in the energy intensity of production and consumption, and the development of energy, transport, waste and water treatment infrastructure (*National Reform Programme for 2011–2014*).ⁱ

Energy efficiency

Slovakia's first **National Energy Efficiency Action Plan (NEEAP 2008–2010)** addresses the main barriers to the adoption of energy-efficient solutions in the various sectors of the economy, including the weak participation of the private sector and insufficient public awareness. The plan identifies the intermediate and final energy-saving targets, the measures to achieve them, the expected impacts and costs of each measure, and the associated financial requirements. Commendably, it places emphasis on developing an appropriate monitoring, evaluation and enforcement system. However, it is unclear how the measures were selected, how their potential impacts and costs were assessed, and whether such measures will achieve the energy-saving target at the least cost. The NEEAP focuses on technical energy efficiency and awareness rising, and less attention is given to developing economic incentives for energy and emission-saving behaviour (*OECD 2011*).

The main goal of the 2007 **Concept for Energy Efficiency by 2016** is to reduce energy intensiveness to the average EU-15 level as well as to support sustainable resolutions and introduce energy-efficient technologies to all sectors of the Slovak economy (*EEA 2011*).

Renewable energy sources

The **Act on Support to Renewable Energy Sources and Highly Efficient Combined Production (2009)** guarantees renewable electricity producers' and highly efficient combined electricity and heat producers' preferential connection to the electricity grid and the distribution of electricity within the regional network. It also introduces a minimum price. The producers of renewable energy will also be reimbursed for network loss. Additional incentives are available to small-scale producers.

The **Action Plan for Renewable Energy Sources 2002–2012** elaborated the potential for the development of RES and targets of RES policy. The **Report on Progress in the Development of Renewable Energy**, including the setting of national targets for using RES (2004), provides information about using RES, their potential and barriers to additional utilisation. The report sets national indicative targets for energy production from RES (*EEA 2011*).

Electricity produced from RES is comprehensively covered by **Act No. 309/2009 on the Promotion of Renewable Energy**, which was approved in June 2009. This law improved the functioning of the electricity market in relation to renewable energy and created a stable business environment. It delivered a long-term guarantee of feed-in prices for 15 years and has guided the path followed in the production of electricity from RES by encouraging the construction of small and decentralised facilities (*EEA 2011*).

The **Concept of Using Agricultural and Forestry Biomass for Energy Purposes** (2004) is used to monitor the impact of existing legislation to promote RES and biomass. The **National Programme for the Development of Biofuels (2005)** covers indicative targets expressed by reference values for years 2006 to 2010 and at the same time creates appropriate economic and legislative conditions for the achievement of the indicative targets introduced in Directive 2003/30/EC. The goals of the **Biomass Action Plan for 2008–2013** (2008) clearly highlight the importance of biomass availability and the real possibilities of Slovakia, the problems related to the practical use of biomass and the implementation of the commitments of Slovakia in the field of RES (*EEA 2011*).

In April 2007, the Slovak Government approved the **Strategy for the Higher Utilisation of Renewable Energy Sources in the Slovak Republic**, which contains targets for the use of RES to be achieved in electricity and heat generation by 2010 and 2015. These targets were set based on the potential of individual energy sources, current utilisation levels and their expected use in the future (*EEA 2011*). Plans for local RES development are set out in **Concepts of Municipal Development in Heat Energy**. These are sectoral concepts drawn up by municipalities and are used when preparing a municipality's spatial planning documentation (*EEA 2011*).

1.2 Public financing schemes and sources for supporting and low-carbon development

The **Green Investment Scheme (GIS)**, established in 2009 and subsequently revised, collects proceeds from the sale of Slovakia's government emission rights under the Kyoto Protocol and reinvests them in environmental and climate mitigation projects. However, the delay in setting up a GIS has hindered the effective and transparent use of the trading mechanism (*OECD 2011*). Slovakia has Kyoto base year emissions of 73 Mt and a reduction target of 8%. Therefore the Kyoto target is to emit not more than 67 Mt CO₂e, or 335 Mt CO₂e over the five years from 2008 to 2012. After subtraction of the commitment period reserve of 243 Mt CO₂e, 92 Mt CO₂e remain, which could theoretically be sold under a GIS. More than half of this amount (50 million AAUs) has been sold in form of an option to the Swiss firm Interblue in a highly controversial deal for the very low price of reported 5.05 Euro per AAU. Due to its controversial deal with Interblue, Slovakia lost access to the AAU market and as yet has been unable to establish a sufficiently credible GIS to re-attract buyers.ⁱⁱ

Under the specification of activities of the year 2011 for support gained from the Environmental Fund in the framework of the Green Investment Scheme (Ministry of Environment of the Slovak Republic), the following activities can be supported in the form of grants or credit:

- Reducing greenhouse gas emissions through renewable energy sources
 - Activity GIS/1: Replacement of equipment used for the preparation of heat and hot water using fossil fuel by equipment using biomass, heat pumps or solar collectors including exchange of whole system.
 - Activity GIS/2: New equipment installation for the preparation of heat and hot water using biomass, new heat pumps installation or solar collector installation including whole system installation.
 - Activity GIS/3: New equipment installation, which uses renewable sources as a source of energy.
- Reducing greenhouse gas emissions through energy efficiency
 - Activity GIS/4: Bringing the equipment up-to-date in order to ensure energy savings.ⁱⁱⁱ

Program of higher biomass and solar energy

Program to promote biomass and solar energy use in households determines the amount of grants and conditions for the allocation of grants as follows. The subsidy amount is determined for solar collectors:

- 200 € per m² of installed solar collectors in the range of less than 8 m² absorber area, including in family house,
- 50 € per 1 m² installed solar collectors in the range of more than 8 m² absorber area in family house,
- 100 € per 1 m² installed solar collectors in flat house, maximum subsidy is not more than 3 m² for each flat in flat house.^{iv}

1.3 Key areas of interventions of EU funds regarding low-carbon measures in the 2007-2013 period and outlook for 2014-2020

Operational Programme on Competitiveness and Economic Growth

(Energy related EU funds can be found under this Programme.)

Total budget: EUR 908 million

ERDF: EUR 7727 million

The overall objective of the Programme is to maintain and foster the competitiveness and efficiency of industrial production and the energy sector, as well as the potential of tourism and other selected services, while respecting the conditions of sustainable development.

Priorities:

| 2. Priority Axis | 3. EU Investment | 4. National Public Contribution | 5. Total Public Contribution |
|--------------------------------|------------------|---------------------------------|------------------------------|
| Innovation and competitiveness | 437 320 000 | 77 174 118 | 514 494 118 |
| Energy sector | 168 836 400 | 29 794 659 | 198 631 059 |

| | | | |
|----------------------|--------------------|--------------------|--------------------|
| Tourism | 146 680 000 | 25 884 706 | 172 564 706 |
| Technical assistance | 24 163 600 | 4 264 165 | 28 427 765 |
| Total | 777 000 000 | 137 117 648 | 914 117 648 |

Innovation and competitiveness (approximately 56.0% of total funding)

The global aim of this priority is the increase of competitiveness of industry and services through innovation. It seeks to focus on the support of activities that will ensure **sustainable development**, increasing competitiveness, growth of added value and employment in industry and in services.

Energy Sector (approximately 21.9% of total funding)

The objective of this priority is to:

- increase **energy efficiency** in production, transport and consumption of energy;
- decrease **energy intensity** in industrial production consumption of primary energy sources; and
- increase exploitation of **renewable energy**.^v

BIOMASA and the SMAPUDE project

BIOMASA, association of legal entities obtained very important support to promote the use of biomass from **LIFE + program of the European Commission**. The project title is **SMAPUDE - Strategic manage and planning use of domestic energy** and it will focus mainly on promoting and support the use of biomass and solar energy. From the next two subprograms Nature and Environment was obtained four projects for Slovakia from nearly 1500 submitted projects. The budget of all project SMAPUDE is nearly **1,3 mil. EUR** and duration is 3 years. Beginning of implementation is on 1st of September 2013. After two very successful projects from subprogram Environment ILUBE and CHEFUB that helped built a complete function system of production and use of wood pellets on Slovakia. BIOMASA resolved a much more difficult task in this new project: they want to contribute significantly to use of biomass and solar energy all over the Slovakia.^{vi}

BIOMASA and the ILUBE project (see above – Energy, good practice section)

BIOMASA and the DANUBENERGY project

Improving eco-efficiency of bio-energy production and supply in riparian areas of the Danube river basin and other floodplains in Central Europe.

Program: *Central Europe 2007-2013*

Duration: August **2012** - December **2014**

Total budget: 1 777 824,9 €

Project partners: *11*

BIOMASA's budget: **100 206,0 €**

ERDF contribution: **85 175,1 €**

DANUBENERGY strives for:

- Production of a storable solid fuel with a highly energy-efficient process

- Utilisation of extensively produced biomass from riparian grassland and landscape management areas, which can neither be used in animal feeding nor in conventional energy conversion technologies

DANUBENERGY will tackle the problem of inefficient bio-energy production at three levels:

1. It will contribute to an optimisation of PRODUCTION processes by introducing a new technology (IFBB: Integrated generation of Solid Fuel and Biogas from Biomass), either as standalone or add-on technology.
2. It will improve the INPUT side by introducing formerly unused parent materials from abandoned areas and roadsides.
3. It will improve the OUTPUT situation by optimising the regionally produced bio-fuels and offer possibilities to market and supply them through a transnational collaborative network.^{vii}

1.4 The role of international financing of low-carbon development

EIB: European Investment Bank:

Green Energy Loan for SMEs (2012)

A loan to finance projects of up to EUR 25M, carried out by SMEs (at least 70% of the loan) and MidCaps as well as other limited-size eligible projects is undertaken by public or private promoters. At least 30% of the loan is expected to be allocated to energy efficiency projects in Slovakia. Objective: Improving access to term finance at favorable conditions. Total cost: n.a., EIB: **EUR 60 million**. Financial intermediary: Tatra Banka AS.^{viii}

Financing eligible projects carried out by SMEs and Mid-Caps (2011)

Financing of eligible projects (including leasing) carried out by SMEs, Mid-Caps companies and public authorities in the fields of energy, environmental protection, infrastructure, knowledge-based economy, industry, services and tourism. Objective: To improve access to finance at attractive conditions. Total cost: n.a., EIB: **EUR 100 million**. Intermediary: Vseobecna Uverova Banka a.s. ("VUB").^{ix}

Renewable Power Generation

The project concerns an investment programme, comprising approximately 100 schemes, which relate primarily to the overhaul/refurbishment of existing hydro power stations as well as capacity expansion with new small run of river hydro units - up to around 3.5MW in capacity. The project schemes will be dispersed throughout the Slovak Republic. Proposed EIB finance: **EUR 90 million**, **Total cost: EUR 120 million**. The project got approved in 2012. ^x

EBRD: European Bank for Reconstruction and Development

As Slovakia is an advanced country expected to graduate during the CRR4 period (2011-2015), the Bank's activities will focus on a limited number of priorities during the upcoming strategy period. The priorities in the next strategy period include:

- Deepening financial intermediation and support for SMEs
- Supporting investments in infrastructure, energy security and energy efficiency

- Support cross border co-operation and investments of leading local entities in other countries of EBRD operations in order to enhance their regional presence.^{xi}

SLOVSEFF – Slovak Energy Efficiency Financing Framework

The proposed project is a finance facility where EBRD will provide credit lines to Participating Banks (PBs) for a total amount of up to **EUR 60 million** for on-lending to private sector industrial entities for energy efficiency and renewable energy investments. The use of proceeds is also extended for on-lending to Housing Associations for investments in the residential sector. The facility will be supported by grant funding of **EUR 15m** (“the Grant”) from the Bohunice International Decommissioning Support Fund. The proposed project would result in demonstration effects of successful restructuring through energy efficiency investments and building sustainable expertise among the PBs and sub-borrowers. **EUR 60 million** from EBRD. The clients will be the PBs which will on-lend to sub-borrowers planning to undertake energy efficiency investments and renewable energy projects.^{xii}

SLOVSEFF II. - The EBRD is considering extending the existing Slovakia Sustainable Energy Finance Facility by providing new funds worth up to **€90 million** to address the demand for energy efficiency and renewable energy investments in Slovakia. The project will be supported by a grant of **EUR €15 million** from the Bohunice International Decommissioning Support Fund to finance technical cooperation and investment incentives. The Project is also expected to transfer and build expertise, among both banks and companies, related to sustainable energy investment. New and existing participating banks will build expertise in assessing the risk and creditworthiness of clients for energy efficiency and renewable energy loans, while the enterprises are expected to become more familiar with banks’ requirements for providing such loans.^{xiii}

BOHUNICE International Decommissioning Support Fund

During the EU accession dialogue with the European Commission, the Slovak government announced its decision to close two units (unit 1, and unit 2) at one of its two nuclear power plants in Bohunice for safety reasons. To support the country in the decommissioning process, the Commission together with 8 European governments established the Bohunice International Decommissioning Support Fund (BIDSF) in 2001 at the EBRD. The agreement was approved by the countries contributing to the Fund, the EBRD Board of Directors and the Slovak Parliament. More than **€134 million** has been committed in contributions from the European Community, Austria, Denmark, France, Ireland, the Netherlands, Spain, Switzerland and the United Kingdom. The Bohunice IDSF finances and co-finances selected projects for two main purposes:

- to support the decommissioning of units 1 and 2 of the plant in a safe, secure and cost-effective manner
- to introduce new measures in the energy sector which will help to minimise the impact of closure of units 1 and 2 improving the efficiency of energy supply and use in the Slovak Republic.^{xiv}

Priemyselna Banka a.s. Kosice (PBK) general purpose and energy efficiency credit facility

The project consists of granting PBK a credit facility for medium and long-term on-lending to private sector clients. Part of this facility will be available to PBK to co-fund, together with interest-free Phare funds, sub-loans for energy efficiency investments.

Project objectives are to allow PBK to expand its lending operations, provide term financing dedicated to energy conservation projects and create general awareness for energy efficiency. Proceeds of the facility will be used by PBK to finance: (i) commercial interest rate sub-loans for the general financing needs of its private sector clients; and (ii) below commercial interest rate sub-loans for energy efficiency projects. The total amount of the facility is ECU 15 million.-financing energy efficiency investments, with interest-free Phare funds available for ECU 3.8 million.^{xv}

Electricity Generator sector

Several funds go to the electricity generating sector to privatize generation companies and restructure their operation^{xvi}

Energy efficiency investment in Bucina Zvolen, a.s.

Loan to a wood processing company (Bucina Zvolen a.s.) in the Slovak Republic for modernisation and extension of its core production facility and improvements to the energy systems. The project demonstrates substantial economic benefits including, among other things, improvements in waste product usage/recycling. This will result in further cost reduction and profitability increase. Energy efficiency investments will focus on reducing energy distribution losses and utilising co-generation opportunities. The impact on the transition arises from the company's on-going restructuring process, focusing core business operations in a separately established subsidiary. The EBRD will provide a loan of DM 28.54 million (ECU 15.16 million).^{xvii}

MUNSEFF – Municipal instrument to finance sustainable energy investments in the Slovak Republic (EUR 45 million)^{xviii}

The EU/EBRD's Municipal Finance Facility for energy efficiency combines credit line with technical assistance to help local banks support number of municipal sustainable energy projects in Slovakia. The local banks use the credit line to provide loans, at their own risk, to the sub-borrowers with eligible investment opportunities. In order to establish MunSEFF, the **EBRD** has chosen following participating bank (PB):

- Slovenska sporitelna, a.s.
- VÚB Banka, a.s.

Eligible Sub-borrowers for MunSEFF II are:

- municipalities,
- housing associations,
- public or private companies providing municipal services,
- ESCOs implementing energy efficiency investments in co-operation with one or more municipalities.^{xix}

Implemented projects: 11 different projects in 8 municipalities.

The type of investments:

Walls insulation, Exterior wall insulation, Windows replacement, Hydraulic balancing and control of heating system, New heat source, Equithermal control, Roof insulation in: primary schools, kindergartens, and municipal offices. In the municipality of KRASBYT, s.r.o., the heat production decentralization project was implemented in the district heating system.^{xx}

Technology upgrade at SLOVNAFT

In July 2012 the EBRD signed a loan agreement for **US\$ 150 million** with MOL Group, a leading international oil and gas company, to finance the upgrade of technology at Slovnaft – it's Slovak subsidiary. The Bank's loan will assist MOL in its strategic shift towards less energy intensive products, to diversify its petrochemical product portfolio, to reduce harmful air emissions and minimise the use of water and energy resources. With this investment MOL will reach and exceed the requirements of the EU Industrial Emissions Directive one year ahead of the relevant deadline. In total the project is expected to reduce annual CO2 emissions by about 80,000 tonnes - the equivalent of the annual greenhouse gas emission from 16,000 passenger vehicles.^{xxi}

1.5 The role of the private financing in supporting the shift to a low-carbon economy

Biomass power plant in Bardejov

The company **Bardenergy s.r.o.** sells electrical energy, and distributes and sells heat energy produced by the biomass power plant in Bardejov. Bardenergy s.r.o. has signed a purchase contract with the company Bardterm s.r.o. for the sale of heat for a period of twenty years. **Bardterm s.r.o.** is the company managing the town heating system. The biomass power plant in Bardejov started to produce green electricity in January 2010. It supplies more than 7 000 households in Bardejov with heat produced from renewable sources of energy, which is cheaper than natural gas. The biomass power plant in Bardejov is the only facility of its kind in Slovakia. The Austrian technologies which are used here enable the production of combined, highly efficient electrical and heat energy from renewable sources. The Austrian technologies used in the biomass power plant are among the best in their field. The company **RIEGLER & ZECHMEISTER GmbH**, which has been developing highly modern equipment for boilers for thermal power plants and biomass power plants for over twenty years, is the supplier of these technologies. Reduction in the price of heating by 10 % compared to the price of heat produced from natural gas. Indirect impact on employment from clearing forests after felling, preparation of fuel and logistics (almost 300 people per 100 000 m³ of wood). Also ash dust can be used as a fertilizer in agriculture. ^{xxii}

GoldenSUN products

The company GoldenSUN s.r.o. continuously develops and sells photovoltaic products in Slovakia. These include the Turnkey photovoltaic power plant, solar trackers, sunlight boosters, and new developments of concentrated photovoltaic panels, that are autonomous energy device designed for combined production of electricity from heat and solar radiation. ^{xxiii}

1.6 Examples of good practices on the above points

ILUBE: creating biomass market in Slovakia (co-financed by LIFE)

The project was the idea of a former mayor of the small town of Rajec. He introduced the country's first woodchip boiler. His aim was to create a Slovakian biomass pellet market similar to the Austrian market. The first step was to form a project with the Slovak ministry of environment to build a pellet producing mill and to reconstruct more than 40 boiler rooms in schools and public buildings. The boilers are centrally monitored by BIOMASA. LIFE funding was central in the reconstruction of boiler rooms, and the construction of the mill. ^{xxiv}

The ILUBE project from Slovakia ("**I**ntegrated **l**ogistics for use of biomass energy" - LIFE03 ENV/SK/000577) provides an excellent example of how LIFE funding can assist in the development of markets for new energy-related products. The success of the project has been recognised internationally with two awards, the **European 'Climate Star' award in 2004** for local climate protection activities, and, more recently, the **2006 National Energy Globe award** for Slovakia. Energy globe is a prestigious award for projects contributing to sustainability. ^{xxv}

1.7 Indicators

- Energy consumption (toe) per capita

| | 1995 | 2000 | 2005 | 2007 | 2008 | 2009 | 2010 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| Slovakia | 4,926 | 4,956 | 4,920 | 5,250 | 5,268 | 4,925 | 5,164 |

<http://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC?page=3>

- Energy intensity (toe/unit of GDP)

Energy intensity: Energy consumption per EUR 1,000 GDP (kgoe)

| | 1995 | 2000 | 2005 | 2007 | 2008 | 2009 | 2010 | 2011 | Rank in EU-27 |
|-----------------|------|------|------|------|------|------|------|------|---------------|
| Slovakia | 962 | 593 | 496 | 388 | 378 | 363 | 370 | 349 | 23 |
| EU-27 | 209 | 171 | 165 | 153 | 152 | 150 | 152 | 144 | |

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdec360&plugin=1>

- Renewable energy in total energy consumption (toe and percentage)

Share of renewable energy in gross final energy consumption (%)

| | 2005 | 2007 | 2008 | 2009 | 2010 | 2011 | Target |
|-----------------|------|------|------|------|------|------|--------|
| Slovakia | 6,6 | 8,2 | 8,1 | 9,7 | 9,4 | 9,7 | 14 |
| EU-27 | 8,5 | 9,7 | 10,4 | 11,6 | 12,5 | 13,0 | 20 |

http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_31&plugin=1

- Energy import dependency/energy resilience (percentage of energy use/TPES)

Energy dependence (%)

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| EU-27 | 50.24 | 52.44 | 53.67 | 52.99 | 54.62 | 53.77 | 52.65 | 53.84 |
| SLOVAKIA | 67.8 | 65.4 | 63.9 | 68.4 | 64.6 | 66.4 | 63.0 | 64.2 |

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdcc310&plugin=0>

2. Financing for Sustainable transport

Focus: Urban public transport and intercity road and rail transport. We will present the sources of financing for the road, railway and public transport sector as well as the blockages for future financing.

2.1. National mechanisms and strategies for public transport development in the country

In 2010, the government approved the **Strategy for Transport Development to 2020**, which includes the promotion of environmentally sound, energy-efficient and safe transport (*OECD 2011*).

The **Fast highway construction** is given emphasis in the **Slovak National Recovery Plan**, which sets as its second measure safeguarding the realisation of projects concerning the highway network. If projects are not realised due to unfavourable conditions, the Ministry of Transport, in cooperation with the Ministry of Finance, will prepare an alternative plan for highway construction to be financed in the framework of the budget deficit of public administration (*2011a*).

The **Programme to Support the Development of Intelligent Transport Systems** (national system of transport information), 2008, yields clear benefits in terms of transport efficiency, sustainability, safety and security, while contributing to the EU internal market and competitiveness objectives (*EEA 2011*).

All vehicles using motorways must carry a tax disc, which in 2010 was replaced by an **electronic road toll for trucks**. This change is expected to reduce congestion, harmonize conditions in the transport market and raise funds for highway financing and maintenance. It was also expected that about 10% of existing road freight would shift to rail, alleviating some environmental impacts. Some regional authorities also differentiated the annual tax on commercial vehicles by emission levels. However, in 2010 the government lowered the diesel tax rate, with the aim of compensating for the increase in road tolls and boosting freight transit (*OECD 2011*).

The **Act on Railways and the Act on Railway Transport** (2008) transposed a whole set of European directives that can be divided into three packages. These acts apply **more market-based instruments to railway transport** to make it more competitive. For instance, the fee for railway usage has been lowered by the railway operator. Railway transport will remain **subject to state supervision, but competence for railway transport will be handed to regions**. However, the state will continue to make up financial deficits through state grants (*EC 2011a*). In 2011, Slovakia adopted a **three-year programme of railroad revitalization**, aimed at achieving economic recovery by the optimization of activities and reducing the number of staff (*National Reform Programme 2011–2014*).

In October 2010, the Slovak Government prepared the **National Renewable Energy Action Plan**, in which national targets for the share of RES in the transport and energy sectors in 2020 are specified (*EEA 2011*).

2.2. Public finance sources for supporting public transport

Transport related taxation:

- **Commercial vehicle annual tax:** dependent on the size of the engine:
Commercial vehicles: 37.4 – 130.8 EUR
Lorries: 42.1 – 1,490.7 EUR
- **Import duty:** 7%
- **Registration charge**
- **Road tolls:**
Vehicles: 9.3 – 18.7 EUR
Lorries: 70.1 – 140.2 EUR^{xxvi}

Slovakia's own contribution to the TEN-T network

Main objectives:

- enhance efficiency and quality of the transport system,
- improve accessibility of less developed regions to the TEN-T network,
- improve the safety and security of the transport system,
- reduce negative effects of transport on environment

Projects:

1. modernisation and development of rail infrastructure ^{xxvii}
2. modernisation and development of road infrastructure (motorways and expressways)
3. modernisation and development of intermodal transport infrastructure: the support of modal shift from road to rail and inland waterways; creation of effective logistic chains

Total financial plan for period 2010-2020 (in mil EUR):

| | 2010-2013 | 2014-2020 | Total |
|---|-----------|-----------|-----------|
| Rail infrastructure | 2 080,76 | 2 977, 00 | 5 057,76 |
| Road infrastructure | 3 517,10 | 7 695,81 | 11 212,91 |
| Infrastructure of Intermodal transport | 138,26 | 149,37 | 287,63 |
| Airport infrastructure | 67,20 | 62,50 | 129,70 |
| Total | 5 803,32 | 10 884,68 | 16 688,00 |

<http://www.seetac.eu/media/7588/ministry%20of%20transport,%20posts%20and%20telecommunications%20of%20the%20slovak%20republic.pdf>

2.3. Key areas of interventions of EU funds regarding low-carbon measures in the 2007-2013 period and outlook for 2014-2020

Operational Programme on Transport

Co-funded by the ERDF and Cohesion Fund and has a total budget of EUR 3.8 B.

Through ERDF: EUR 877 M

Through CF: EUR 2.3 B

The Operational Programme shall promote activities directly related to major transport infrastructure and sustainable mobility. It will therefore contribute substantially to the achievement of the Lisbon and Gothenburg strategic objectives.

Priorities:

| Priority Axis | EU Investment | National Public Contribution | Total Public Contribution |
|---|----------------------|------------------------------|---------------------------|
| Railway infrastructure | 782 746 878 | 138 131 802 | 920 878 680 |
| Road infrastructure TEN-T | 972 333 473 | 171 588 260 | 1 143 921 733 |
| Intermodal transport infrastructure | 102 620 947 | 18 109 579 | 120 730 526 |
| Infrastructure for integrated transport systems | 471 794 200 | 83 257 800 | 555 052 000 |
| Road infrastructure | 740 794 961 | 130 728 523 | 871 523 484 |
| Public railway passenger transport | 88 510 567 | 88 510 567 | 177 021 134 |
| Technical assistance | 48 103 569 | 8 488 865 | 56 592 434 |
| Total | 3 206 904 595 | 638 815 396 | 3 845 719 991 |

Railway infrastructure [approximately 24.4% of total funding]

The objective of this priority is to modernise and develop railway infrastructure in the context of TEN-T. This will enhance interoperability, increase speed limits and increase operational quality and safety.

Intermodal transport infrastructure [approximately 3.2% of total funding]

This priority will contribute to a network of public intermodal terminals based on the principles of sustainable mobility. This creates the basic conditions for the development of environmentally friendly transport systems.

Infrastructure for integrated transport systems [approximately 14.7% of total funding]

This priority seeks to integrate public railway transport into urban transport systems. This will contribute to both public transportation and sustainable transport mobility.

Public railway passenger transport [approximately 2.8% of total funding]

This priority aims to improve the quality of railway services and to supplement activities focusing on railway infrastructure modernisation.

Modernised rail transport

The project to renew the rolling stock of Railway Company Slovakia involves the purchase of two new electric push-pull locomotives, renovation of 10 existing locomotives and the purchase of 32 new electric or diesel units that have a seating capacity of up to 290 per unit. Together this stock will by 2013 represent almost a quarter of the company's overall capacity within the interregional and suburban transport sector. The project aims to increase the number of passengers in interregional and in regional rail transport by 10% by 2015 as compared to 2008, by creating the conditions to attract people who are currently using individual cars and buses. A further goal is to reduce noise and air pollution that stem from

the outdated rolling stock run in these regions of Slovakia. **Total: EUR 177 021 100; EU: EUR 88 510 600.** ^{xxix}

Modernisation of railway tracks in Northern Slovakia

The upgrade means that a previous speed limit of 120 km/h has been increased to 140 km/h, and up to 160 km/h for tilting-trains. The project involved the modernisation of existing railway tracks and overhead lines, the construction of a new bridge, the rebuilding of 11 bridges, 12 level crossings, substations and switching stations. The environment has also benefitted through the construction of 11.6 km of noise control barriers along the railway line. In addition, because the improved railway line is expected to reduce freight transport by truck in the region, it is estimated that carbon dioxide emissions should be reduced by 3 000 tonnes a year. Total investment for the project was EUR 158 840 953 of which the **EU's Cohesion Fund contributed EUR 85 877 364** through the "Transport" Operational Programme. **The national contribution was EUR 15 154 829.** ^{xxx}

Train marshalling upgrade

Žilina is a city of some 85 000 people and is important to Slovakia because of its automotive production. It is at the junction of several Slovakian railway lines and, as an element of the TEN-T programme, forms part of the priority rail route running from Gdańsk in Poland to Vienna in Austria. This project will centralise formation of the Žilina region's trains at Žilina-Teplička. **Total eligible budget of EUR 125 614 900, with the EU's Cohesion Fund contributing EUR 87 227 900.** ^{xxxi}

2.4. The role of international financing of public transport in the area

EIB: European Investment Bank:

Bratislava Regional Infrastructure (2008)

The project is expected to be developed as a framework comprising several sub-projects of relatively modest scale. It will include eligible measures on the regional road network, as well as the rehabilitation and/or new construction of facilities in the fields of other social spheres. Total cost: **SKK 1 500 million, EIB: SKK 700 million.** ^{xxxii}

R&D for electronic vehicles (2012)

The project comprises mainly R&D investments to improve electronic components for the automotive industry, including new power management solutions for electric vehicles. The project is financed under the RSFF objective: The **Risk Sharing Finance Facility (RSFF)** is an innovative credit risk sharing scheme jointly set up by the European Commission and the European Investment Bank to improve access to debt financing for private companies or public institutions promoting activities with a higher financial risk profile in the fields of research, technological development, demonstration and innovation investments. Cost: **EUR 1,000,000.** ^{xxxiii}

Locomotive Leasing (2011)

The project consists in the acquisition of around 80 new locomotives for leasing to European rail freight service operators (Railway Undertakings for freight in EU terminology) and possibly to a limited extent for passenger transport. Objective: The locomotives are destined to replace existing locomotives or provide additional capacity for the expanding rail freight market. The project will support rail freight competitiveness on a wider European level (in 12 European countries) and

contribute to the transfer of traffic from road to rail. **Total: EUR 285 million, EIB: EUR 100 million. Slovakia: EUR 5,000,000.** ^{xxxiv}

Co-financing projects supported by EU Funds

The European Investment Bank (EIB) is providing to the Slovak Republic a loan of **EUR 1.3 billion** for the implementation of projects receiving EU grants from the Cohesion and Structural Funds. These investments have been identified as priorities under the Slovak National Strategic Reference Framework, for the programming period of 2007-13.

Sectors:

- Composite infra: EUR 287,430,000
- Services: EUR 91,000,000
- Health, Education: EUR 156,000,000
- Water, sewerage, solid waste: EUR 260,000,000
- Transport: EUR 364,000,000
- Urban infra.: EUR 141,570,000^{xxxv}

Projects:

Expressway R1

The Expressway R1 runs from Trnava, through Nitra and Zvolen to Banská Bystrica in Central Slovakia and forms part of the European route E 571 of the European road network. The project will reduce travel time and improve road safety. The expressway alignment has been determined to minimise interferences with the river Hron, the existing railway track of the Slovak Railways and the residential areas of the municipalities concerned.

Total cost: **EUR 165 million. EIB: EUR 38 million.** ^{xxxvi}

Railway

The project concerns the rehabilitation and modernisation of 18.9 km of the existing twin track electrified railway line (3kV DC). The modernised line will allow maximum speed of 140 km/h (160 km/h for tilting trains). Rehabilitation works in 2 stations (Kysucké Nové Mesto and Krásno nad Kysucou) and 4 train stops are also part of the project. The project will increase the quality of rail services, and thereby will promote sustainable transport solutions. **Total: EUR 196 million, EIB: EUR 53 million.** ^{xxxvii}

Rail – rolling stock

The project will modernise part of ZSSK rolling stock for suburban, regional and interregional public passenger railway transport, and consists of the purchase of 2 new locomotives and 32 new train sets, as well as the refurbishment of 10 existing locomotives to make them compatible with the newly purchased train sets. The project, with the acquisition of new trains, will improve the quality of public transport service in terms of speed, comfort and reliability and will increase the attractiveness of public transport, thus contributing to reduce reliance on private cars and the negative impact of transport on the environment and thereby contributing to tackling climate change.

Total: EUR 243 million; EIB: EUR 99.6 million. ^{xxxviii}

Framework Loan

The project will support a number of investment schemes eligible to the Structural Funds and Cohesion Fund grants in the programming period 2007-13. These will be included in the relevant Operational Programmes in the areas of industry, services, transport, environment, local basic infrastructure, research and development, information society and others. Some measures under the Operational Programmes for Bratislava region will be included as well. The project builds upon a similar operation financed by the Bank during the programming period 2004-6. The total cost of the

NSRF is estimated at some **EUR 11.6 billion**, the cost eligible to the Bank's project will be determined during appraisal; EIB: **Up to 15%** of the eligible cost. ^{xxxix}

Bratislava urban transport (2013)

The project includes a new tramway line linking the city centre with the most densely populated residential area, Petralka. It will upgrade the old bridge of Starý Most over the Danube for use by trams, pedestrians and cyclists. The upgraded bridge will be in line with Danube Convention and will increase traffic capacity on the river. The project will also include upgrade of tram tracks, trolley bus lines, new rolling stock of trams and trolley buses, and a new depot for rolling-stock. Proposed EIB fund: **EUR 25 million, Total cost: EUR 390 million**. The project is under appraisal. ^{xi}

Zilina Teplicka Marshalling Yard

The project aims at developing a new marshalling yard at the crossing point of two TEN-T corridors, in north-west Slovakia (a marshalling yard is a railroad yard at a freight station, used to separate railroad cars on to one of several tracks). The new marshalling yard will concentrate all of the marshalling operations from the existing yards in the area, in particular the railway station Āzilina, the marshalling yard Āzilina, the railway station Vrútky and the freight station Vrútky. The project will be constructed at the site of one of the existing marshalling yards. Proposed EIB finance: EUR 15 million, Total cost: EUR 119 million. The project is under appraisal. ^{xii}

2.5. Positive examples of public-private partnerships in the transport sector

Modernization and maintenance of railway stations

The Railway of the Slovak Republic, Bratislava is the manager of railway lines of Slovakia and thus the manager of more than 400 stations and bus stops serving passengers and freight as well. The main objective of this project is to the increase of travelling culture and safety. The ambitions of the project:

- Ensure the revitalization and modernization of railway stations
- Move closer to European standards of comfort services provided to passengers
- Offer better services to its major trading partners - carriers in passenger and freight

The partners are the Railways of the Slovak Republic, Bratislava, but the private partner is not yet selected. The investment costs will be known after the selection proceedings. Preparation and construction of the project should not exceed 2 years. ^{xiii}

2.6. Examples of good practices on the above points

TEN-T rail corridor with Bratislava rail network:

National budget: €14,394,855

Total project cost covered by this Decision: €23,225,000

EU contribution: €8,830,145

Percentage of EU support:

Studies: 38.02%

The project consists of studies needed for the tender preparation in the three following key areas:

- Connection of Bratislava's three main railway stations (Bratislava predmestie, Bratislava filiálka and Bratislava Petržalka);
- Direct connection from Bratislava Airport to the existing railway network;
- Electrification of railway track in the remaining section from Devínska Nová Ves/Austrian border with the connection to the Priority Project 17 in Marcheg (Austria). ^{xliii}

2.7. Indicators

- **Modal split of passenger transportation (also by purpose), measured in passenger-km and percentage.**

| Modal split of passenger transport | | | | |
|------------------------------------|--------|----------------|--|----------------|
| % in total inland passenger-km | | | | |
| 2010 | | | | |
| geo\vehicle | Trains | Passenger cars | Motor coaches, buses and trolley buses | Tram and metro |
| Slovakia | 5,4 | 75,5 | 12 | 7,1 |

<http://ec.europa.eu/transport/facts-fundings/statistics/doc/2012/pocketbook2012.pdf>

- **Modal split of freight transport (also by group of goods), measured in ton-km and percentage.**

| Modal split of freight transport - Slovakia | | | | | | | | |
|---|------|------|------|------|------|------|------|------|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| Railways | 34,3 | 29,5 | 30,9 | 25,5 | 23,4 | 19,6 | 22 | 20,9 |
| Roads | 65,4 | 70,3 | 68,8 | 71,8 | 73,8 | 77,9 | 74,8 | 76,6 |
| Inland waterways | 0,3 | 0,3 | 0,3 | 2,7 | 2,8 | 2,5 | 3,2 | 2,4 |

<http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdtr220&language=en>

- **GHG emissions from transport (million tons CO₂ equivalents).**

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Slovakia | 51377 | 50596 | 50503 | 48520 | 49114 | 43956 | 45896 | 45297 |

<http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdcc210&language=en>

3. Financing adaptation to climate change

Focus: on interventions that lead to reduction of the territory's vulnerability to climate change (e.g. measures that aim to reduce and manage the risk of floods, forest fires, droughts and other natural disasters. Despite the fact that this type of financing is still limited in the region and is mainly coming from the Cohesion Funds, this section attempts to make an overview of available efforts.

3.1. National mechanisms and strategies regarding reducing the vulnerability to climate change

National Reform Programme of the Slovak Republic 2011-2014

Although its primary focus is not environmental, it has an “environmental sustainability and energy” aspect. Flood protection programmes were implemented under this programme (see below).^{xliv}

The Water management policy in Slovakia up to 2015 emphasises that expected changes in climate may have a significant impact on changes in total run-off, as well as its annual distribution. Adaptation measures are based on the principle of “no-regret” policy, which was formulated in the National Climate Programme (*Fifth National Communication*).

Under the 2009–2014 agreement between Slovakia and the European Economic Area and Norway, climate change is the biggest priority. Out of **EUR 81 million allocated to Slovakia, EUR 27 million is earmarked for programmes on adaptation to climate change and green industry innovation.**

The recommendations of the **National Climate Programme** have been transferred into several other conceptual documents in the water management sector. The Plan for the Development of Public Water Supplies and Public Sewerage Systems for Slovakia has introduced the principle of the re-evaluation of usable groundwater reserves with the goal of achieving good status, taking into account climate change impacts in river basins.

The **Landscape Revitalisation and Integrated River Basin Management Programme** is a systematic tool for flood prevention; for reducing flood risks, the risk of drought and other risks related to extreme natural events; for the adaptation of landscape structures to climate change; and environmental revitalisation. This programme is based on the principles of the EU Water Framework Directive, the EU Directive on the Assessment and Management of Flood Risks, and the White Paper on Adapting to Climate Change.

In terms of adaptation and the first National Plan for River Basin Management, some additional measures at national level are required: the reassessment of expected floods and dam safety; a re-evaluation of future water needs; the re-evaluation of existing water withdrawals from reservoirs for water supply, energy production and low flow augmentation; the development of methodologies for drought assessment and the introduction of new indicators; the investigation of droughts and their impacts on water bodies; and increased research into the impacts of climate change.

The priorities of the **Concept for Agriculture and Forestry Development 2007–2013**: Forestry include supporting the development of green technologies, supporting ecological forest management,

improving the protective functions of forests (the protection of soil and water resources), maintaining and improving forest conditions, and ensuring the non-productive functions of forests (EEA 2011).

Forest management is guided by the chapter on forest management in the **Strategic Plan for the Development of Soil Management 2007–2013**^{xlv} and the **National Forestry Programme**, adopted in 2007, which contains five strategic targets that recognise the environmental and also economic value of forests. These are further elaborated into 18 priority areas. The programme is to be followed by an action plan (EC 2011a).

3.2. Public finance sources for improving adaptation to climate change

Landscape revitalisation and integrated river basin and landscape management programme (under the National Reform Programme). This is a unique programme to the adaptation to climate change and flood prevention. It has three main focus points: flood prevention, harvesting rain water in the landscape, and the restoration of damaged landscapes, therefore it is a truly integrated management programme, with the aim of changing society's approach to water and its use. Funding the programme includes among others (i) **EU funds** defined for the Slovak Republic (ERDF, EARD, ESF, Cohesion Fund) and those provided for the National Strategic Reference Framework for flood prevention measures and (ii) funds from the **state budget** of the Slovak Republic as well as (iii) **other funds** defined for the programme within the legislative process shown in this point of the programme.^{xlvi} The Slovak Government approved the landscape revitalisation and integrated river basin and landscape management programme in October 2010. The **Government** allocated approximately **€34 million** to be spent under this programme in the 2010-2011 period. In addition, the project implementation generates **new job opportunities**. The project will follow up on the introduction of an allowance to support employment through the implementation of flood prevention measures and removing consequences of emergency situations.^{xlvii}

Some Outcomes

The Landscape Revitalization Programme sets a goal to restore landscape water retention capacity of at least 250 million m³ in damaged parts of the landscape. The costs or financial aid from public funds were set at **4€ per cubic meter** of water retention capacity of an element, measure or system. In a short period of 18 months 488 villages and towns involved in the Programme carried out about 100 thousand different water retention elements in degraded landscape. The landscape water retention capacity of total 10 million m³ was built or restored, which amounted to 4% of total plan during the expected 10-year Programme implementation period. The implementation projects provided total of 7,700 seasonal jobs for local people. In some cases the investment returned within six months after the measures were implemented before torrential rains in spring and summer 2011. The retained water was gradually released over the period of extreme drought that affected Slovakia in the second half of the same year. The measures should repeatedly bring benefits in the following years.^{xlviii}

Incentive against ozone depleting substances

Tax type of incentive for the import or production of ozone depleting substances. Tax rate: 40 SKK – 1,000 SKK (**0.9 – 23.4 EUR**) per kg of ODS or piece of equipment.^{xlix}

3.3.Key areas of interventions of EU funds regarding low-carbon measures in the 2007-2013 period and outlook for 2014-2020

Operational Programme on Environment

Total budget: EUR 2.1 billion

ERDF + CF: EUR 1.82 billion

Objectives:

| Priority Axis | EU Investment | National Public Contribution | Total Public Contribution |
|---|----------------------|------------------------------|---------------------------|
| Protection and Rational Utilisation of Water Fund (CF) | 915 643 065 | 161 584 070 | 1 077 227 135 |
| Flood Protection (CF) | 120 000 000 | 21 176 471 | 141 176 471 |
| Air Protection and Minimisation of Adverse Effects of Climate Change (ERDF) | 180 000 000 | 31 764 706 | 211 764 706 |
| Waste Management (CF) | 485 000 000 | 85 588 235 | 570 588 235 |
| Protection and Regeneration of Natural Environment and Landscape (ERDF) | 50 756 935 | 8 957 106 | 59 714 041 |
| Technical assistance (CF) | 48 600 000 | 8 576 471 | 57 176 471 |
| Development of flood warning and forecasting system (ERDF) | 20 000 000 | 3 529 412 | 23 529 412 |
| Total | 1 820 000 000 | 321 176 471 | 2 141 176 471 |

Flood protection [approximately 6.7% of total funding]

This priority aims at flood protection by preventive flood protection measures and development of flood warning and forecasting systems.

Air protection and minimisation of adverse effects of climate change [approximately 10% of total funding]

The specific objective is to minimize polluting substances emissions and to minimize the adverse effects of climate change, including the support of renewable energy sources in line with EU legislation.

Protection and regeneration of natural environment and landscape [approximately 2.8% of total funding]

The objective is the completion of NATURA 2000 protected sites and nature protection infrastructure.

The Operational Programme will increase the population connected to public sewers to 4.4 million, the percentage of population connected to wastewater treatment plants to 81%, and the share of population supplied with drinking water from public the water supply network to 91%. The area of the territory with flood protection measures will represent 5970 km² and the number of NATURA 2000 declared territories will reach 420. The amount of greenhouse gas emissions would represent 61 902 thousand tons CO₂ and the rate of waste recovery will be increased to 60%.ⁱ

Urban planning as adaptation strategy (GRaBS project)

The GRaBS project – Green and Blue Space Adaptation for Urban Areas and Eco-towns – sets out to provide the tools and knowledge to ensure that urban development across Europe, both existing and new, is suitably adapted to the impacts of climate change. Through interregional cooperation, the GRaBS project has facilitated the transfer of good practice, knowledge, and experience on climate change adaptation strategies to local and regional authorities across Europe. A key product of the GRaBS project is the Risk and Vulnerability Assessment Tool which allows planners to input climate and socio-economic data into a GIS mapping system and measure the vulnerability of specific areas to climate change patterns. This is complemented by the development of an online database of international case studies which compiles information on effective climate change adaptation planning in urban areas. **Total eligible budget of EUR 3 183 000, with the EU Fund contributing EUR 2 430 000.**ⁱⁱ

Bratislava flood protection

The Bratislava Flood Protection System, which is supposed to protect citizens of the Slovak capital even in a case of a momentous flood, was officially completed and handed over on Tuesday. The **31 million euro** project was co-financed from the **EU Cohesion Fund by 85%. 10% of the funds went from the state budget and the rest was paid by the Slovak Water Management Company.** The project has been implemented from February 2007 to December 2010.ⁱⁱⁱ

EAFRD – European Agricultural Fund for Rural Development

The EAFRD support the different priority axis of Slovakia’s Rural Development Plan, which also has a focus on sustainable development, ecologic farming, and sustainable forestry management. The overall aim of the programme is:

- Development of economic activities suitable for the rural areas;
- **Protection of the environment and of the cultural heritage;**
- Improvement of the quality of life of the rural population.

The fund is allocated into 4 priority axis:

Budget and share of EU funding

| Axis | Total public budget (in €) | EAFRD* contribution rate (%) | EAFRD amount (in €) |
|----------------------|----------------------------|------------------------------|----------------------|
| Axis 1 | 835,427,149 | 74.26 | 620,366,695 |
| Axis 2 | 1,242,076,174 | 79.28 | 984,709,039 |
| Axis 3 | 358,040,205 | 74.26 | 265,871,440 |
| Axis 4 | 74,524,570 | 79,28 | 59,082,542 |
| Technical Assistance | 52,517,816 | 75.00 | 39,388,362 |
| Total | 2,562,585,914 | 76.85 | 1,969,418,078 |

The axis are:

Axis 1:

- Increasing the modernization, innovation and efficiency of agricultural, food and forestry sector
- Deepening knowledge and improving professional overview in the agricultural, food and forestry sector

Axis 2:

- Enhancing biodiversity in rural areas and agriculture and forestry systems of high natural value
- Maintaining and improving the quality of underground and ground waters
- Maintaining and enhancing the quality of agricultural and forest soil
- Mitigation of the impacts of climatic changes

Axis 3:

- Creating job opportunities in the rural areas
- Promoting training activities
- Improving quality of life in rural areas
- Formation of local partnerships

Axis 4:

- Improving the administration and management and mobilization of the development potential in the rural areas

Axis 4 will be implemented only via Axis 3.^{liii}

European Regional Development Fund for Flood Protection

CE-frame project: Central European Flood Risk Assessment and Management in CENTROPE
Project partners: 9 partners from Austria, Czech Republic, Hungary and Slovakia.^{liv}

Objectives:

CEframe develops strategies and recommendations for a reliable and sustainable transboundary flood management in the river catchments of Danube, Thaya-Morava, and Leitha.

The catchments span over the territories of Austria, Czech Republic, Slovak Republic and Hungary.

The overall objective of CEframe is sustainable integrated flood protection management. It is supported by :

- joint assessment of flood management facilities and harmonisation of methodologies for flood protection,
- assessment of flood risk management strategies and
- proposal of future joint action on institutional and legislative basis under compliance to the EU flood directive.

Duration: 01.04.2010 – 31.03.2013

Budget: appx. 3.1 Mln.EUR^{lv}

3.4. The role of international financing for reducing the vulnerability and increasing adaptive capacity

EIB: European Investment Bank:

Co-financing Slovakian Rural Development Programme

The **EIB project** will support afforestation, improved **forest management** and protection, and small-scale rural and agricultural infrastructure. Specific, long-term orientated Rural Development Programme measures will be included. Investments will take place all over the country. The

operation will actively seek to promote **sustainable afforestation** and rural environmental management both in selection and implementation of subprojects. Financial Intermediary: Ministry of Agriculture and Rural Development. Proposed **EIB finance: EUR 120 million, Total cost: EUR 2177 million**. The project got approved in March, 2013.^{lv}

3.5. Indicators

- Rate of afforestation/deforestation

Afforestation: http://www.ieep.eu/assets/298/wp4_nd_afforestation_in_europe.pdf

| Forest area (1000 ha) | | | Annual rate of change (1000 ha yr ⁻¹) | |
|-----------------------|------|------|---|-----------|
| 1990 | 2000 | 2005 | 1990-2000 | 2000-2005 |
| 1922 | 1921 | 1929 | n.s. | 2 |

Deforestation: <http://rainforests.mongabay.com/deforestation/archive/Slovakia.htm>

| Total forest cover (1000 ha) | | | Annual rate of change (ha; %) | | Change in rate (%) |
|------------------------------|------|------|-------------------------------|-----------|--------------------|
| 1990 | 2000 | 2005 | 1990-2000 | 2000-2005 | |
| 1922 | 1921 | 1929 | -0,01 | 0,08 | -1700,83 |

- Percentage of agricultural land and arable land

| | 2007 |
|--|-------------|
| Agricultural Land: % of land area | 40,1 |
| Arable Land: % of land area | 28,6 |

<http://en.worldstat.info/Europe/Slovakia/Land>

4. Financing Ecosystems protection

Focus: Available mechanisms for different financing options for supporting investments in natural capital including protected areas and wider green infrastructure elements

4.1. Existing strategies and national mechanisms for nature conservation

Legislation on **hunting and nature protection** was almost harmonised during the process of EU accession (harmonisation of periods of protection/hunting of selected species). Act No. 274/2009 introduced biodiversity protection into the definition of hunting. However, poaching is still a cause for concern (*OECD 2011*).

The **2005 Forest Act** provides for biodiversity measures to be included in forest management plans, which must be approved by the Ministry of Agriculture. Almost half of Slovakia's forest area is subject to restrictions for nature protection (*OECD 2011*). Among the main priorities of the **National Forest Programme** are to support nature-friendly forest management, conservation and the improvement and enhancement of biodiversity (*EEA 2011*).

The **2002 Act on Nature and Landscape Protection**, transposing the EU Birds and Habitats Directives, aims to protect habitats and species of Community interest and to develop the Natura 2000 network. The government adopted a wetland programme for 2003–2007 (later updated for 2008–2014) and an action plan for 2008–2011. Three additional Ramsar sites have been designated since 2000. The Carpathian Wetland Initiative, initiated by Slovakia in 2004, was approved as a Ramsar Convention regional initiative. The mapping of habitats that started before EU accession was pursued only on a limited scale for grasslands and wetlands (*OECD 2011*). The Act made provision for cooperation between the Ministry of Environment (responsible for nature protection) and the Ministry of Agriculture (responsible for agricultural and forest policy implementation).

4.2. Key areas of interventions of EU funds regarding low-carbon measures in the 2007-2013 period and outlook for 2014-2020

Operational Programme on Environment

Total budget: EUR 2.1 billion

ERDF + CF: EUR 1.82 billion

Nature protection projects can be found under the same OP, than climate change adaptations.^{lvii}

Priorities:

Protection and Regeneration of Natural Environment and Landscape (ERDF)

50 756 935

8 957 106

59 714 041

Protection and regeneration of natural environment and landscape (approximately 2.8% of total funding)

The objective is the completion of NATURA 2000 protected sites and nature protection infrastructure.

EUSDR cross-border re-establishment of a major wildlife corridor

Re-establishment of a cross-border Alps-Carpathians wildlife corridor between Vienna and Bratislava as part of the EU Strategy for the Danube Region (EUSDR). The project has brought together various institutions, NGOs, universities, as well as highway companies and regional and federal authorities from Austria and Slovakia to create a common cross-border platform facilitating the migration and genetic exchange of wild animal populations. The project “Alps-Carpathians Corridor” has a total eligible budget of **EUR 1 852 450**, with the **EU contributing EUR 1 427 519**.^{lviii}

BROZ - Conservation of natural heritage through saving biodiversity in the landscape (2011)

Funded by the **Visegrad Fund** and the **EC**. The project’s main goal is to study the fragmented nature of the Visegrad countries and, based on it, to form and represent a common Visegrad position towards the Ministries, and the EU with the aim of creating a more sustainable land use and more efficient connectivity among sites, and through this, to maintain the high biodiversity.^{lix}

LIFE Integrated management of river ecosystems in southern Slovakia

The habitats of important EU Birds Directive species found in three Natura 2000 network wetland sites

(Parížske močiare, Žitavský luh and Dolné Pohronie) are under threat as a result of negative water management actions and changes in landscape and land use. The main objective of this project is to tackle the lack of water management in the targeted sites and to reduce the negative impacts of land-use changes on the conservation status and habitats of populations of target bird species. Duration of the project: 10/2013-09/2018. **Total budget: EUR 1.830.000, EC contribution: 915.000 (50%)**, Financial Beneficiary: NGO Foundation: BirdLife Slovakia.^{lx}

LIFE Restoration of nesting and feeding habitats of Sand Martin, Kingfisher, and Bee-eater in Danube-Morava region

Once-continuous large inundation areas on the region’s rivers have been divided by flood protection dykes and reduced. As a consequence, formerly flowing river branches have stagnant water for most of the year, and, because of natural sedimentation, the number and area of river branches is slowly decreasing. The deterioration of the habitats has also led to a lack of nesting habitats for the sand martin (*Riparia riparia*) and kingfisher (*Alcedo atthis*). The project’s main objective is to improve the conservation status and population characteristics of target bird species by restoring their habitats. The conservation actions, including suitable restoration management, will lead to active nature protection and promotion of natural values in the region. The project actions will be implemented in six Natura 2000 network sites in the Danube-Morava region, five in Slovakia and one in Hungary. Duration: 2014 – 2019. **Total budget: EUR 3.992.066, EC contribution. 1.996.033 (50%). Beneficiary: BROZ.**^{lxi}

Conservation of birds in the SPA

The target species are steppe and forest steppe birds that adapt well to agricultural areas. The project aims to contribute to habitat restoration for three Annex I species of the Birds Directive – the lesser grey shrike, the tawny pipit and the red-footed falcon – in ‘Ostrovne lúky’ by establishing a suitable management model for agricultural land and restoring feeding and nesting habitats. Specific objectives include:

- Restoration of feeding and nesting habitats by reintroducing traditional land management, such as grazing or haymaking;
- Restoration of wetlands;
- Restoration of nesting and perching sites;

- Restoration of a bio-corridors network that, in addition to its primary migratory function, provides feeding and nesting opportunities for the target species;
- Land lease or purchase;
- An increase of overall landscape and species diversity.
- Duration: 2014-2018; **Total budget: EUR 2.843.386, EC contribution: 1.421.693.** Beneficiary: NGO Foundation: BROZ. ^{lxii}

4.3. The role of international financing for nature protection and eco-system conservation

EIB: European Investment Bank:

SMEs for environmental protection (2013) Credit line dedicated for at least 70% to the financing of projects promoted and carried out by public authorities and SMEs in the fields of Environmental Protection and Sustainable Development, with the remainder going to convergence regions. Total cost: n.a., **EIB: EUR 100 million** for four European countries: Hungary (EUR 5 million), Austria (EUR 85 million), **Slovakia (EUR 5 million)**, Check Republic (EUR 5 million). ^{lxiii}

HYPO NOE INFRA GL II ^{lxiv}

4.4. Indicators

Special protection areas as a percentage of the total area of the country

Terrestrial Protected area (% of total land area) – World Bank

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Slovakia | 23,2 |

<http://data.worldbank.org/indicator/ER.LND.PTLD.ZS?page=1>

Area devoted to organic farming

| | Slovakia | | | | | EU-27 average | Rank in EU-27 |
|---|-------------|-------------|-------------|------|---|---------------|---------------|
| | 2000 | 2006 | 2007 | 2008 | Target | | |
| Area occupied by organic farming (% of utilised agricultural area) | n.a. | 6,4% | 6,5% | | 5% (Indicative target according to the action plan not yet implemented.) | 4,2% | 8 |

http://ec.europa.eu/environment/pdf/EPR%202008_SWP%20part%202.pdf

5. Financing of eco-innovation in SMEs

Focus: Eco-innovation and barriers for its financing within SMEs

5.1. National mechanisms and strategies for supporting eco-innovation

According to the **eco-innovation composite index**, the overall eco-innovation performance of Slovakia is almost **at the bottom of the ranking of EU countries** (26th out of the 27 EU countries) and is positioned in a group of countries with lower eco-innovation performance (*EIO 2010*). At 0.5% of GDP in 2009, gross expenditure on R&D in Slovakia was the second lowest in the OECD. Technology is largely imported from outside the country. This illustrates a divide in the Slovak economy: on the one side multinational enterprises with advanced technology from abroad and high productivity; and on the other, small and medium-sized Slovak enterprises, and a few large enterprises owned by domestic investors, with low productivity and low R&D intensity.

The need to promote innovation to build a knowledge economy and maintain long-term competitiveness was integrated in the government agenda in 2006 with the adoption of Slovakia's Lisbon Strategy [*EC 2009*]. Several key policy documents have been adopted: the Innovation Strategy in 2007; the Innovation Policy in 2008; the National Reform Programme for 2008–2010; the Operational Programmes for Competitiveness and Economic Growth and for Research and Development; and the 2008–2010 Strategy Implementing the Long-Term Objective of State Science and Technology Policy up to 2015 (*OECD 2011*).

One of the main goals of the **National Development Strategy for Sustainable Development in Industrial Policy** is to increase the effectiveness of material and energy use. The Strategy for Sustainable Development in Industrial Policy contains, for example, a list of programmes supporting sustainable development in industry, and the development and application of environmental technologies in industry. The **Raw Materials Policy** (2004) ensures the effective exploration and use of minerals meeting all criteria for sustainable development (*EEA 2011*).

In line with the 2004 EU Environmental Technologies Action Plan, the government adopted **two implementation road maps**, in 2005 and 2008, to promote environmental technology in Slovakia. The updated version listed 11 measures, mainly supply-side instruments such as support for R&D, equity support and information services [*OECD, 2009b*]. On the demand side, emphasis was given to regulations and standards. In its 2009 evaluation of the road map, the government underlined the following outcomes: the inclusion of indicators on expected environmental benefits in all applications for R&D funding from the Ministry of Education budget; the creation of an information portal for environmental technologies; the adoption of an innovation strategy and policy creating an innovation framework that also supports environmental technologies; and the adoption of the 2007–2010 National Action Plan for Green Public Procurement (*OECD 2011*).

One objective of the Science and Technology Policy is to raise the share of business funding to two-thirds of gross expenditure on R&D by 2015. However, Slovakia is not on track to achieve this target, and it is the only OECD country to experience a decline in business expenditure on R&D in real terms in the last decade.

The **Innovation Strategy in Manufacturing** includes proposals such as the development of a new quality of steel for applications making it possible to decrease steel stocks in industrial and other applications (*EEA 2011*).

The **Proposal for Innovation Policy of the Ministry of Economy of the Slovak Republic for 2011–2013** covers industry, energy, energy efficiency, and the extraction of solid propellants, oil, gas and raw materials. The innovation policy will be approved by the government (*EEA 2011*).

The **National Action Plan for Green Public Procurement for 2007–2010** (NAP GPP) proposes priorities, objectives and activities to achieve the implementation of environmentally friendly products, technologies and environmental management systems in public procurement according to the requirements of the EC. The preparation of the second NAP GPP was due to begin in October/November 2011 (*EEA 2011*).

In July 2009, the **“EMASeasy” pilot project** was launched in order to promote EMAS in SMEs by creating a set of easy-to-apply, less time-consuming and less costly guidelines on how to comply with EMAS requirements. The main advantages of this system are that it is divided into 30 clear steps, does not take more than 10 days and the full documentation does not exceed 10 pages. The implementation of this methodology is supported by the EC, and Slovakia was chosen as one of the eight member states in which the training of EMASeasy consultants will take place (*EC 2011*).

An explicitly defined eco-innovation policy is still missing in Slovakia, however certain measures can be found in innovation, environmental and energy policies and partially in industrial policy strategy documents. In the environmental sector, **the majority of expenditures go to traditional areas** (protection of air and water, waste) with low innovation potential. The concept of eco-innovation is **dominated by the consideration of energy savings or renewable energy savings**; hence public policy and the building of an institutional framework in this area are primarily orientated towards energy savings and the promotion of renewable energy sources (RES).

The new environmental policy measures approved in 2012 are:

- the amendment act on the Energy Performance of Buildings and
- the new registration tax for new and imported second-hand cars, which is motivated more by fiscal consolidation than environmental motives.

Funding of eco-innovation measures **depends fundamentally on EU structural funds**, and is fragmented into many **Operational Programmes (OP)**. In the Programming period **2007 – 2013 EUR 1.8 billion** is allocated for the environment and **approximately €2b in the form of indirect environmental investments** (aimed at the modernisation of railroad transportation and using of RES and energy efficiency). However, the spending of EU structural funds lags significantly behind, (financial implementation of OP Environment is just 19 % as of August 2012). Challenging areas for eco-innovation appear to be the modernization of transportation, energy intensive sectors of manufacturing, RES (particularly hydro energy and biomass), municipal waste and environmental burdens disposal (costs on environmental burdens are estimated at 1.8% GDP).

5.2. National instruments for supporting businesses in carrying out eco-innovation projects

Thermal Engine

This thermal engine is designed to use heat concentrated from solar radiation, however, it can also operate on heat acquired from burning biomass or traditional fossil fuels. The key element of the thermal engine is the unique Impulse Steam Generation Principle system. Its main advantages include high efficiency, simple design, and the expected high reliability and low price. The research and development was supported by a grant from the Slovak Research and Development Agency.

The Slovak Research and Development Agency (SRDA) is the research and development grant agency in the Slovak Republic. It was established by the Act No.172/2005 in July 2005 and it is a successor of the previous agency functioning since 2001. **SRDA is the instrument for distribution of public finances** for research and development on the competitive basis in Slovakia.^{lxv lxxvi}

5.3.Key areas of interventions of EU funds regarding the above sectors in the 2007-2013 period and the outlook for 2014-2020?

Eco-innovation in SMEs

ERDF:

3.1. Cross-border Cooperation Programme Austria-Slovakia 2007-2013

3.1.2. VIBRATE project

VIBRATE - Vienna BRATislava e-mobility is a two-year pilot cross-border project focused on the development of electromobility and a green highway between the two capitals (Bratislava and Vienna) and in the neighboring region. The aim of the VIBRATE project is to create a network of fast-charging stations for electric cars. The high priority of the project is to install 16 private charging points and 4 fast charging stations on the highway . Also approximately 10 charging spots at public and semi-public locations (i.e. shopping centers and supermarkets) are planned as a low priority. The budget for the project is **EUR 1.25 mil**; co-financed by the “Crossborder cooperation program Austria – Slovakia 2007-2013”. The project is based on cooperation of **public sector** (Cities of Bratislava and Vienna, Regional Governments of Lower Austria and Bratislava, Das Bundesministerium für Wirtschaft, Familie und Jugend) **and private companies**, including leading energy companies from Austria (**EVN, VERBUND and WIEN ENERGIE**) and Slovakia (**Západoslovenská energetika**). As part of the project, 15 electric cars were leased to the Austrian and Slovak governmental bodies. During the reference period (January -June 2012), VIBRATE electric cars saved locally 5,600 kg of CO₂ in total, of which 1,700 kg was in Slovakia and 3,900 kg in Austria.

5.4.The role of private financing in stimulating eco-innovations

Profibuilding Ltd. – potential of wooden family houses

Wood is a good, sustainable resource for the construction industry, especially in countries like Slovakia, where 42 percent of the territory is covered by forest. Multilayered (so-called sandwich construction) houses are appearing on the market, but demand for standard brick houses still prevails. According to pioneers in the sector, such as Profibuilding Ltd., demand for wooden houses is still low, even though these buildings are sustainable from many perspectives (construction material and low-energy operation). These houses feature excellent insulation, a high level of air-tightness, and the heat recovery of expelled air. They offer the same level of comfort as conventional housing.

There are five main advantages: solid construction; low energy demand; the use of easily recycled natural resources; precise and rapid construction; and affordability. **Profibuilding Ltd.** has worked in the sector since 2005.^{lxxix} **There are also Individual projects** of the company: (mainly bungalows and villas)^{lxx}

The first low-energy apartment in Zvolen (central Slovakia)

The first low-energy apartment building in Slovakia was constructed in Zvolen in 2009. It achieves annual heat energy consumption of 22 kWh/m² which is almost passive house standard. State-of-the-art technology-based heat pumps save building residents up to 75 percent of the cost of heating and hot water, allowing them to reduce their dependence on fossil fuels. The heating system in the apartment building has a temperature gradient of 50/40°C, and the floor heating has a gradient of 38/32°C. The designed and implemented heating system is suitable for use with heat pumps as heat source, and the heat pump outlet temperature reaches 60°C. The **investor is EuroEcology, p. r. o.**, Bratislava, the number of apartments innovated is 44, plus 2 more offices.^{lxxi}

PD Ludrová biogas plant – RUDOS

The biogas plant was built at the PD Ludrová agricultural cooperative near the small village of Liptovská Štiavnica (northern Slovakia). The farm focuses on livestock production and is one of the major producers in the region. The biogas plant receives a daily 30 tons of material, complemented during the summer by grass silage and fresh grass. The daily input is 90 m³ of substrate, which contains 12 percent dry matter. The biogas produced is used for the combined production of electricity and heat. **The electricity produced is primarily sold to the grid** and the **heat is used** partly for substrate heating in the reactors and partly **on the farm** for various purposes (heat for milk processing, heating of rooms and office buildings). The main supplier of all the technologies was **RUDOS Ružomberok**. **Rudos** is a medium sized company^{lxxiv}

Selective dimming control – SEAK Energetics

The SEAK selective dimming control is an energy-saving solution for indoor and outdoor lighting installations supporting Metal Halide and High pressure sodium HIDs with or without conventional ballasts, fluorescent lights with dimmable electronic ballast and LED sources. By providing an option for increasing and decreasing the lighting intensity level, this technology will help lighting operate at an optimal and economically friendly level. Using energy wisely in consideration of the greenhouse effect is becoming fashionable. Yet energy saving solutions shouldn't outweigh their investment, therefore SEAK Energetics provides robust and appropriate solutions for decreasing energy consumption, with a focus on a relatively fast return on investment.^{lxxv}

5.5. The main barriers facing SMEs in terms of eco-innovations

The construction company **Profibuilding Ltd.** identified difficulties in bringing about changes in consumption patterns as the main barrier. Slovaks tend to be conservative and prefer using conventional materials (bricks and panels). The company also identified differences within the country itself, with most of the orders for such houses coming from western and southern Slovakia.^{lxxvi}

5.6. Indicators

Ranking on the European Innovation Scoreboard — the eco-innovation index includes eco-innovation inputs, eco-innovation activities, eco-innovation outputs, environmental outcomes and socio-economic outcomes.

- Overall Scoreboard: 54.43
- Eco-innovation inputs: 33.59
- Eco-innovation outputs: 30.34
- Eco-innovation activities: 74.80
- Environmental outcomes: 74.24
- Socio-economic outcomes: 52.55^{lxxvii}

Number of companies registered under EMAS — reflects the level of awareness among companies of the fact that environmental management is good for business.

There are no companies registered under EMAS in Slovakia. ^{lxxviii}

ⁱ http://ec.europa.eu/europe2020/pdf/nrp/nrp_slovakia_en.pdf

ⁱⁱ http://www.joanneum.at/climate/Publications/Solutions/JoanneumResearch_GISWorkingPaper_April2010.pdf

ⁱⁱⁱ http://www.estif.org/solarkeymarknew/images/downloads/QAiST/qaist-country_report-slovak_republic.pdf

^{iv} http://www.estif.org/solarkeymarknew/images/downloads/QAiST/qaist-country_report-slovak_republic.pdf

^v http://ec.europa.eu/regional_policy/country/prordn/details_new.cfm?gv_PAY=SK&gv_reg=ALL&gv_PGM=1234&LAN=7&gv_per=2&gv_de_fl=7

^{vi} <http://www.biomasa.sk/en/index.php/home/52-clanky/434-biomasa-obtained-an-exclusive-project>

^{vii} http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=375:wood-pellets&catid=72:slovakia
<http://www.biomasa.sk/en/index.php/danubenergy>

^{viii} <http://www.eib.org/projects/pipeline/2011/20110523.htm>

^{ix} <http://www.eib.org/projects/pipeline/2010/20100688.htm>

^x <http://www.eib.org/projects/pipeline/2012/20120244.htm>

^{xi} <http://www.ebrd.com/pages/country/slovakrepublic/strategy.shtml>

^{xii} <http://www.ebrd.com/english/pages/project/psd/2007/36970.shtml>

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^{xiv} <http://www.ebrd.com/pages/sector/nuclearsafety/bohunice.shtml>

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^{xvii} <http://www.ebrd.com/english/pages/project/psd/1998/2460.shtml>

^{xviii} <http://www.ebrd.com/pages/sector/energyefficiency/sei/financing.shtml>

^{xix} <http://www.munseff.eu/en/about.html>

^{xx} <http://www.munseff.eu/en/implemented-projects.html>

^{xxi} <http://www.ebrd.com/downloads/research/factsheets/slovakrepublic.pdf>

^{xxii} http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=377:the-biomass-power-plant-in-bardejov&catid=72:slovakia

<http://www.bioenergybardejov.sk/en/urcenie-ceny.html>

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xxv <http://life.lifevideos.eu/environment/life/themes/energy/features2007/biomass.htm>

xxvi http://pdc.ceu.hu/archive/00002423/01/SI_taxes.pdf

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xliiii http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=241:trans-european-networks-ten-t-bratislava-&catid=72:slovakia

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