

PART I  
Chapter 1

## Towards Green Growth\*

*Slovenia experienced rapid economic growth throughout most of the 2000s, with GDP per capita converging with the OECD average. Relatively favourable business- and export-oriented macroeconomic policies, combined with structural reforms stimulated by EU accession, were key factors driving growth. Even though environmental pressures were reduced towards the end of the 2000s due to the impact of the global economic and financial crisis, Slovenia will face a number of pressing environmental challenges as economic growth resumes. This chapter examines Slovenia's framework for sustainable development and green growth. It analyses how the country has used investment, both public and private, supported by EU funds, to pursue environmental objectives. It also examines the use of economic instruments (i.e. energy and vehicle taxation), the removal of fiscal benefits, environmental fees and charges, and subsidies that encourage environmentally friendly activities or reduce environmentally harmful impacts. Included is an assessment of eco-innovation performance, as measured by environment-related R&D and patenting activity. This chapter also examines policies to encourage green corporate responsibility and investment, as well as green public procurement.*

\* This chapter reviews progress in the period 2000-11. It also reviews progress with respect to the objectives of the 2001 OECD Environmental Strategy.

## Assessment and recommendations

Slovenia's Development Strategy (SDS) for 2005-13 has been the key mechanism for defining sustainable development goals and targets. Implementation of the SDS has been assessed on an annual basis. Further in-depth assessment of the costs and benefits of implementing the Strategy's measures should provide a good basis for a new Development Strategy for 2013-20, which would integrate a green growth perspective. In addition to the SDS, an abundance of sectoral strategic documents have been produced by different ministries. However, inter-ministerial co-operation required to exploit synergies and identify trade-offs is lacking. Environment formed part of the Exit Strategy 2010-13, the fiscal stimulus implemented in response to the global economic and financial crisis. The Exit Strategy included measures to: adjust the planning and permitting system for transport, energy and environmental infrastructure; modernise the railways; promote renewable energy; adapt to climate change; and increase the competitiveness of the agriculture and food processing industries while reducing environmental impacts, and optimising forest management.

In 2009, revenue from environmentally related taxes reached 9% of total tax receipts and 3.5% of GDP, well above OECD averages. As in most OECD countries, the bulk of this revenue was accounted for by taxes on energy carriers, motor fuels and vehicles. Even though excise duties on petrol and diesel increased in 2009, the tax on diesel was about 90% of that on petrol in 2009-10, and decreased to 80% in 2011, which is not justified from an environmental perspective. Important refunds apply in the case of commercial use of diesel. Taxes applied to other fuels (such as for heavy fuel oil and gas oil used for heating, or coal and coke products) could better reflect the environmental costs associated with greenhouse gas and traditional air pollutant emissions. Substantial changes to vehicle taxation in 2009-10 linked a new one-off tax on new motor vehicles and annual taxes on trucks and buses to CO<sub>2</sub> and Euro emission standards. The priority currently being given to strengthening the overall tax system provides an opportunity for an in-depth review of the effectiveness and efficiency of environmentally related taxation. This could pave the way for comprehensive green tax reform, which would contribute to fiscal consolidation while more effectively addressing environmental externalities. This review should include existing environmental taxes (*e.g.* the landfill tax, wastewater tax, CO<sub>2</sub> tax, and taxes linked to Extended Producer Responsibility for various waste streams), as well as other economic instruments (*e.g.* user charges for waste collection, water abstraction, and wastewater collection and treatment).

After remaining unchanged for several years at 1.6% of GDP, the share of general government subsidies increased to 1.9% of GDP in 2009, but this increase was the result of a decline in GDP and an increase in subsidies. Information about the positive and negative environmental impacts of subsidies is patchy and the economic, social and environmental costs of such schemes have not been systematically assessed. The establishment of an inter-ministerial working group in 2010 to study existing subsidies (including their

environmental impacts) and the development of a register of subsidies are steps in the right direction. However, more rapid progress is needed, especially in the context of the needed fiscal consolidation.

Total expenditure on environmental protection increased from 1.5% to 2.1% of GDP in the period 2000-09. Public environmental expenditure remained broadly constant, at a level close to the OECD average of 0.8%. It focused on environmental infrastructure. Slovenia's absorption of EU funds is improving: it has the highest contracting rate for committed funds (55%) among the ten new EU members, mainly due to simplification of financial management and control procedures. However, the absorption of funds for environment-related investment has been slow. At the halfway point in the 2007-13 implementation period, less than one-third of the available budget had been contracted, and only 14% had been disbursed to beneficiaries. Delays were particularly important in the waste and railway sectors. Private environmental expenditure increased, mostly in the area of waste management. The Eco Fund has proven an effective mechanism for channeling public finance of environmental projects. Opportunities to further promote public-private partnerships in the areas of waste and wastewater management should continue to be explored, building on the experience of the Slovenian Export and Development Bank. This should be accompanied by the implementation of measures to ensure that quality of service is maintained at a reasonable price, including through increased use of benchmarking and performance evaluation.

Responsibility for financing of environmental infrastructure has gradually decentralised to local government, particularly for wastewater collection and treatment infrastructure, and accounted for more than two-thirds of central government expenditure in 2009. However, while public needs may be better identified at the local level, greater decentralisation has resulted in fragmentation of efforts and in insufficient capacity and resources at the local level. The absence of a regional tier of administration in Slovenia makes the issue of municipal fragmentation all the more challenging. The adoption of the Balanced Regional Development Act in 2000 encouraged good co-operation among Regional Development Agencies (RDAs), Councils of Regions and the associations of municipalities and towns of Slovenia. Greater co-operation among municipalities, and their co-operation with the Ministry of the Environment and Spatial Planning (MESP), is needed to strengthen the effectiveness and efficiency of environmental services and spatial planning policies.

Slovenia has increased its support for innovation. For example, gross expenditure on R&D for environmental purposes has more than tripled in real terms during the review period. Its share in total R&D has risen from 0.8% to 2.2%. Nevertheless, these shares are still smaller than those in many other OECD countries. Moreover, the outputs of Slovenia's environmental innovation system, measured in terms of number and growth of total patent applications, are weak compared to those in many other OECD countries. The public sector accounts for most of the research effort, and there is a need for greater promotion of innovative activity in the private sector. This will be a challenge given the predominance of small and medium-sized enterprises. The government could usefully draw on the OECD publication *Fostering Innovation for Green Growth* to identify ways to strengthen its performance in promoting and disseminating environment-related innovation.

### Recommendations

- Include explicit environmental objectives in the 2013-20 Development Strategy and in other strategic documents, such as the regional development, transport and agriculture policies, taking account of their benefits and costs.
- Gradually equalise the tax rates for diesel and petrol; remove refunds for taxation of commercial uses of diesel fuel; and assess how a broader reform of environmentally related taxes and subsidies, and other economic instruments of environmental policies, could help meet the policy objectives of the 2013-20 Development Strategy and contribute to fiscal consolidation.
- Promote greater co-operation between municipalities through Regional Development Agencies, Councils of Regions, and the associations of municipalities and towns of Slovenia, in order to achieve economies of scale and scope for environmental infrastructure; promote greater participation by the private sector in environmental investment while maintaining the quality of service at a reasonable cost, including through transparent benchmarking and performance evaluation; further strengthen co-operation among institutional stakeholders in spatial planning.
- Assess how capacity for eco-innovation could be enhanced in light of the conclusions and recommendations of the OECD publication *Fostering Innovation for Green Growth*.

## 1. Socio-economic trends in the review period

### 1.1. Economic growth

Slovenia is a small, open economy which until recently has enjoyed dynamic growth and has steadily made progress towards the OECD average GDP per capita (Table 1.1). Relatively favourable business- and export-oriented macroeconomic policies, combined with structural reforms stimulated by its accession to the European Union in 2004, have contributed to rapid growth without creating major fiscal imbalances during most of the last ten years (Box 1.1). The 2002 social agreement to keep wage growth below growth in productivity has helped to keep inflation close to levels in the euro area. Along with public wage restraint since 2004, it has fostered competitiveness and prevented deterioration of the current account balance. However, a high growth rate has been heavily dependent on credit and construction activity, with exports reliant on cyclical industries such as automobile manufacturing.

Towards the end of the 2000s, the global economic and financial crisis impacted Slovenia's economic convergence with the EU and the OECD. GDP declined by 8% in 2009, the sharpest fall in any OECD country with the exception of Estonia. This was mainly due to a fall in construction activity and a decline in Slovenia's exports of labour-intensive products and some loss of cost-competitiveness, limiting productivity gains in the traded goods sector. Domestic demand has been held back significantly by the poor financial health of households and firms affected by reduced asset prices, incomes and credit availability. Economic growth resumed by the end of 2010, as exports rebounded. However, it has been further hampered by fiscal consolidation. Fiscal consolidation, export competitiveness and financial stability are the current economic policy challenges. A major long-term challenge for Slovenia is to boost growth in productivity so that living standards continue to converge with those of the OECD's best performers. The 2011 OECD Economic Survey of Slovenia suggested that structural reforms to boost productivity and

Table 1.1. **Socio-economic trends and environmental pressures**

	Slovenia 2000-10 (% change)	OECD 2000-10 (% change)
<b>Selected economic trends</b>		
GDP <sup>a</sup>	30.6	17.4
Private final consumption <sup>a</sup>	27.6	20.7
Agricultural production <sup>b</sup>	-5.1	..
Industrial production <sup>b, c</sup>	11.3	-2.2
<b>Road transport<sup>b, d</sup></b>		
Freight transport*	18.1	..
Passenger, private cars**	23.9	..
Vehicle stock***	21.4	13.1 <sup>e</sup>
<b>Energy</b>		
Total primary energy supply	10.6	2.3
Total final consumption of energy <sup>b</sup>	4.8	-1.8
Energy intensity	-15.3	-12.7
Renewable energy supply	17.7	29.1
<b>Selected social trends</b>		
Population <sup>b</sup>	1.7	6.2
Life expectancy at birth <sup>b</sup>	4.6	..
Ageing index	34.3	26.9
Standardised unemployment rates	7.4	36.5
<b>Selected environmental pressures</b>		
<b>Pollution<sup>b</sup></b>		
CO <sub>2</sub> emissions from energy use <sup>f</sup>	7.5	-4.7
Emissions of SO <sub>x</sub>	-87.5	-40.0
Emissions of NO <sub>x</sub>	-8.9	-24.9
<b>Resource use</b>		
Water abstractions <sup>b, g</sup>	4.8	-1.2 <sup>e</sup>
Municipal waste per capita <sup>g</sup>	3.6	-3.6
Material productivity <sup>h</sup>	10.9	19.0
Nitrogenous fertiliser use <sup>b</sup>	-19.6	-3.5
Pesticide use <sup>i</sup>	-17.0	..

a) Based on values expressed in USD at 2005 prices and PPPs.

b) To 2009.

c) Mining and quarrying, manufacturing, and production of electricity, gas and water.

d) Based on values expressed in: \* tonne-km; \*\* passenger-km; \*\*\* motor vehicles in use. Since 2001 for Slovenia.

e) To 2007.

f) Sectoral approach; excluding marine and aviation bunkers.

g) Since 2002 for Slovenia.

h) GDP per unit of domestic material consumption (DMC), where DMC is the sum of (domestic) raw material extraction used by an economy and its physical trade balance (imports minus exports of raw materials and manufactured products).

i) To 2008.

Source: OECD, Environment Directorate.

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competitiveness should concentrate on improving labour market flexibility, fostering innovation and higher education, and favouring foreign direct investment (FDI), notably by reducing the state's direct involvement in the economy.

### Box 1.1. Structure of the economy

Slovenia experienced a rapid transition towards a market-based economy after it gained full independence from the Socialist Federal Republic of Yugoslavia in 1991. Structural changes increased the importance of the services sector, which has grown at an average annual rate of 1% since 2000. The services sector currently represents 67% of GDP, providing employment to about 58% of the workforce. Within this sector, tourism and transport have gained importance, together accounting for about 9% of GDP.

During the review period the share of industrial production (including manufacturing, construction and energy production) gradually decreased by 5%, reaching a current 31% of GDP and employing about 24% of the workforce. At the beginning of the review period the industrial sector specialised in labour-intensive industries, which matched capital-intensive industries in terms of value added. Relatively slow restructuring towards higher-end products left some of the largest Slovenian companies vulnerable to an economic downturn. Within the industrial sector, construction companies were hit hardest by the economic and financial crisis, with their share of GDP falling from 8.3% to 7.1% in the period 2008-10.

Gross value added in the transport sector represents 6.5% of GDP. It has increased at an average rate of 2% since 2000, except during the crisis. This sector currently employs about 5.3% of the workforce. Freight transport is dominated by road, which carried 85% of all freight in 2009 (a 12% increase compared with 2001). Since 2001, freight transport by rail has increased by only 2% while freight transport by road has increased by 110% and freight transport by sea by 57%. By contrast, the share of private vehicles in land passenger transport has increased by a mere 3% as the level was already relatively high in 2001 at 83%. Despite Slovenia's small size, it is crossed by some of Europe's major south-north transit routes, which carry a high volume of international road freight.

The contribution of agriculture, forestry and fishing to GDP has decreased by 25% since 2000. It currently represents about 2.1% of GDP and employs about 8.4% of the workforce. Some 25% (0.5 million ha) of Slovenia's territory is agricultural land,<sup>a</sup> of which about 36% is arable. Agricultural land is scattered among individual farms with an average size of 5 ha, concentrated in the fertile central and northeastern plains. Two-thirds of agricultural land lies in less accessible hilly and alpine regions. Slovenia's main crops are wheat, maize, sugar beet, barley and potato. There is also some viticulture. Livestock raising (pigs, cattle and sheep) is important. The livestock density of 750 head of sheep equivalent per km<sup>2</sup> of agricultural land is well above the OECD (190) and OECD Europe (429) averages.<sup>b</sup> Domestic fish catches provide only about one-quarter of the national fish supply. The remainder is imported. Forestry is an important industry. Forests cover about 62% of Slovenian territory. In recent years the volume of wood cut in Slovenian forests has averaged 3.7 million m<sup>3</sup> per year, or 70% of the possible volume and 40% of the annual increment; 74% of forest area is privately owned.

Before the 2008-09 crisis, exports of goods and services accounted for almost 6% of GDP growth. The Slovenian economy was therefore vulnerable to changes in international price competitiveness and economic conditions in trading partners. Following a sharp decline of about 18% as a result of the crisis, exports of goods and services rebounded in 2010. This was largely due to higher EU demand for technologically advanced products manufactured in Slovenia (e.g. chemical products, motor vehicles and electrical appliances). Apart from related transport services, however, exports of services remained subdued.

Primary energy supply has increased by almost 9% since 2000 despite a sharp decline due to the crisis (-10% in 2008-09). The share of primary energy supply increased by 26% (or an annual average of 2%) between 2000 and 2010. It currently contributes 2.9% of GDP and employs 0.8% of the workforce. Oil and solid fuels (57%) and nuclear energy (21%) represent the largest shares of total primary energy supply (TPES). While the share of natural gas in TPES has remained relatively stable since 1990 at 12%, the share of renewable energy increased from 9% to 13% between 1990 and 2009. Slovenia's energy import dependency (about 55%) is close to the EU average and consists mainly of imports of oil (two-thirds) and natural gas (one-quarter).

a) Agricultural land includes arable area, permanent crop land and permanent grassland.

b) Head of sheep equivalent is based on equivalent coefficients in terms of manure: 1 horse = 4.8 sheep; 1 pig = 1 goat = 1 sheep; 1 hen = 0.1 sheep; 1 cow = 6 sheep.

## 1.2. Social development

Slovenia's population was estimated at 2.02 million in 2010, a small increase of 1.7% since 2000. It is the fourth smallest OECD country by population, after Iceland (318 000), Luxemburg (493 000) and Estonia (1.34 million). Population density (101 per km<sup>2</sup>) is close to the OECD average. Even Slovenia's most densely populated area, the Central Slovenia statistical region (198 per km<sup>2</sup>), is not densely populated by OECD standards.<sup>1</sup> None of Slovenia's regions is predominantly urban. Four of them (in which 43% of the national population lives) are classified as intermediate and eight as predominantly rural. Among OECD countries, only in Finland and Ireland does a higher proportion of the population live in rural areas.

In 2009, life expectancy at birth was 75.8 years for men (3.9 years more than in 2000) and 82.3 years for women (3.2 years more than in 2000). In the same year, life expectancy in Slovenia was lower (on average by gender) than in most of the old EU member states (except Denmark) but higher than in the new ones (except Cyprus and Malta). Infant mortality has been falling for several years, from 4.5-5.5 per 1 000 live births in the second half of the 1990s to 2.4 in 2009, the lowest rate among EU countries. With a significant decrease in the working-age population (between 15 and 64 years) projected, the share of public pension expenditure in GDP is expected to increase from the currently estimated 11% of GDP.

In contrast to most other transition economies, Slovenia has succeeded in maintaining a low level of inequality during the accelerated structural reforms and the convergence of its economy with that of the EU. The Gini coefficient of about 0.24 in 2008 resembles that of the Scandinavian countries. It is below the EU average (0.3) and far below that of countries with similar income levels (*e.g.* Portugal, with 0.4). About 11% of the population was below the poverty line in 2009, a relatively small percentage compared with other OECD countries. The household debt servicing burden increased during the crisis, curbing domestic demand and consequently economic growth.

Until the economic and financial crisis, the unemployment rate was low (below its estimated natural rate). Improvements in the labour market, particularly labour tax reductions and more stringent eligibility criteria for unemployment benefits, have had much to do with economic growth and structural reforms. However, employment costs have remained high and, together with wage movements, have limited competitiveness. Following a significant increase in unemployment as a result of the crisis (from 4.4% to 7.2% in the period 2008-10), labour market conditions stabilised in 2011. However, participation in the job market by the elderly remains low compared to other OECD countries.

Slovenia's educational system performs relatively well. The country has one of the highest shares of the population aged 25 to 64 to have completed at least upper secondary education, and it ranks above the OECD average in international educational achievement tests in the Programme for International Student Assessment (PISA). Tertiary attainment rates and graduation rates are below the OECD average, limiting prospects for youth employment.

In the health sector, Slovenia has maintained universal coverage with relatively generous benefits. At around 8% of GDP (below the OECD average), total spending on health care as a share of GDP has not changed greatly since 2000. Public spending on health care is slightly below 6% of GDP – among the highest levels among the new EU member countries, but somewhat lower than the EU15 average. The level of spending per capita on health care is also relatively high if compared internationally. It increased more rapidly (by 4.8%) than the OECD average (4.0%) in the period 1998-2008.

According to Eurobarometer data, Slovenia ranked tenth among EU countries in terms of satisfaction with life in 2010, with 85% very satisfied or satisfied. The number of those very satisfied has been falling since 2004 while the number of those dissatisfied has been growing, particularly since 2008.

### 1.3. Environmental context

With a total land area of 20 105 km<sup>2</sup>, Slovenia is one-fifth the average size of the OECD countries. Only Luxembourg covers a smaller area. Slovenia has four basic landscape types: Alpine, Dinaric, Pannonian and Mediterranean (Box 1.2). About 90% of the country lies at an altitude of more than 300 metres above sea level, and more than one-third is higher than 600 metres. The neighbouring countries are Italy to the west, Austria to the north, Hungary to the northeast, and Croatia to the south and east.

#### Box 1.2. Physical context

The Alps, including the Julian Alps with Slovenia's highest peak, Triglav (2 864 m), Lake Bled and the Soča Valley, dominate northern Slovenia along its borders with Austria and Italy. In the south are the Dinaric Alps, whose highest peak is Snežnik (1 796 m). On the Pannonian plain in the northeast, towards the Croatian and Hungarian borders, the landscape is essentially flat. The Mediterranean zone includes areas around the Gulf of Trieste in the west and southwest of the country, where it overlaps the Kras (Karst) Plateau, a geologic formation characterised by cenotes, sinkholes and dolines and more than 8 000 subterranean limestone caverns, including the Postojna and Škocjanske caverns, the latter classified as a UNESCO world heritage site.

At the junction of several ecological systems, Slovenia enjoys extraordinarily rich biodiversity. About 26 000 plant and animal species have been counted. As many as 850 are endemic species, many of which live in karstic caves. The country is also home to animals such as the white-tailed eagle, bear, wolf and lynx. Protected areas include national, regional and natural parks. The Triglav National Park is the largest natural park in Slovenia and one of the oldest in Europe. There are 286 Natura 2000 designated protected areas, covering 36% of the land area (the largest percentage among EU member states).

This natural endowment is enhanced by valuable semi-natural ecosystems resulting from a history of close-to-natural forest management and from low-intensity farming. The main trees in Slovenia's forests are beech, fir and oak. The approximately 62% of total land area occupied by forests is about twice the OECD average and comparable to this area in Japan and Sweden. Remnants of primeval forests are still found. The largest is in the Kočevje area south of Ljubljana. Forested area is expanding through the growing-over of abandoned farmland, primarily by meadow and pasture, in more remote parts of the countryside. Although they are found in many parts of the urban landscape, forests are yielding to the construction of infrastructure and housing. The shares of permanent grassland and arable land in total land area are 13.3% and 10%, respectively (Figure 1.1).

The greatest precipitation occurs where the Julian Alps are highest (upper Posočje in the northwestern part of the country) and in the Mount Snežnik area (in the southwest), where the annual amount can reach 3 500 mm. Precipitation declines in the northeast, to a level of 800 mm per year in the Prekmurje region on the border with Hungary. The total length of rivers is nearly 27 000 km. The river network is dense (1.33 km/km<sup>2</sup>).



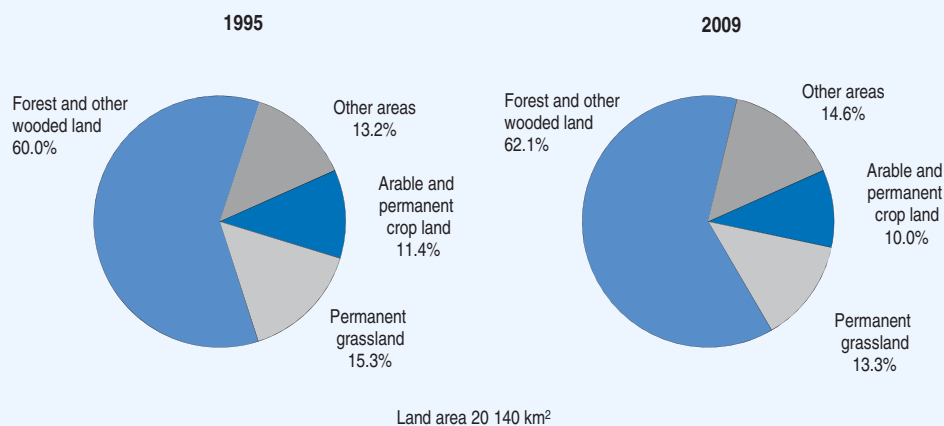
### Box 1.2. Physical context (cont.)

Although Slovenia borders the Adriatic Sea (with 47 km of coastline), 81% of Slovenia's territory is in the Black Sea drainage area, which includes the major rivers passing through Slovenia: the Sava in the centre and the Drava and Mura in the northeast. The Adriatic catchment area includes the Soča River, flowing through Italy to the Gulf of Trieste, and several short coastal rivers.

Forests are among Slovenia's most valuable natural resources, with close to 300 million m<sup>3</sup> of growing wood. Hydropower accounts for about 6% of TPES and 29% of electricity production. Slovenia's only domestic fossil fuel deposits include lignite and brown coal extracted at two underground mines at Velenje in the north of the country and near Trbovlje in the centre. Other mineral resources include relatively small quantities of lead, zinc, mercury, uranium and silver.

The western and central parts of Slovenia lie in the earthquake-prone alpidic zone. The Ljubljana earthquake of 1895 caused considerable damage. More recently, the Posočje region was affected in 1998 (3 000 buildings damaged) and 2004 (1 800 buildings damaged). Floods present a threat to more than 300 000 ha or 15% of Slovenia's territory.

Figure 1.1. Land use



Source: FAO (2011), FAOSTAT Database.

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Rapid economic growth during most of the last ten years has exerted pressures on Slovenia's natural asset base and the health of the population:

- Although Slovenia enjoys an extraordinarily high level of biodiversity, 38% of mammal species, 27% of bird species, 47% of freshwater fish species and 11% of vascular plant species are threatened. The precarious situation of many species has been exacerbated by pressures such as loss of wet grasslands to urbanisation and intensive agriculture. Urban sprawl and transport infrastructure have caused habitat fragmentation, including the fragmentation of continuous forests. Aquatic habitats have been damaged by intensification of agriculture and the construction of dams and other engineering works, notably in Pannonia. The extent of flooded forests has been reduced in the floodplains of all the major rivers (Drava, Sava, Mura) (Chapter 2).

- Slovenian rivers are fast-flowing, which contributes to good oxygen conditions and low levels of nutrients and toxic chemical substances. However, the quality of lakes and groundwater is less satisfactory, especially in northeastern Slovenia, due to higher concentrations of nutrients and pesticides as a result of intensive farming. Since the year 2000, the trophic status of marine water has been gradually improving except in Koper Bay. Contaminated sites created by historical mining of mercury and other minerals are still a source of surface and groundwater contamination despite remediation efforts (Chapters 2 and 5).
- By ratifying the Kyoto Protocol, Slovenia committed to reduce greenhouse gas (GHG) emissions in the 2008-12 period by 8% on average compared with its baseline emissions in 1986. In 2008, its GHG emissions were 5.2% higher than in the base year, with transport increasingly contributing to these emissions. While the economic downturn contributed to a decrease, GHG emissions from the transport sector are expected to continue to increase beyond 2012. Slovenian authorities estimate that meeting the Kyoto Protocol target is within reach, but only when account is taken of forest sinks and the likely purchase of a small amount of carbon credits (Chapter 4).
- While concentrations of air pollutants such as SO<sub>2</sub>, NO<sub>2</sub> and CO in urban areas were below limit values, levels of seasonal exposure of urban populations to particulate matter (PM) and ozone (O<sub>3</sub>) were among the highest in the EU27 during most of the review period. Concentrations of these pollutants exceeded daily and annual limit values throughout Slovenia. Road transport in urban centres and the use of wood-burning stoves for heating in households, together with unfavourable temperature inversions, are major causes of urban pollution incidents. Some air pollution hot-spots still exist around industrial facilities and lignite-fuelled power stations in central Slovenia (Chapter 4).
- The concentration of jobs and of the population in urban centres, especially around Ljubljana, increases urban sprawl and the volume of motor vehicle transport. An unregulated real estate market and fragmented and incomplete spatial planning, combined with underdeveloped public transport infrastructure, is leading to increased emissions of greenhouse gases and traditional air pollutants. These factors also underlie external costs such as road congestion, accidents and habitat fragmentation (Chapters 2 and 4).
- The amount of waste generated in Slovenia increased by 34% between 2002-10 (in line with increases in GDP and final private consumption) to 6.6 million tonnes. In 2010, non-hazardous waste from production and services accounted for 85% of waste generated. Construction and demolition (C&D) waste accounted for a significant fraction, peaking at 37% of all waste generated in 2007. Municipal waste increased during the decade at a slower rate than GDP, accounting for 12% of waste in 2010. However, a large share of municipal waste (65%) is sent to final disposal in landfills. Hazardous waste accounted for 1.5% of the total, while a large share is exported for treatment. Although waste generation per capita remained well below OECD national averages during the review period, pressures to generate waste will increase as incomes converge with the OECD and EU averages (Chapter 5).

## 2. Strategic framework for sustainable development and green growth

### 2.1. Slovenian development policies

Slovenia's Development Strategy (SDS) for 2005-13 focuses primarily on economic development, but social and environmental issues are also extensively addressed. The SDS identifies the implementation of measures to achieve sustainable development as one of its five priorities. The 2008 National Development Programme (NDP) was designed to implement the SDS. The NDP lists renewable energy, energy efficiency and environmental infrastructure as key national sustainable development issues. Every year a *Development Report* presents a detailed account of progress in meeting the SDS objectives. In 2010, Slovenia's Statistical Office published a list of sustainable development indicators to complement the monitoring of SDS implementation.

The National Development Programme is supported by the National Strategic Reference Framework, an investment programme that sets priorities for domestic and EU development funding. The Operational Programme for Environmental and Transport Infrastructure Development (OPDETI) is an integral part of the reference framework. It has guided the allocation of funds for environment-related projects in 2007-13, including waste management, collection and treatment of urban wastewater, drinking water supply, energy efficiency and renewable energy.

There are several environment-related sectoral strategic documents, including: the National Environment Protection Programme 2005-12, which provides the aims and goals of national environmental policy; the Spatial Development Strategy (2004), which provides guidelines for sustainable spatial planning and development at the national and local levels; the Environment and Agriculture Programme (2008), which sets priorities with respect to sustainable agriculture; the National Action Plan on Energy Efficiency for 2008-16, which includes financial support for optimising energy use in the public sector; and the Rural Development Programme for 2007-13, which pays special attention to sustainable management of natural resources. A new National Energy Programme, under preparation since 2010, is expected to address issues related to climate change and air pollution while a new National Environment Protection Programme for the period until 2020 will be elaborated in 2012.

Despite the inclusion of environmental issues in these documents, implementation of the SDS and the NDP has not effectively integrated environmental considerations into economic development priorities. The main constraint has been compartmentalisation of planning and implementation within individual government agencies. The abundance of strategic documents produced by individual government agencies, and a lack of inter-ministerial co-operation, prevents the exploitation of synergies and the identification of trade-offs, including those related to environmental impacts. Although the Council for Sustainable Development was established in 2003, it has mainly served as a consultative body for government agencies and stakeholders. There are plans to increase its advisory role by making it an instrument for in-depth analysis of key development issues. The government intends to pursue greater integration of economic, environmental and social policies as it prepares a new Development Strategy for 2013-20, which is expected to be accompanied by a new set of sustainable development indicators.

## 2.2. Aftermath of the 2008 crisis

The 2008 economic and financial crisis revealed vulnerabilities in Slovenia's pattern of economic development and demonstrated the need for structural changes to enable recovery. The Slovenian Exit Strategy 2010-13, adopted in February 2010, contained short-term anti-crisis measures for the 2010-11 programming budget, in parallel with the formulation of key development priorities. These priorities included: strengthening entrepreneurship and skills for development; securing flexibility and social cohesion; and developing transport and energy infrastructure for effective and stable environmentally sustainable development. The Exit Strategy included a combination of economic policy measures (e.g. determining the scope of public spending through the fiscal rules and structure of public spending, based on national development priorities), structural changes (e.g. reform of the pension and health care systems) and institutional adjustments (e.g. improving the functioning of markets and public asset management).

In the environment-related part of the Exit Strategy, emphasis was placed on: adjusting the planning and permitting system for transport, energy and environmental infrastructure; modernising the railway system (infrastructure and logistics/services); promoting renewable energy sources; adapting to climate change; increasing the competitiveness of agriculture and the food processing industry, while reducing their environmental impacts; and optimising forest management. It will be important for the priorities of the Exit Strategy to be reflected in the 2013-20 Development Strategy, in order for it to constitute a "green growth strategy" that encourages greener behaviour by firms and consumers, facilitates smooth and just reallocation of jobs, capital and technology towards greener activities, and provides adequate incentives and supports green innovation so as to give rise to new sources of economic growth that are consistent with resilient ecosystems.

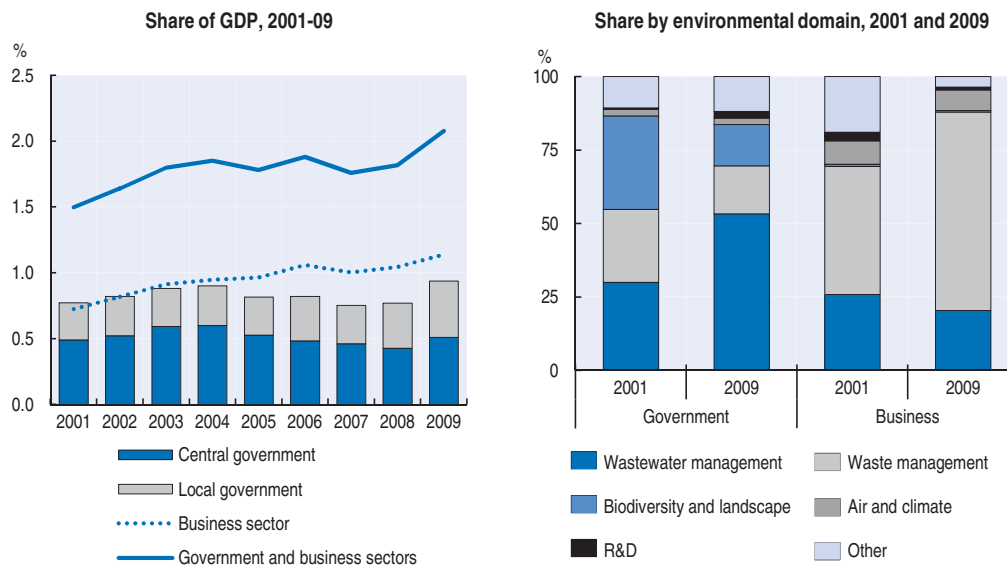
## 3. Integrating environmental and fiscal policies

### 3.1. Budget and expenditure for environmental protection


#### *Public and private environmental expenditure*

Strengthening environmental requirements associated with Slovenia's accession to the EU stimulated an increase in total expenditure for environmental protection in the period 2001-09 (including operational costs and investment) from 1.5% to 2.1% of GDP. This expenditure also more than doubled in absolute terms, from EUR 322 million in 2001 to EUR 736 million in 2009. The trend was driven by the progressive growth of private expenditure, mostly in the area of waste management (Figure 1.2). Private and public environmental expenditure and investment have increased since 2001 and were resilient during the economic and financial crisis. This was due in part to investment and operational needs resulting from the tightening of environmental standards following transposition of the EU requirements, and in part to the leveraging effects of additional EU funding available before and after Slovenia's EU accession.

Public expenditure has increased steadily in real terms, but has remained at a rather stable level of 0.8% of GDP (around the OECD average). The increase in absolute terms has mostly been due to higher investment and operational costs related to water and wastewater infrastructure. Public environmental expenditure has been progressively implemented by local governments, particularly for the development of wastewater collection and treatment infrastructure. It accounted for more than two-thirds of central government expenditure

Figure 1.2. **Public<sup>a</sup> and private environmental expenditure**

a) Government expenditure according to the COFOG classification.  
Source: SORS (2011), SI-STAT Data Portal.

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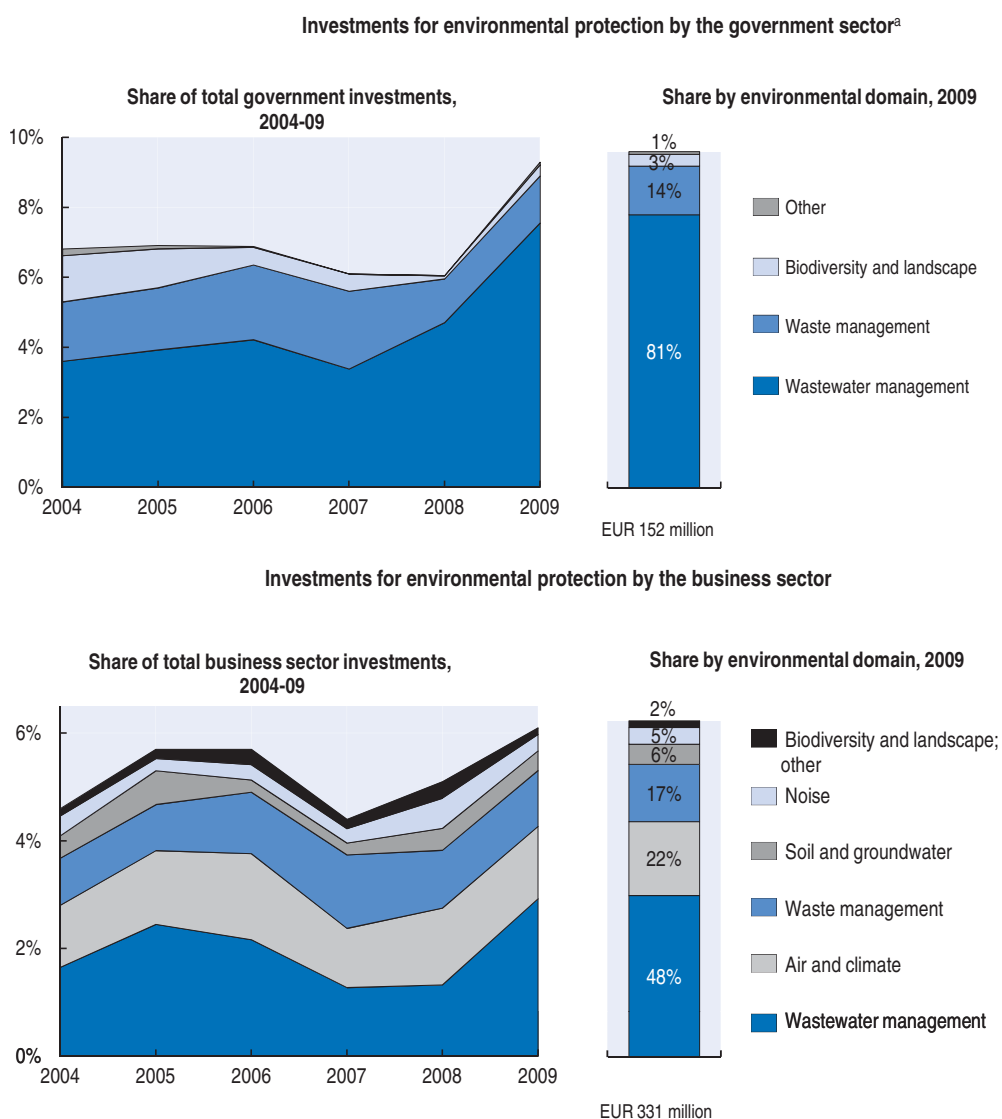
in 2009. However, decentralisation of infrastructure development has generated some policy bottlenecks: while public needs are better identified and addressed more rapidly at the local level, greater decentralisation poses problems with respect to addressing cross-regional externalities and hampers the achievement of overall objectives. Many municipalities are now too small to provide public services efficiently. Slovenia's municipalities range in size from 7 to 500 km<sup>2</sup> (around two-thirds are smaller than 100 km<sup>2</sup>).<sup>2</sup> Experience with addressing the treatment of residual waste, wastewater collection and treatment, and the impacts of recent flooding indicates that further progress is needed to strengthen co-ordination between the central and local governments and consolidate efforts to fully utilise economies of scale and scope.

In 2009, waste and wastewater management accounted for 70% of public environmental expenditure. This partly reflects efforts to improve the ability of municipalities with poor sewerage and sewage treatment to meet the requirements of the EU Directive on urban wastewater treatment (91/271/EEC). More recently, higher priority has been given to flood prevention. Air pollution control (now including climate change mitigation) has traditionally accounted for a minor share (2%) of public environmental expenditure.

Private environmental expenditure has increased in real terms and relative to GDP, reaching 1.1% of GDP in 2009. Private environmental expenditure grew from the equivalent of two-thirds of public environmental expenditure in 2001 to surpassing it by one-half in 2008. Consistent with the Polluter Pays Principle, the private sector spends significantly more than the government on both operations and investment for waste management (68%) and air and climate protection (7%). The need to comply with EU standards has been a major driver of this investment effort.

Public and private investments in the environmental sector increased overall during most of the review period in real terms. They remained stable as a percentage of total government investment except in 2008-09 when their share increased, partly due to decreasing investment in other areas. Public investment remained stable as a percentage of total government investment (at 7%) for most of the review period, but increased to 9% in 2009. Similarly, private investment in environmental protection remained stable as a share of total investment in the period 2004-09, averaging around 5%. Private investment increased to 6.1% in 2009 despite the economic and financial crisis (Figure 1.3). In real terms, environmental investment fell by 4% in 2009 (to EUR 333 million) in the aftermath of the 2008 crisis. However, this decline was considerably less than the 18% decrease in total business investment during that period. Waste and wastewater management constituted most of the investment portfolio (65%).

Figure 1.3. **Public and private gross investment for environmental protection**



a) Gross capital formation according to the COFOG classification. Source: SORS (2011), SI-STAT Data Portal.

Since demand for waste management (which includes recovery and recycling) is relatively linked to business cycle movements, private environmental investment in this sector fluctuated. Across the manufacturing and the mining and quarrying industries, investment amounts were relatively equally distributed between end-of-pipe investments in environmental protection (58%) and investments in integrated technologies (42%).

### **Environmental finance and EU funds**

EU funding has provided an important contribution to Slovenia's public environmental investment. Before EU accession, Slovenia benefited from various EU instruments, particularly through the PHARE and ISPA pre-adhesion programmes. Between 1999 and 2001, EUR 3.4 million was disbursed under the PHARE programme to support an environmental credit scheme managed by the Slovenian Environmental Public Fund (Eko Sklad, or Eco Fund) (Box 1.3) and EUR 2.5 million was disbursed to support investment in wastewater management. Slovenia also secured EUR 22 million in ISPA funding for environmental and transport projects in the period 2000-03, representing 38% of the country's total ISPA funding.

#### **Box 1.3. The Eko Sklad (Slovenian Eco Fund)**

The Eko Sklad was established in the early 1990s to support environmental investment. The main sources of financing originally included earmarked asset funds (of which 8.5% from privatisation process contributions from the state budget) and donations. Environmental taxes have not been part of Eko Sklad income. By the end of review period, the Eko Sklad had become more financially self-sustaining, with its own resources constituting nearly 64% of its total assets of EUR 181 million in 2010. The remaining assets were acquired through obligations, donations, and debt raised with national and international institutions, including EU PHARE grants (EUR 5 million) and long-term loans from the European Investment Bank (EIB) and the Slovenian Export and Development Bank (EUR 46.6 million). Between 1995 and 2010, the Eko Sklad granted 14 800 loans worth EUR 375 million for environmental investment.

The fund strengthened the environmental evaluation of projects according to the recommendations of an OECD review carried out in 2000. Priority has been given to climate change and projects on energy efficiency and renewable energy; these represented EUR 19.6 million (90% of all commitments) in 2010. A relatively minor share of loans was devoted to waste management and efficient use of water. Beneficiaries include private companies, municipalities and utilities. Although the value of loans increased by 51% between 2001 and 2009, they fell by 22% to EUR 21.2 million in 2010. This was mostly due to a reduction of the credit worthiness of potential business clients during the economic and financial crisis.

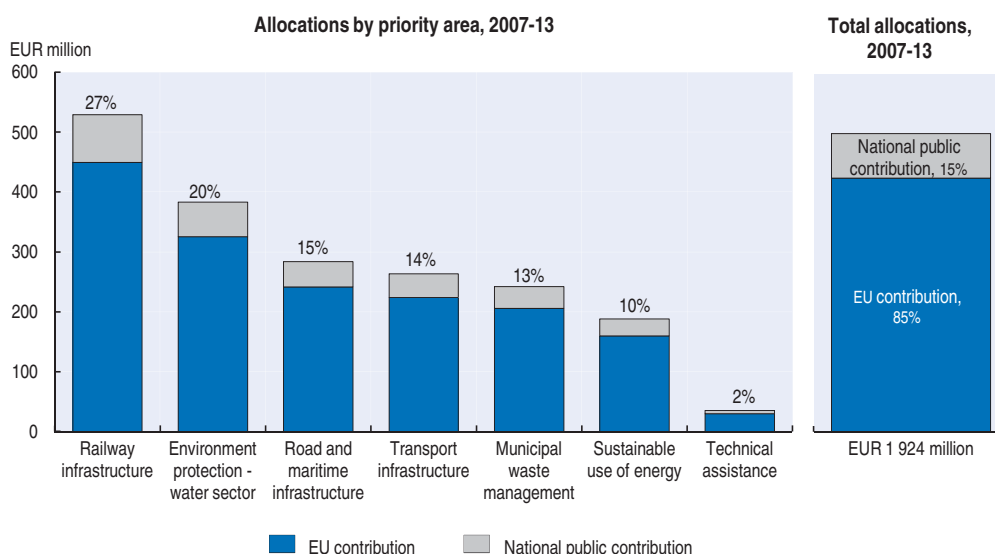
In 2008 the fund started a grant programme to support the National Action Plan for Energy Efficiency adopted for 2008-16. EUR 11.5 million was made available to promote the installation of solar heating systems, energy-efficient renovation of existing residential buildings, and construction of low-energy and passive houses. Part of these subsidies was allocated to road transport operators to purchase freight vehicles in compliance with stricter environmental standards. The programme continued in 2010 with three public calls for grant applications for an additional EUR 18 million. The Eko Sklad's projects are estimated to have helped avoid nearly 7 kt of CO<sub>2</sub> emissions, save 56 GWh of energy and generate 12 GWh of electricity from renewable sources per year, as well as creating around 500 jobs in 2008-09.

Source: Eko Sklad (2011).

During the first programming period following EU accession (2004-06) the Cohesion Fund, which incorporated ISPA projects, provided EUR 209 million for environment-related expenditure. This was nearly half the total amount allocated to Slovenia from the Structural and Cohesion Funds. A large part was allocated for improvement of wastewater management. However, the use of funding from the Structural and Cohesion Funds for environment was low, at around 20% in 2007. Other sources of finance included commercial lending from the European Bank for Reconstruction and Development (EBRD) and the EIB, which contributed to the development of wastewater treatment plants in large cities such as Maribor.

In the 2007-13 programming period, Slovenia was more effective in tapping EU resources for environmental investments, as the environment-related budget reached around 2 billion out of 4.1 billion allocated to Slovenia from the Structural and Cohesion Funds. Of the resources available for the environment and transport infrastructure, nearly 30% was available for the development of railway infrastructure, 20% for water-related infrastructure and 15% for road and maritime infrastructure (Figure 1.4). In 2008 EU funds equalled around 40% of Slovenia's total environmental investment expenditure.

Figure 1.4. **EU funds for environment-related investments**



Source: EC (2010).

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The overall absorption of EU funds by Slovenia started slowly, but has improved due to the simplification of financial management and control procedures. By December 2010, projects worth EUR 2.3 billion in grants were contracted by the beneficiaries of the Operational Programmes of the Slovenian National Development Plan. Based on a 55% contracted ratio, Slovenia was at an average level at the halfway point of the programming period. Of the contracted grants, EUR 1.3 billion has been disbursed, accounting for 56% of the total.



The absorption of funds under the OPDETI has progressed quite slowly compared to other areas. At the halfway point in the implementation period, less than one-third of the available budget had been contracted and only 14% had been disbursed to the beneficiaries. Delays were particularly important in the waste and railway sectors. In the waste sector, for example, EUR 205 million from the Cohesion Fund was foreseen for ten projects in the field of municipal waste management under the 2007-13 OPDETI, but only EUR 10.8 million had been approved by the end of 2010 for two regional waste management centres in Ljubljana and Koroška. In the transport sector, EUR 450 million was intended for railway infrastructure, but no project had been approved by the end of 2009 and only some progress was made in 2010 (when EUR 68 million was approved for modernising the existing Divača-Koper line). At the same time, out of the EUR 220.9 million foreseen for road and maritime infrastructure, projects amounting to EUR 156 million had been approved by the end of 2010.

A part of EU financial resources was channeled through the Eko Sklad. In addition to increasing its resources, this arrangement improved its credit worthiness, stability and timeframe, enabling it to attract funds from other sources (Box 1.3).

### **3.2. Taxation policy and the environment**

The overall tax burden in Slovenia has been relatively high, at 38% of GDP compared to an OECD average of 35% in the period 2000-08. This was mainly due to high taxation of labour and consumption, which represented over 70% of total tax revenues. In terms of total tax revenues, taxes on goods and services, including energy and transport, are considerably higher (at 36%) than the OECD average of 32%. By contrast, property taxes (0.6% of GDP), including an immovable property tax (0.4% of GDP), are lower than the OECD average. On average, other OECD countries collected about three times more revenues from related property taxation.

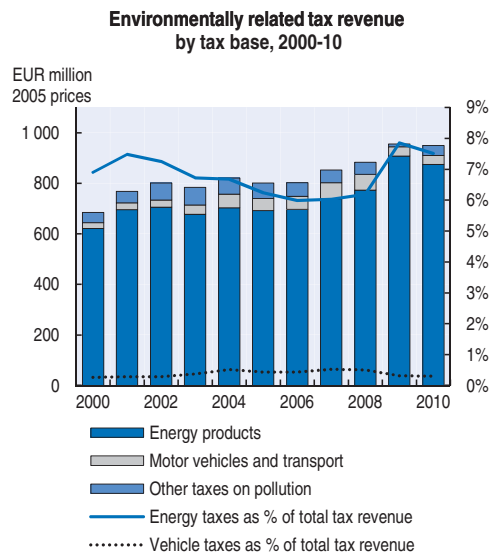
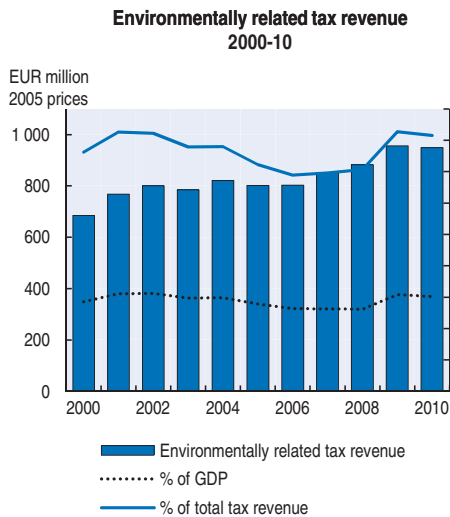
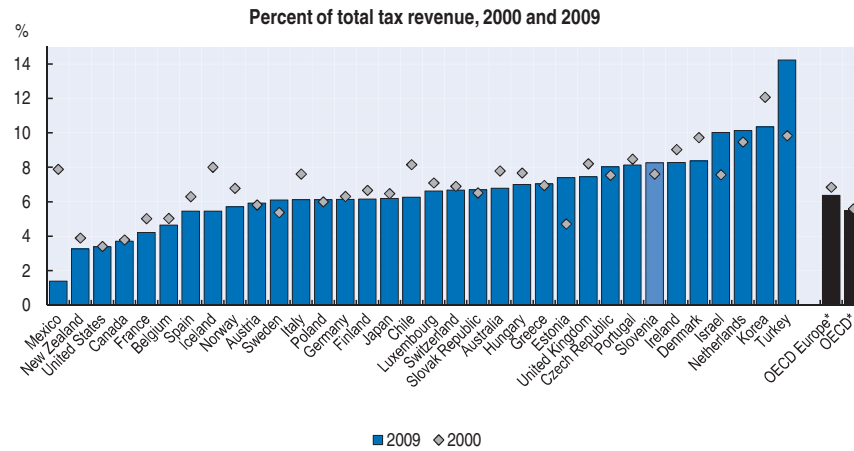
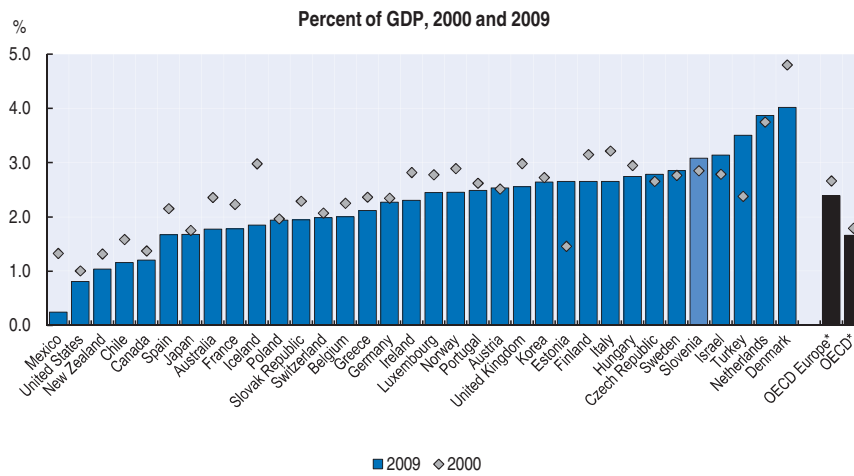
The share of environmentally related taxes in GDP and in total tax revenues was 3.1% and 8.3%, respectively, in 2009, which was high by OECD standards (Figure 1.5). It was higher only in Denmark, Israel, Korea, the Netherlands and Turkey. Over time, the share of environmental taxes in both GDP and total tax revenues declined in the period 2000-06 but then increased progressively.<sup>3</sup> This trend was driven mainly by hikes in excise duties.

#### **Taxes on energy products**

Taxes on energy products accounted for 92% of Slovenia's environmentally related tax revenue in 2010, significantly above the OECD average of 71% (Figure 1.5). Transport fuel taxation accounted for more than three-quarters of energy-related tax revenues.

In contrast to many other European countries, excise duties on energy products have remained close to minimum levels during periods of economic growth (Table 1.2). This is not uncommon in the new EU member states, which were granted temporary exemptions or considerably reduced rates from the minimum excise duty for energy taxes and use this instrument to buffer the inflationary effect of oil price increases. Despite such relatively low duties being levied on transport fuels until the end of 2008, the related tax revenues increased. This was mainly due to strong growth in fuel consumption, partly associated with higher international transit freight transport but also with daily passenger car commuting in the absence of developed public transport. Excise duties increased substantially in 2009, in line with the situation in many other OECD countries, with the aim of securing fiscal revenues during a period of lower global oil prices. Excise duties on petrol

Figure 1.5. **Environmentally related tax revenues**



\* Data refer to weighted averages.  
 Source: OECD/EEA (2011), *OECD/EEA Database on instruments used for environmental policy and natural resources management*; OECD (2010), *OECD Economic Outlook No.88*.


Table 1.2. **Excise duties on energy products and electricity,<sup>a</sup> December 2010**

Energy product	Slovenia	EU minimum	% difference	Emission factor <sup>b</sup> (t CO <sub>2</sub> /TJ)
<b>Transport fuel</b>				
Unleaded petrol, EUR/litre	0.478	0.359	33	69
Gas oil, EUR/litre	0.420	0.330	27	74
Kerosene, EUR/litre	0.330	0.330	–	72
LPG, EUR/kg	0.125	0.125	–	63
Natural gas, EUR/GJ	1.228	2.600	–53	56
<b>Heating fuel</b>				
Gas oil, EUR/litre	0.071	0.021	236	74
Kerosene, EUR/litre	0.021	–	..	72
Heavy fuel oil, EUR/litre	0.015	0.015	–	77
LPG, EUR/kg	–	–	–	63
Natural gas, EUR/GJ	1.228	0.150	719	56
Coal and coke, EUR/GJ	0.290	0.150	93	95
<b>Electricity</b>				
Business use, EUR/MWh	3.050	0.500	510	..
Non-business use, EUR/MWh	3.050	1.000	205	..

a) As defined in the EU Council Directive 2003/96/EC.

b) Emission factor in accordance with the Commission Decision 2007/589/EC.

Source: MESP.

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and diesel jumped to 30% and 43% above the minimum level in that year, increasing the associated revenues by about 20%. In 2010, excise duties remained at around their 2009 levels (EUR 0.43 per litre of diesel and EUR 0.49 per litre of petrol), with a slight (1%) increase in associated revenues, but they decreased again in 2011 (to EUR 0.36 per litre of diesel and EUR 0.44 per litre of petrol). In August 2010, Slovenia also increased the electricity tax for household and commercial use, mainly to raise revenues. Even with this increase, the rate is still lower than in some other OECD countries. Overall, the 2009-10 increases led to higher implicit taxation of energy consumption, from EUR 121.7 per tonne of oil equivalent (toe) in 2008 (slightly below the EU average) to about EUR 163.2/toe in 2009.

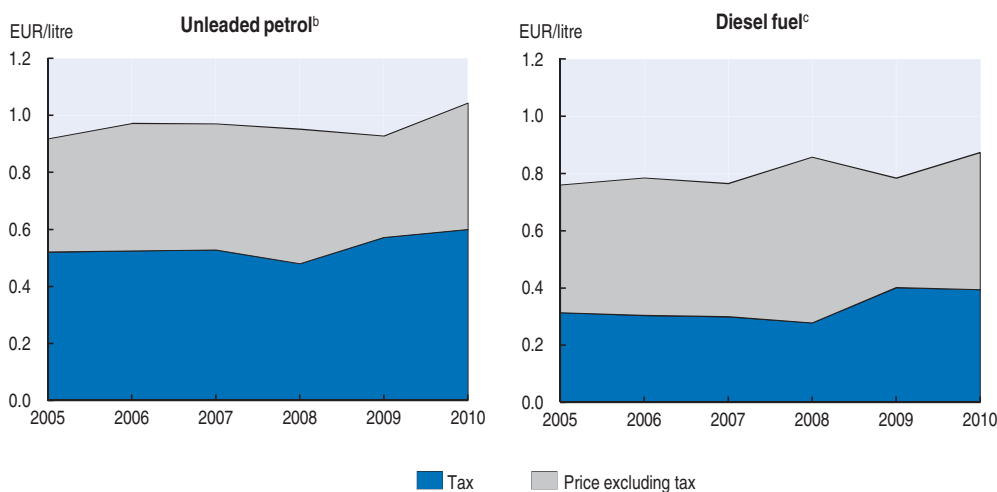
Tax rates have varied substantially with respect to the different purposes of energy use, but in general they have not been aligned with environmental impacts. Excise taxation rates for diesel fuel, including for commercial uses, were 60% of those for petrol in the period 2009-10, increasing to only 68% as part of excise duty hikes (Figure 1.6).<sup>4</sup> There is no environmental justification for a lower tax on diesel. Diesel consumption in transport generally has a greater environmental impact than consumption of unleaded petrol due to higher NO<sub>x</sub> and PM emissions per kilometre driven. Tax rates are still very low on heavy fuel oil and gas used for heating. Coal and coke products are taxed at about one-quarter the rate of gas used for heating, although they contribute more GHG emissions per unit of energy.

### Vehicle taxation

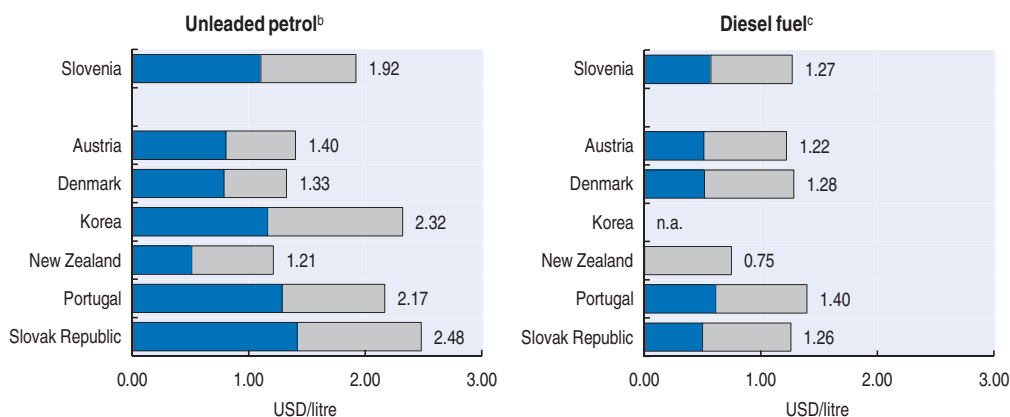
Motor vehicle- and (non-fuel) transport-related taxes are relatively low in Slovenia. They account for 0.85% of total tax revenues, below the OECD average (0.93%). While the revenues from motor vehicle- and transport-related taxes progressively increased from 3.4% to 7.5% of environmentally related taxes in the period 2000-07, their share declined

Figure 1.6. Road fuel prices and taxes

Trends in Slovenia,<sup>a</sup> 2005-10



State,<sup>d</sup> 2010




a) At constant 2005 prices.

b) Unleaded premium (RON 95).

c) Automotive diesel for commercial uses.

d) Unleaded petrol: at current prices and purchasing power parities. Diesel fuel: at current prices and exchange rates.

Source: OECD-IEA (2011), *Energy Prices and Taxes*, 3rd quarter 2011.

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sharply to 3.7% in 2010. This accounted for a much lower share than the 27% OECD average. About half of revenues from these taxes come from registration fees on vehicles paid by individuals, and slightly less from revenues from taxes on sales of new motor vehicles.

An annual vehicle circulation tax has long been differentiated across categories of vehicles based on engine size for passenger vehicles and motorcycles, and on maximum permissible weight for vehicles. In addition, since July 2008 an annual vignette has been required for all vehicles up to 3.5 tonnes that use Slovenian motorways and expressways. Heavier vehicles must use existing tollgates.

Substantial changes to the vehicle registration taxes were made in March 2010. Amendments of the Motor Vehicle Tax Act linked registration tax of motor vehicles to CO<sub>2</sub> and Euro emission standards and reduced the number of exemptions (Box 1.4). However, this tax is still not levied on commercial transport vehicles while a generous refund of excise duty guarantees minimum EU tax rates for commercial diesel.

**Box 1.4. Incentives to reduce environmental impacts of car ownership**

The motor vehicle tax (MVT) is a one-off payment, which is required at the time of registration of a new passenger vehicle in addition to the annual circulation tax. The sale of motor vehicles has been subject to the value added tax since 1999. The use of motorways by motor vehicles requires the purchase of a vignette.

In the period 2000-09, MVT rates were determined on a progressive scale at 1%-13%, differentiated according to the purchase price and fixed at 5% of the purchase price in the case of used vehicles. Until the end of 2009, vehicles emitting less than 110 grams of CO<sub>2</sub> per kilometre were exempted from the registration tax.

In March 2010, the system of one-off vehicle registration taxation was modernised, taking account of environmental criteria. The MVT is now differentiated on the basis of CO<sub>2</sub> and Euro emission standards, with a slightly wider range for diesel vehicles (1%-31%) than for petrol, hybrid and electric ones (0.5%-28%). PM emissions are also taken into account in taxing diesel vehicles. The amendments to corporate and personal income taxation included the possibility to deduct from corporate and personal income taxes the amounts invested in hybrid or electric cars, buses and trucks that meet the EURO V and EURO VI emission requirements, as well as in buses that meet the EURO IV requirements.

The changes in taxation also extended regulation to motorcycles and mopeds, prevented double taxation by eliminating taxation of used vehicles, and made possible a rebate when the vehicle is exported.

**Other environmentally related taxes, charges and fees**

Slovenia has used environmental taxes and charges in sectors other than energy and transport. They include: taxes on water abstraction and wastewater discharges (Chapter 2) and on CO<sub>2</sub> and F-gas emissions (Chapter 4); an energy efficiency tax (Chapter 4); and a tax on waste landfilling and a number of taxes and charges on various waste streams, such as waste electronic and electrical equipment, end-of-life vehicles, end-of-life tyres, waste packaging and lubricating oils (Chapter 5).

The revenues from such taxes and charges accounted for only a small share of total revenues from environmentally related taxes during the review period, fluctuating between 5% and 10%. Revenues from the taxes on wastewater and on CO<sub>2</sub> emissions contributed the largest share to environmental taxation, accounting for about EUR 35 and EUR 30 million, respectively, in 2010, while the landfill tax generated EUR 7 million in that year. More significant revenues have been generated by the water abstraction charge (around EUR 22 million in 2010) and payments for water rights (around EUR 10 million in 2010). Revenues from waste- and emission-related charges (e.g. on F-gas emissions, end-of-life vehicles and end-of life tyres, lubricating oils and liquids, electric and electronic equipment, packaging waste) have been very small, not exceeding EUR 0.5 million per year for each stream.

Most of these taxes and charges are earmarked and contribute to financing the implementation measures identified in the National Environmental Action Programme (NEAP). For example, most funds collected from taxing water effluents and water abstraction have been used for the rehabilitation of water resources and mitigation of environmental pollution. The landfill tax has been an important source of funds to meet the objectives of safe waste disposal regulations; the revenues from taxes on the use of lubricating oils have been used for rehabilitation or clean-up projects, particularly in the case of tar pits; and revenues from taxes on end-of-life vehicles have been used to initiate a public service for dismantling such vehicles. Taxes on packaging waste, electrical and electronic equipment or F-gases have mainly been applied for statistical purposes to track the sources of pollution and calculate quantities.

### **Assessment**

The overall tax burden in Slovenia has been relatively high by international standards and the potential for a tax increase seems limited. Similarly, the high share of environmentally related taxes in total tax revenues, and the recent sharp increases in excise duties on motor fuels and the tax on electricity, may create political obstacles for further increases. There is, however, scope for adjusting taxes to take better account of environmental impacts, for example in relation to low taxes on heavy fuel oil and gas used for heating, coal and coke products. Similarly, reimbursements of excise duties (up to their minimum EU levels) paid on diesel for commercial purposes should be removed. An attempt made in 2010 to replace a portion of the excise duty on motor fuels by a CO<sub>2</sub> tax (with no reimbursements for commercial diesel foreseen with respect to this tax) was a step in the right direction. Efforts to introduce such a change should continue.

Slovenia should consider shifting the composition of environmentally related taxes further towards taxes on vehicle use in order to approach the OECD average of 22%. The increase in taxation on road transport could be reinforced by introducing other economic instruments related to the use of vehicles, such as congestion charges.

There is also scope for strengthening the incentive effects of environmental taxes in the areas of waste and water management. For example, increasing the landfill tax and simplifying the way it is calculated could provide a better incentive to divert waste from landfills. Taxes and charges associated with different waste streams could be increased to better reflect their environmental externalities.

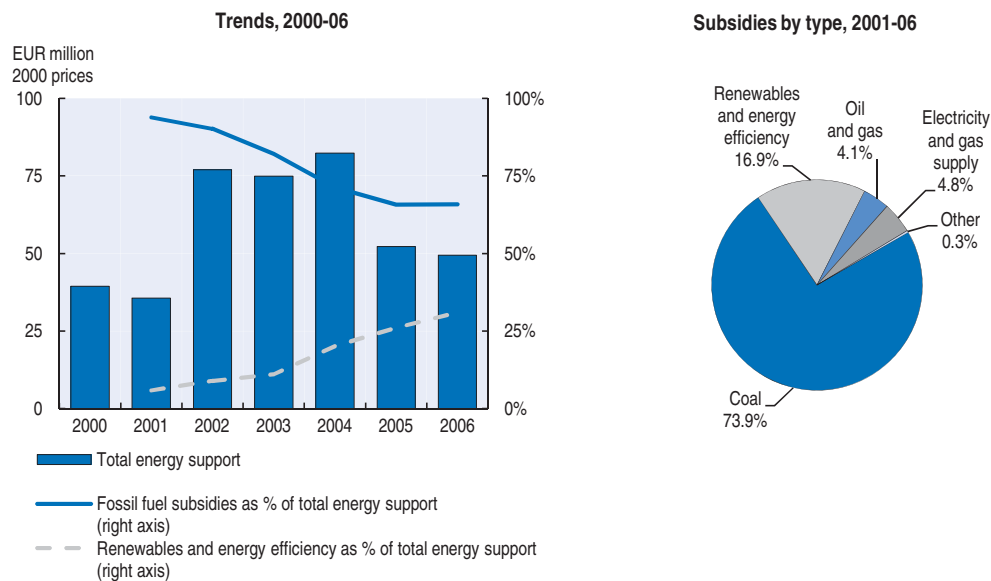
In view of the large number of environmental taxes, their environmental effectiveness and economic efficiency should be assessed, distinguishing those that serve a statistical or a revenue raising purpose from those intended to provide incentives to reduce pollution. This could pave the way for a comprehensive green tax reform, which would contribute to fiscal consolidation while more effectively addressing environmental externalities.

### **3.3. Environment-related subsidies**


After remaining unchanged for several years at 1.6% of GDP, the share of general government subsidies increased to 1.9% of GDP in 2009. This increase may have been the result of a decline in GDP, with the subsidies remaining constant or increasing. According to the most recent internationally comparable data (for 2008), subsidies were much higher in Slovenia than the EU average (1.1% of GDP).

A more detailed analysis of subsidies is lacking. For example, the most recent data available on subsidies in Slovenia's energy sector were compiled in 2006. They suggest that subsidies exceeded EUR 400 million in the period 2000-06 (Figure 1.7). This analysis showed that in 2006 on-budget subsidies accounted for one-third and off-budget subsidies for the remainder of energy sector support,<sup>5</sup> and that the bulk of off-budget support (93%) was allocated to electricity production, especially to brown coal-powered thermal units. Tax exemptions and subsidised interest rates accounted for the rest, which included exempting all sectors from payment of the excise duty for electricity until 2007 (afterwards set at the EU minimum level).

Figure 1.7. **Energy sector support**



Source: MoF; MESP.

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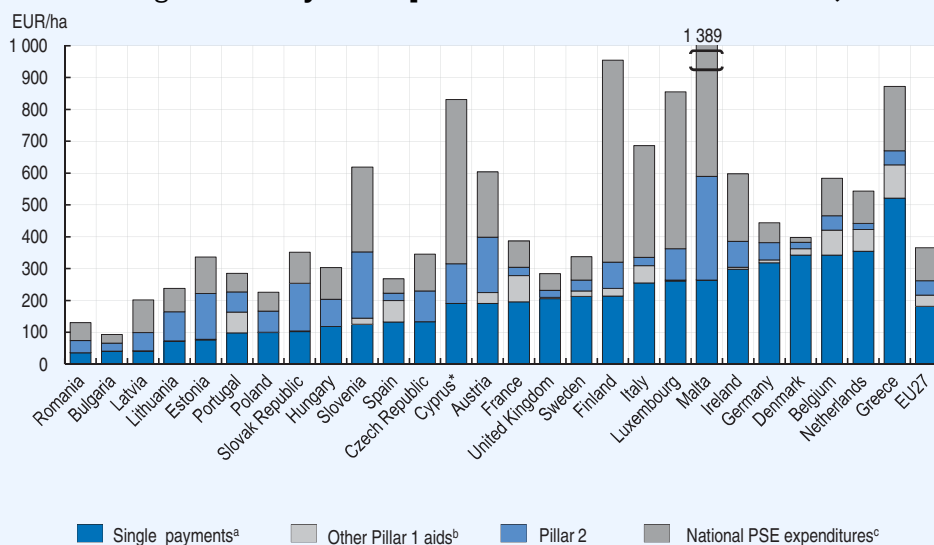
Information about the positive and negative environmental impacts of subsidies is patchy. Agriculture is one area where some information is available (Box 1.5). Little analysis is available on the environmental impacts of subsidies in Slovenia's energy or transport sectors, even in the case of the introduction of large subsidisation or tax exemption schemes. For example, a scheme to reimburse the difference between the excise duties paid on fuel for commercial purposes and the minimum EU level of excise duties was introduced in 2009, with the aim of compensating commercial freight haulers for increased costs incurred due to new tolls and inducing them to refuel in Slovenia. These refunds, amounting to about EUR 26 million in 2009, stimulated both internal transport and greater transit traffic through Slovenia. The scheme's environmental impacts have not been assessed. Neither have there been assessments of the environmental impacts of some other schemes, such as a 50% refund of the excise duty paid for fuel used in agriculture and forestry.

### Box 1.5. Slovenian agriculture and the EU Common Agricultural Policy

Following Slovenia's accession to the EU in 2004, the agricultural sector adapted to the requirements and measures of the EU Common Agricultural Policy (CAP). Slovenia has been part of the Single Payment Scheme (SPS), which is also used in the EU15 and in Malta. Slovenia opted for the regional scheme, a uniform payment per hectare within a region which, in Slovenia's case, covers the whole country.

The overall level of support to agriculture in Slovenia can be assessed using percentage producer support equivalent (% PSE) only for the EU, where the CAP applies. This support fell from 30% in 2005 to 24% in 2009. The decrease was mostly due to a reduction of market price support, which is potentially the most production- and trade-distorting measure and one that contributes to environmental pressures. Slovenia's level of SPS is low compared to that in the "old" EU member states, but it is one of the highest among the new members (Figure 1.8). However, full granting of all EU direct payments is linked to adherence to environmental standards ("cross-compliance") as well as to standards for food safety, animal and plant health, and animal welfare.

Figure 1.8. Payments per hectare in EU member states, 2009



a) Single Payment Scheme and Single Area Payments Scheme.

b) Including market measures, commodity-specific payments and funds from modulation not applying to the first EUR 5 000 per farm.

c) National payments to producers including Complementary National Direct Payments (CNDPs) and national co-financing of RDP measures.

\* Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC).

Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: OECD (2011), *Evaluation of Agricultural Policy Reforms in the European Union*.

StatLink <http://dx.doi.org/10.1787/888932595339>

EU co-financing instruments have facilitated the introduction of a more comprehensive agri-environmental policy package. Slovenia has chosen to devote half its Rural Development Programme to improving the environment and countryside (part of Pillar 2 of the CAP), a large share compared with other EU countries (Figure 1.8). This programme, which involves EUR 600 million during the period 2007-13, includes agri-environmental and animal welfare payments, payments to farmers in areas with "handicaps", payments for afforestation, payments for protecting biodiversity in specific sites, and support to non-productive investments.



### Box 1.5. Slovenian agriculture and the EU Common Agricultural Policy (cont.)

Since 2005 the government has provided income tax exemptions for environmentally friendly agricultural programmes. This policy has resulted in an increase in the share of agricultural land with at least one agri-environmental measure in place (from 0.6% in 1999 to 50.2% in 2008). This share increased along with the number of measures in place. The largest increase concerned areas with measures (e.g. integrated production, greening of arable land, crop rotation) aimed at reducing negative impacts on soil and water quality and increasing the area under organic farming. The increase in the area with measures in place to preserve the landscape, habitats and biodiversity was rather modest, although this area still represents the largest share of the overall area subject to agri-environmental measures (50% in 2008).

Several environmentally motivated subsidies have been introduced in Slovenia, such as corporate and income tax breaks for both households and businesses that invest in energy efficiency and environmental effectiveness. They amounted to EUR 110 million in 2009. Again, the economic, social and environmental costs of such schemes have not been systematically assessed. The establishment of an inter-ministerial working group in 2010 to study existing subsidies (including their environmental impacts) and the development of a register of subsidies are steps in the right direction. However, more rapid progress is required, especially in the context of the needed fiscal consolidation. A better assessment of environmentally harmful subsidies should increase the positive impacts of the proposed comprehensive green tax reform.

## 4. Promoting environmental technologies, goods and services

### 4.1. Eco-innovation

#### *Innovation policy and institutional setting*

The 2007-13 Programme of Measures for Promoting Entrepreneurship and Competitiveness, prepared by the Ministry of Economy, aligned Slovenia's innovation policy with the EU's renewed Lisbon Strategy and the 2007-13 EU Competitiveness and Innovation Framework Programme. The 2006-10 National Research and Development Programme (NRDP) has been the other key innovation policy document. Noting that the economy was too dependent on low-technology activities, these documents proposed strengthening efforts to build a "knowledge society", with competitive business and a strong partnership between research institutions and the private sector.

Overall R&D expenditure in Slovenia increased from 1.4% to 1.9% in the period 2000-08. It was below the OECD average of 2.3%, but similar to or higher than the percentage in countries with similar or even higher levels of GDP per capita (e.g. the Czech Republic, Greece, Italy, Luxembourg, New Zealand, Norway, Portugal and Spain) and significantly higher than in Central and Eastern European countries. Although Slovenia has been performing well on the innovation input side (R&D expenditure as a percentage of GDP, number of researchers per million inhabitants, number of scientific papers), weak innovation output indicators (movements in innovative activities, proxies by the number of innovations, high-growth firms and high-technology exports) show important weaknesses in the innovation system. A few large firms are responsible for the bulk of business R&D spending, while the public sector employs a high share of researchers. Poor innovation outcomes have been linked to three major constraints: barriers to firm creation and firm expansion; lack of entrepreneurial dynamism; and a complex and opaque National Innovation System, which lacks policy co-ordination and suffers from combined policy planning and policy implementation deficits.

Aware of the innovation system's deficiencies, Slovenia has made several attempts to shift the emphasis of innovation policy measures away from freely funded public R&D (supply-driven innovation efforts) to targeted, business-inspired innovation activity (demand-driven R&D activity). New initiatives to enhance the efficiency of the national innovation system have included changes in the funding mechanism of public R&D to reduce the spending autonomy of Slovenia's powerful research institutions, as well as improved screening and evaluation procedures for research and innovation projects. These efforts are supported by a new Council of Science, Technology and Innovation, created in 2011.<sup>6</sup>

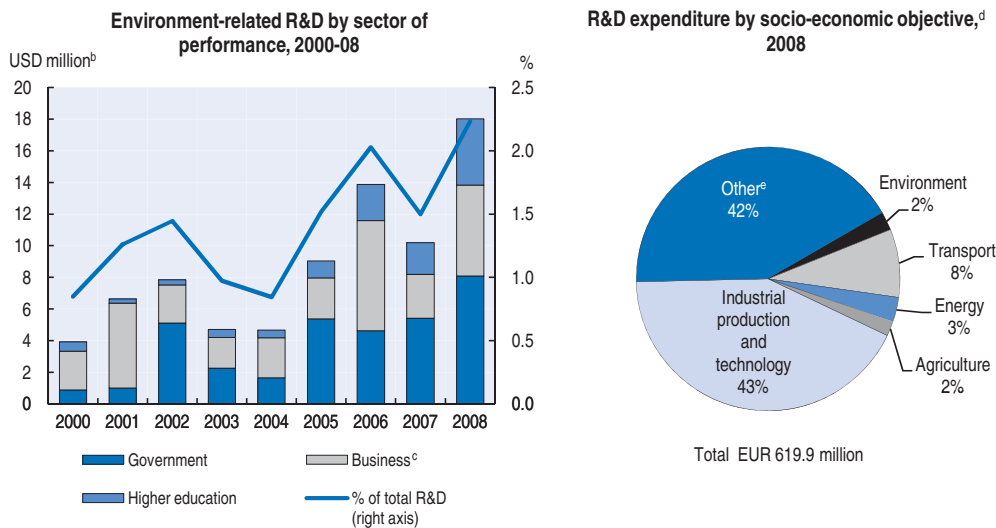
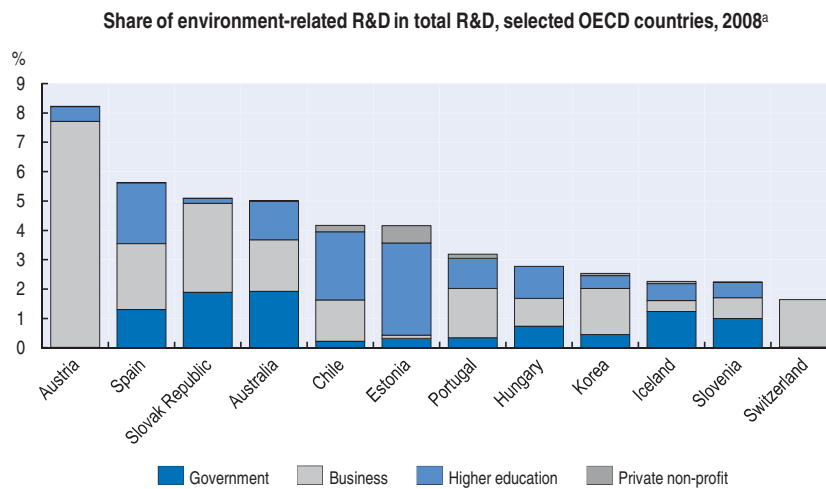
Environment-related innovation and entrepreneurship was not explicitly addressed in any of the four pillars of the 2007-13 Programme.<sup>7</sup> Some environment-related horizontal projects were implemented under the NRDP, linked mostly to the energy sector. For example, 10 of 13 topics under the NRDP, co-financed with around EUR 23 million from the EU European Regional Development Fund, concerned the development of renewable energy technologies and the energy efficiency of housing. Since the mid-2000s, horizontal public tenders have included environment-related criteria. An example is a public tender for support of the R&D activities of SMEs (EUR 21.3 million) published by the Ministry of Higher Education, Science and Technology (MHEST), in which 12.5% of the project evaluation was based on environmental technology and ecology-related criteria.

More recently, the largest and most concentrated public investment in R&D in Slovenia, with EUR 350 million available for 2010-14, was in the development of Centres of Excellence (CoE) that concentrate knowledge in priority technological areas and in Centres of Competence (CoC) managed by partners from the industrial sector that aim to deliver market-oriented results. Two CoEs focus on sustainable energy: the CoE for Low-Carbon Technologies has included work on the use of lithium and hydrogen technologies for stationary and mobile applications, while the CoE for Polymer Materials and Technologies has worked on developing materials for advanced applications in energy and renewable resources. Out of seven Centres of Competence, one focused on efficient energy use (the Competence Centre for Advanced Systems for Efficient Use of Electrical Energy, with a budget of EUR 6.4 million) and one on environmentally sustainable buildings (the Competence Centre for Sustainable and Innovative Construction, with a similar budget). Financial support for 17 Centres reached EUR 426 million in 2011.


Driven by cost-efficiency and market gaining motives, green entrepreneurship is emerging in large established firms as well as new SMEs. It is spreading beyond an initial focus on renewable energy and waste management to such areas as systemic environmental solutions in aviation, water and energy-efficient domestic appliances and components, sustainable housing and insulation, intelligent lighting systems, and resource-efficient mechanical equipment for timber processing.

### ***Environment-related R&D***

Gross expenditure on R&D for environmental purposes more than tripled in real terms in the period 2000-08. Its share of total R&D increased by almost as much, from 0.8% to 2.2%. Nevertheless, these shares are smaller than those in many other OECD countries (Figure 1.9).

Figure 1.9. **Gross domestic expenditure on environment-related R&D**

- a) Or latest available year.  
 b) At constant 2000 prices and PPPs.  
 c) Break in time series in 2008.  
 d) According to the NABS 2007 classification.  
 e) Including general advancement of knowledge (23%) and health (14%).  
 Source: OECD (2011), *OECD Science, Technology and R&D Statistics Database*.

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Environment-related R&D has been funded for the most part by the government, particularly in the case of research carried out by academic institutions or governmental bodies. The government's R&D budget for the environment was 4.1% of the total government R&D budget in 2009, well above the OECD average of 1.7%.<sup>8</sup> In absolute terms, however, Slovenia accounts for a relatively small share (0.1%) of total OECD budget appropriations for energy and environment-related R&D. Business R&D expenditures have been financed almost entirely by their own sources (around 90%), while attracting little funding from abroad (around 4%) compared with the situation in some other OECD countries (e.g. 13% in the Slovak Republic).

### **Patents in environmental technologies**

Slovenia's overall innovation performance, measured in terms of the number and growth of total patent applications, is weak compared to that in other OECD countries. This is the case in most areas of environment-related innovation, except for total patent applications in the fields of energy efficiency and electric and hybrid vehicles, where Slovenia performs at the OECD average (Figure 1.10). Patents in pollution abatement and waste management technologies are low compared to other OECD countries and their number is declining. However, patents are not a perfect indicator of innovation. There is some anecdotal evidence that some Slovenian firms have preferred not to patent their inventions for fear they would be appropriated and further developed by larger firms.

### **Assessment**

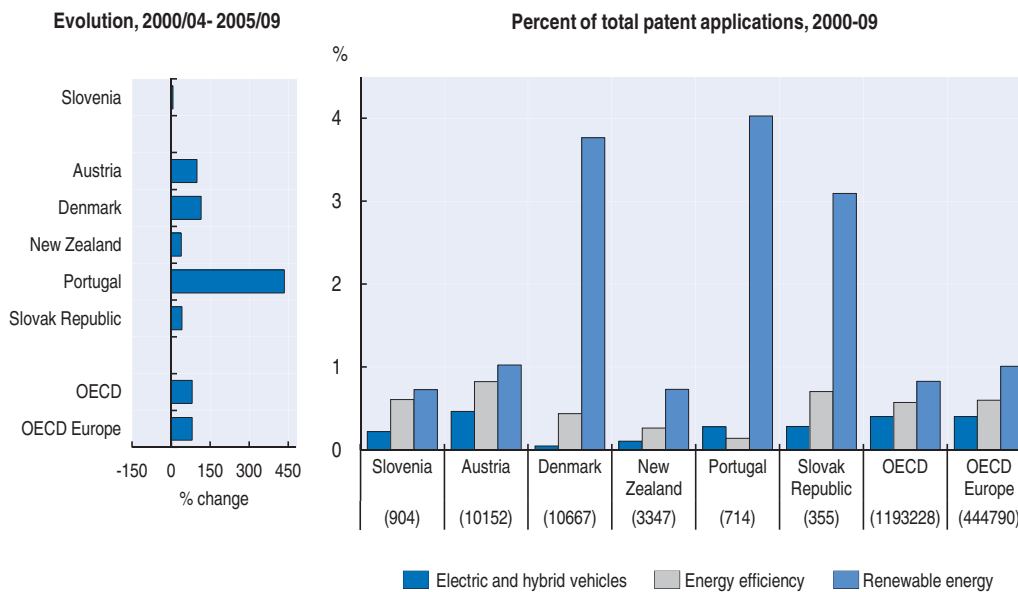
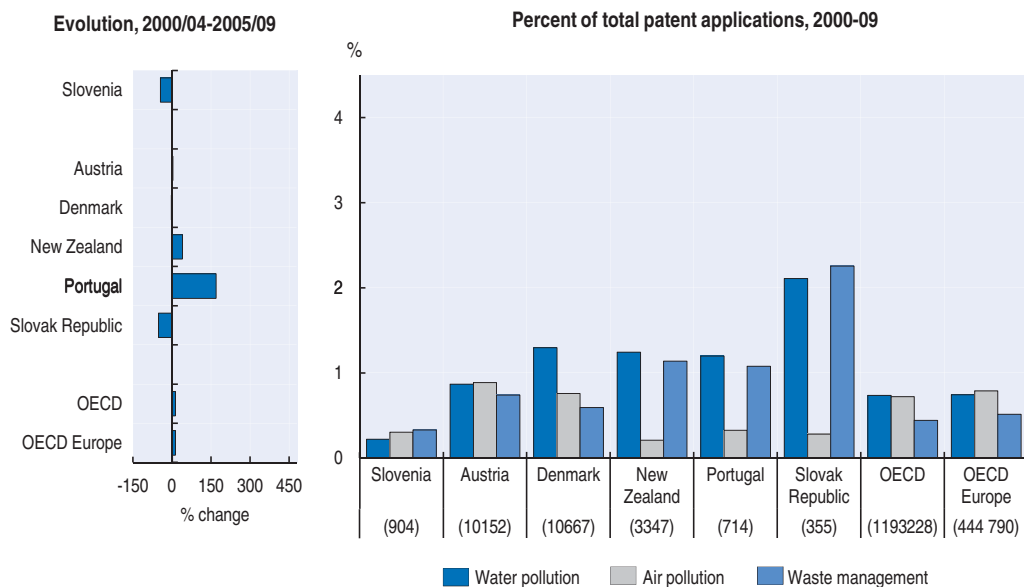
Slovenia has created a strong foundation for fundamental R&D through the participation of academic institutions, including in the field of environment-related sciences. This is necessary since funding of basic research by the government minimises the risk involved in picking winners and locking in inappropriate technologies. However, Slovenia's current approach to innovation, evolving through stages of basic research, elaborated research, applied research to development and final commercialisation of products, should shift towards stimulating much closer interaction between public and private partners at every stage, from invention through to diffusion.

Taking account of increasing global demand for environmental technologies and services to respond to rising material and energy prices, growing public awareness and the introduction of more stringent environmental standards, government and industry leaders should consider the "clean tech" sector to be an important growth engine. Slovenia's Research and Innovation Strategy for 2011-20, adopted in 2011, included stronger provisions for promoting eco-innovation. The recent OECD report *Fostering Innovation for Green Growth* discusses some of the best practices and challenges in this regard. Much of the advice in this report would be helpful to Slovenia. In particular, Slovenia needs to improve its overall capacity for innovation in order to boost its productivity and competitiveness. This should include promoting more R&D in the private sector, possibly through the provision of appropriate incentives.

Since domestic firms are generally small, mechanisms to disseminate information about markets and stimulate awareness of business opportunities, particularly in Europe, should be promoted. Government R&D should be focused in areas where Slovenia appears to have the best comparative advantage. Large, long-term public procurement projects would help create demand for innovative, environmentally friendly products, as would implementation of an ambitious environmental agenda. Further efforts to stimulate dialogue and co-operation among the main players in the innovation system, including the financial sector and actors outside Slovenia, should be encouraged. All these efforts should also be supported by putting a price on pollution and environmentally harmful subsidies (through environmentally related taxes or emission trading systems), which should stimulate demand for eco-innovation.

### **4.2. Corporate environmental responsibility and trade**

A commitment to corporate environmental responsibility by Slovenian companies has been expanding over the last 20 years. Large companies in the manufacturing, telecoms and energy sectors develop corporate environmental strategies and provide regular sustainability reports. The introduction of voluntary environmental standards has been growing, with

Figure 1.10. **Patents in selected technologies**<sup>a, b</sup>**Patents in selected climate change- and energy-related technologies****Patents in general environmental management technologies**

a) Patent counts are based on the priority data and the inventor's country of residence, and use fractional counts of filings under the Patent Co-operation Treaty (PCT) at the international phase (European Patent Office designations).

b) Data in brackets indicate the total number of PCT patent applications filed in 2000-09.

Source: OECD (2011), *OECD Patent Statistics Database*.

StatLink  <http://dx.doi.org/10.1787/888932595377>

more than 700 Slovenian companies certified for ISO 14001 (environmental management) as of 2010. However, the results of a 2010 survey of 153 Slovenian manufacturing companies show that the majority of companies seem to be environmentally responsible primarily because of the personal commitment of their top management, and that public concern and regulations play a limited role in developing companies' environmental strategies. The results of the study also confirm a general trend for large companies to develop and implement environmental strategies to a much greater extent than SMEs.

Environmental bodies (the MESP and the State Environmental Inspectorate) have been co-operating with the Chamber of Commerce and Industry, the Chamber of Crafts (representing SMEs) and industry branch associations to facilitate compliance with environmental requirements, mainly through clarifying requirements under new environmental legislation. The efficiency of these efforts should be strengthened through the provision of compliance guidance to the regulated community and through offering regulatory incentives to operators that have reliably demonstrated good environmental behaviour (*e.g.* by adopting an environmental management system or having a good compliance record). These efforts should also be associated with greater use of economic instruments, including environmental taxes, which would provide stronger incentives to internalise the costs of pollution.

In the transitional period, financial support can be provided (especially to SMEs) for environmental improvements. There are already several examples of such opportunities, including funding available from the Slovenian Environmental Fund. An important contribution has recently been made by the Slovenian Export and Development Bank (SID Bank), whose mission is to develop and provide long-term financial services designed to supplement financial markets for sustainable development in Slovenia.<sup>9</sup> In 2010 the SID Bank provided loans worth EUR 160 million to support environment-related projects. More recently, it started a Promotional and Development Platform, in co-operation with government ministries, to support access to finance with favourable conditions for projects to support the transition to an environmentally friendly, knowledge-based society. This mechanism is expected to evolve from providing grants to non-grant support for enterprises (*e.g.* loans, guarantees, seed capital) with promotional elements (*e.g.* lower interest rates, longer terms), and deeper involvement of the bank in raising new capital in international markets.

Internal financing is complemented by support to environmental projects promoting Slovenian know-how abroad under bilateral ODA. This includes the Centre for International Co-operation and Development (CMSR), which operates within the SID Bank Group. In line with Slovenian development co-operation priorities, the CMSR pays special attention to projects in the field of energy and environmental protection in the Western Balkans. In the period 2007-10, the CMSR provided EUR 6.7 million, which included EUR 2.5 million in grants to ten projects in the field of environmental protection. In 2009, international support was provided for electric and electronic waste management in Bosnia and Herzegovina, The Former Yugoslav Republic of Macedonia, and Serbia; air quality measurement in Kosovo; and wastewater treatment in The Former Yugoslav Republic of Macedonia.

Increasing demand for environmental products and technologies should also stimulate the growth of the environmental goods and services (EGSs) industry. The size and extent of operations of the EGSs industry has not been well researched. Some studies carried out in the late 1990s suggested that this market was still relatively new,

as both regulations and enterprises had only been established after 1990. The total annual turnover of the surveyed enterprises was USD 87 million in 1998. The share of employment in selected “green” industries represented about 1.5% of total employment in 2007, a small increase from 1.4% in 2002. In 2004, the Institute of Economic Research, in co-operation with the Chamber of Commerce and Industry, developed a catalogue of EGSs companies that aimed to help companies looking for suppliers of such goods and services to obtain rapid access to the desired information. However, the catalogue is not complete or regularly updated. Progress has been hampered by lack of appropriate methodology, despite research carried out by the Statistical Office of Slovenia in 2005-07 to establish a proper classification that could serve to collect data on the EGSs industry. Due to unsatisfactory coverage by NACE classification, a different classification of environmental domains and lack of quality administrative data, results are expected only in 2012.

### 4.3. Green public procurement

The share of public procurement in national budget expenditures grew from 24% in 2001 to 47% in 2007 (reaching 13% of GDP in that year). Although green procurement was encouraged by the government in several top level strategic documents (*e.g.* the 2005 National Development Strategy, the 2005 National Environmental Action Protection Plan, the 2008 National Energy Efficiency Action Plan), no environmental criteria were introduced in the comprehensive Public Procurement Act of 2000 or its amendments of 2004. The preferred approach continued to be based on a traditional lowest-cost selection criterion.

Harmonisation of Slovenian legislation following EU accession resulted in the adoption of a new Public Procurement Act in 2006 supplemented by the Public Procurement in Water Management, Energy, Transport and Postal Services Area Act, which, for the first time, explicitly referred to environmental criteria in public procurement. It was expected that both Acts would stimulate the inclusion of environmental factors within technical specifications and selection criteria in the tender documents, although they were not made obligatory but were referred to as factors which may be included in tendering procedures. The changes followed the development of a National Action Plan for Green Public Procurement (GPP) adopted in 2009, which set specific targets including the establishment of an operational system of green public procurement, according to which 50% of all public tenders would result in the purchase of greener products and services by 2012.<sup>10</sup> Subsequently, a Decree on Green Public Procurement was adopted at the end of 2011 in line with the EU requirements. The Decree includes mandatory environmental criteria and recommendations for 11 product groups (electricity, food and catering services, copying paper and paper tissue and towels, office IT equipment, audio-video equipment, refrigerators, freezers and their combinations, washing and drying machines, dishwashers, construction, furniture, cleaning products and cleaning and laundry services, road vehicles and transport services, and tyres).

Since the adoption of the Action Plan, the Ministry of Public Administration (MPA) has made several centralised purchases, including low CO<sub>2</sub> emission vehicles, Forest Stewardship Council (FSC) certified and recycled paper, and more energy-efficient IT equipment. In purchasing electricity, the MPA selected the offer of a supplier that would provide 60% from renewable energy sources. According to the Ministry of Finance, 138 tenders with a total value of EUR 70 million took into consideration at least one environmental element in 2008.<sup>11</sup> This represented 3.5% of all tenders. In 2009, the number of such tenders increased to 415, representing 8.9% of all tenders and a value of EUR 246 million.

Experience shows that there are no formal obstacles to the introduction of regular green procurement practices. National legislation (the amended Public Procurement Act) and accompanying legislative documents constitute the legal framework for “green” public procurement. The National Action Plan and the most recent Decree on GPP in 2011 contain detailed requirements, *i.e.* mandatory (core) and recommended (comprehensive) GPP criteria, as well as guidelines for practical implementation. An obstacle to more rapid adoption of GPP is lack of expertise and skills on the part of public procurers. There should be a focus in the next period on training programmes and systematic work with procurers and potential suppliers of environmentally less harmful products. This should be supported by the new Public Procurement Agency, which was established in 2010. One of this agency’s responsibilities is the implementation of green public procurement. In the new 2011-20 Research and Innovation Strategy of Slovenia, GPP is expected to be one of the key elements stimulating eco-innovation. The strategy’s practical success depends on practical application of mandatory green procurement requirements, extension of accompanying activities (especially promotion, qualification and training), and wide dissemination of good practices.

### Notes

1. Seven OECD countries have a higher average density than the capital region.
2. At the end of 2009 only seven municipalities covered an area larger than 300 km<sup>2</sup>.
3. In Slovenia, the share of GDP has fluctuated narrowly around 3%, which is above the OECD average (1.7% of GDP in 2009) and slightly below the share in GDP in Denmark and the Netherlands, which are at the top end.
4. If the use of fuels for commercial purposes is not considered, the tax on diesel was about 90% of that on petrol in 2009-10 and decreased to 80% in 2011.
5. On-budget subsidies are cash transfers or soft loans to industrial producers, consumers and other related bodies. They appear on national balance sheets as government expenditure. Off-budget subsidies are typically transfers to energy producers and consumers that do not appear in national accounts as government expenditure. They may include tax exemptions, credits, deferrals, rebates, and other forms of preferential tax treatment. They may also include market access restrictions, regulatory support mechanisms such as feed-in tariffs, border measures, external costs, preferential planning consent, and access to natural resources.
6. A Competitiveness Council was established in early 2008 to create, improve and streamline collaborative linkages among government agencies, knowledge institutions and the business community. It ceased to exist in mid-2009. The new Council of Science, Technology and Innovation, jointly run by the Ministry of Economy and the Ministry of Higher Education, Science and Technology, aims to make the awarding of public R&D funds more responsive to business needs.
7. The programme’s four pillars are: promotion of entrepreneurship and an entrepreneur-friendly environment; knowledge for business; R&D and innovations in companies; and promotion of SMEs through equity and debt instruments.
8. Excluding energy.
9. The SID Bank was established in 1992 as an export-credit bank, and as an authorised Slovene export credit agency providing non-marketable insurance and an Interest Rate Equalisation Programme on behalf of and for the account of the Republic of Slovenia. At the end of 2006 the company acquired a license as the Bank of Slovenia and was transformed into a specialised bank for promotion of export and development. In the environmental field the SID Bank focuses on environmental protection and waste disposal projects, as well as power supply and renewable energy resources projects. It refinances credits of banks and other financial institutions, co-finances transactions and investments, or finances directly.



10. The Plan also defined the share (in monetary terms) of goods and services to be procured on the basis of green criteria for eight priority groups (construction and buildings, cleaning, office IT, vehicles, electricity supply and use, furniture, paper, and catering). The Action Plan listed 14 implementation measures (e.g. training and educational activities), a green procurement web platform, and dialogue with the commercial sector to develop a green market.
11. Tenders with a value higher than EUR 40 000 for goods or EUR 80 000 for services were taken into account.

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