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Green growth indicators for Slovenia

Ljubljana, October 2014

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FOREWORD

Green growth means fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our prosperity relies. New findings prove that GDP as the only measure of economic progress is not sufficient, as it does not take into account the contribution of natural assets to prosperity. Not taking into regard the level of exploitation of the natural assets and other impacts on the environment can cause irreparable damage. Economic development has to be planned with consideration to the natural assets – by taking into account that their quantities are limited.

In order to efficiently encourage green growth, besides national cooperation also international cooperation is required. Based on the results of the Rio Earth Summit in 1992, OECD developed a clear and focused agenda on sustainable development and internationally comparable green growth indicators, on the basis of which progress shall be monitored.

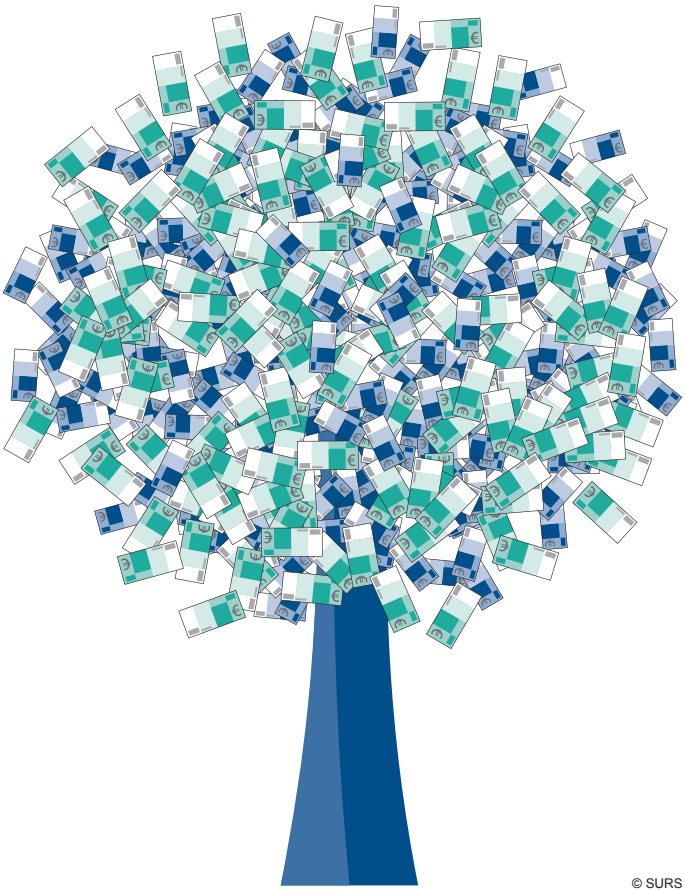
This publication is the first one that reveals the green growth indicators for Slovenia; part of the indicators was selected from the recommended OECD list of indicators and we supplemented them with some other indicators which further describe the actualisation of green growth in Slovenia. Then also other indicators were added, revealing how the national natural resources are exploited (to what extent we are aware of their limitations), how we get along in selected waste collection, whether we reduce the pollution of drinking water to a sufficient extent, and whether sufficient area of agricultural land is earmarked for ecologic production of crops.

The presented green growth indicators make up four themes of indicators: indicators reflecting the environmental and resource productivity, indicators of the natural assets base, indicators describing the environmental quality of life and the indicators of economic opportunities and policy responses in relation to green growth.

The description of individual green growth indicators in Slovenia is supplemented by line charts and infographics.

Green growth indicators are so very new indicators that they have not yet been fully interpreted by the international community. Nevertheless, we believe that they should already be brought to your attention.

Genovefa Ružić
Director-General



»The notion of looking on at life has always been hateful for me. What am I if I am not a participant? In order to be, I must participate.«

Antoine de Saint-Exupery

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Source: http://www.slideshare.net/.../gg-overviewforforum-webfriendly

Source: http://www.oecd.org/env/44077822.pdf

1 WHAT IS GREEN GROWTH?

Green growth

Green growth means encouragement of economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities.

Striving for green growth that shall not jeopardize man's well-being during the development and growth

Aimless and economically irrational handling with the natural assets or natural capital (too large consumption of drinking water, air and water pollution, lavish use of energy, etc.) can cause irreparable damages (climate change, loss of biodiversity, etc.) and create obstacles to economic growth and development, but it can also pose a threat to man's well-being. Therefore a strategy is required that shall determine the guidelines for reaching greener growth and the measures for monitoring the improvement in fulfilling this goal.

The purpose of the green growth strategy

Green growth strategies need to encourage greener behaviour by enterprises and consumers, facilitate smooth and just allocation of jobs, capital and technology towards greener activities, and provide adequate incentives and support to green innovation.

Green growth as part of sustainable development

According to the green growth strategy, the essence is to mutually strengthen the environment and the economic policy. Green growth is thus primarily focused on the economic and the environmental domain and less on the social domain. In this concern it differs from the sustainable development, which concentrates on the environmental, economic and social points of view. Green growth thus is not a replacement for sustainable development, but has to be understood as part of it.

Monitoring progress and measuring the results of green growth

Policies that encourage green growth must be founded on good understanding of various factors that impact green growth. In order to monitor progress and measure the results of green growth, adequate information is required. Such information are green growth indicators, which were prepared on the basis of internationally comparable data. Such data must be part of a conceptual framework on the green growth strategy and selected in line with well-defined criteria. They must give clear messages that shall address the policy-makers and the general public.

Declaration on Green Growth

In June 2006 Ministers from 30 OECD countries and 4 candidate countries signed the OECD Declaration on Green Growth with which they would strengthen the efforts for put into force the Green Growth Strategy, partly as the response to the crisis in which they acknowledged that green and growth can go hand-in-hand.

OECD was authorised to prepare the Green Growth Strategy, so as to unite the various points of view of the economy, environment, technology and development into a unified framework.

The Green Growth Strategy

The Green Growth Strategy strengthens both the economic and environmental policies. In a cost-efficient way it strives to minimize the pressure on the environment and the transition to new patterns of economic growth, i.e. such that will be in synergy with the environment. In this view, innovations are of key importance. The strategy addresses the tools and recommendations for defining the policies for the most efficient transit to green economy.

National green growth strategies must stimulate greener behaviour on the part of enterprises and people, and provide for adequate incentives and support of green innovations. A good economic policy must be the foundation of every national strategy.

WHAT IS GREEN GROWTH?

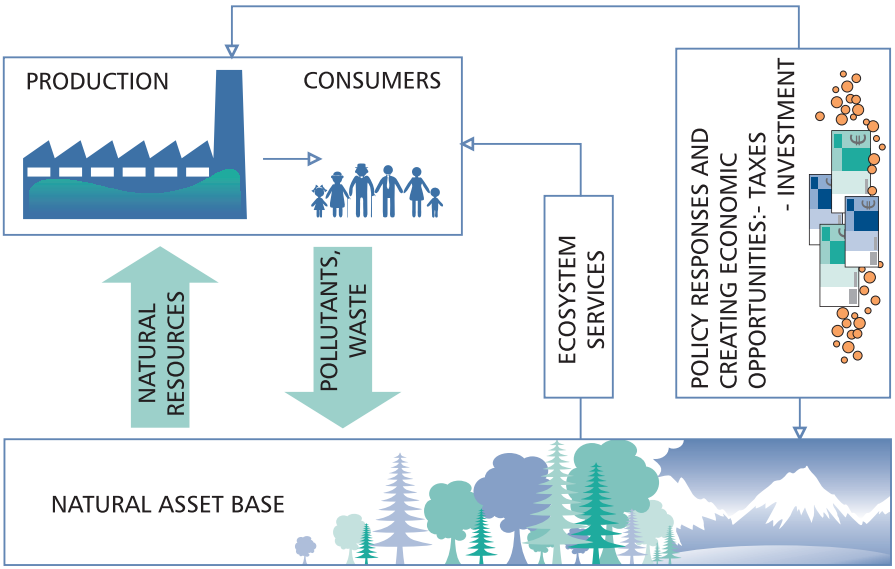
The strategy prepared by OECD was part of the OECD contribution to the »Rio+20« Conference in 2012.

In the Green Growth Strategy, OECD developed a conceptual framework and the indicators for monitoring the progress in achieving green growth.

These indicators are divided into 4 themes – in view of the areas to which the changes relate, and the indicators monitor and describe:

- indicators of environmental and resource productivity
- indicators of the natural asset base
- indicators of environmental quality of life
- indicators of economic opportunities and policy responses.

Scheme 1: Measuring the green growth results

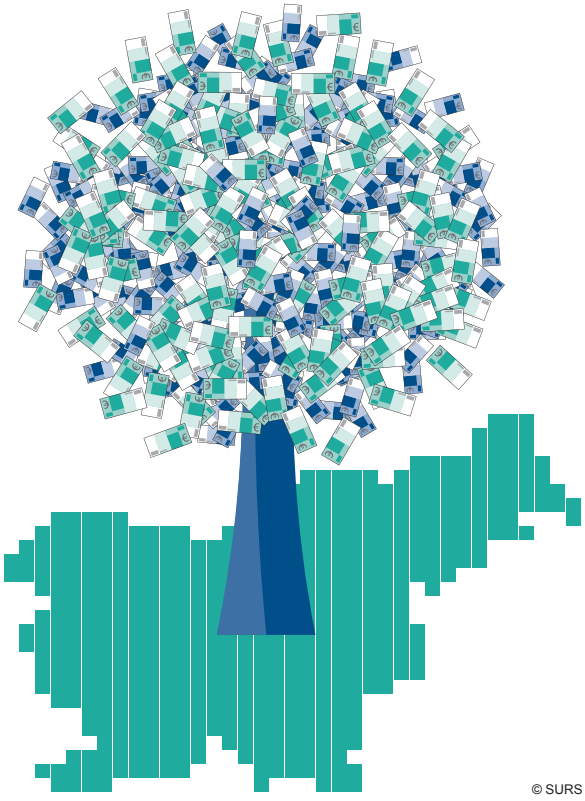


Source: OECD

WHAT IS GREEN GROWTH?

The scheme presenting the measurement of green growth results illustrates the link among the individual groups of indicators. Economic production and growth depend on the environment; on the one hand they obtain from it the natural resources, such as energy, water, natural materials, and on the other hand they leak waste into it, such as waste water, emissions and waste. This is why green growth places its attention to environmental and resource productivity, i.e. the possibilities for improvement and the rationalization of the production processes. Green growth also measures the links between the environmental limitations and the economic growth, as it is important to prevent the ultimate loss of the natural resources of good quality. It is in the interest of long-term economic stability to preserve a healthy balance of the natural resources.

The link between the economy and the environment is reflected in the environmental economic accounts that are part of the regular tasks of the statistical offices. These accounts are further divided into physical accounts (accounts of emissions into the air, material flow accounts, energy accounts) and monetary accounts (environment tax accounts, environmental goods and services sector accounts, environment protection expenditure accounts).



2 GREEN GROWTH INDICATORS FOR SLOVENIA

As part of the Green Growth Strategy, OECD proposed 30 internationally comparable indicators. Among them 14 indicators were selected to be presented in this booklet, namely those that can be calculated from the data that are available at SURS or EUROSTAT. We added also 5 indicators (exploitation of national resources, separate waste collection, drinking water pollution, agricultural area and utilised agricultural area with ecologic production) that are important for our country and illustrate to what extent this strategy is being enforced in Slovenia.

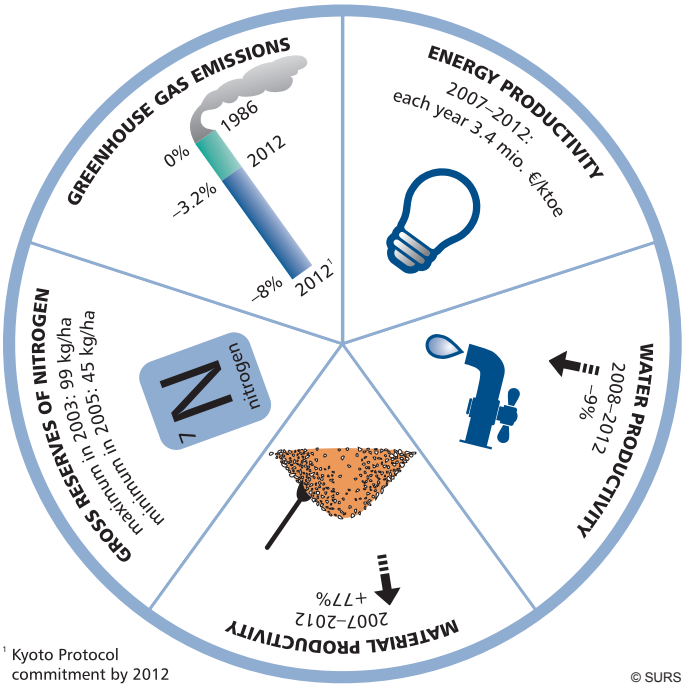
The following page presents the trends of the movements of the green growth indicators for Slovenia:

- increase in value
- stagnation
- decrease in value

GREEN GROWTH INDICATORS FOR SLOVENIA

INDICATOR	Time series	TENDENCY
Emission productivity	1995-2012	
Energy productivity	2000-2013	
Resource productivity: materials	2000-2012	
Resource productivity: water	2002-2012	
Resource productivity: nitrogen stock	1992-2012	
Freshwater resources	1990-2011	
Extraction of domestic resources per inhabitant	2000-2012	
Forest resources	1953-2012	
Share of utilised agricultural area	2000-2013	
Share of aquaculture in total fishing production	1990-2012	
Environmental health and risks: pollution with PM_{10}	2002-2011	
Environmental services and amenities: connection to treatment plants	1998-2011	
Share of separately collected municipal waste	2002-2012	
Share of unsuitable samples due to faecal contamination of drinking water with E.coli	2004-2011	
Share of utilised agricultural area with organic farming	2004-2012	
Share of government budgetary funds for R&D, for the environment & energy	2007-2012	
Share of GNI for official developmental assistance	2004-2012	
Share of environmental taxes of all taxes	2008-2011	
Shares of taxes in the prices of electricity and natural gas for industry	2007-2013	

GREEN GROWTH INDICATORS FOR SLOVENIA



2.1 INDICATORS OF ENVIRONMENTAL AND RESOURCE PRODUCTIVITY

Effective use of all kinds of means and good understanding of the green growth principles

An essential element of green growth is the efficiency in use of environmental means and natural resources and its development in time and place and in various sectors. The understanding of this development and of the elements that impact it is crucial for the development of the green growth policies.

Most of the indicators are based on the link between the environment and the economy, for instance the environmental economic accounts. Therefore the statistical data on such accounts can serve as the basis for the calculation of such indices as these indicate the relation between the environmental issues and the gross domestic product.

Monitoring the progress of green growth

According to green growth principles, progress of the economy can be determined by monitoring the use of environmental services in the production (use of natural resources and raw materials, incl. energy, the formation of pollutants and other residues) and comparing it to the achieved result.

The main topics

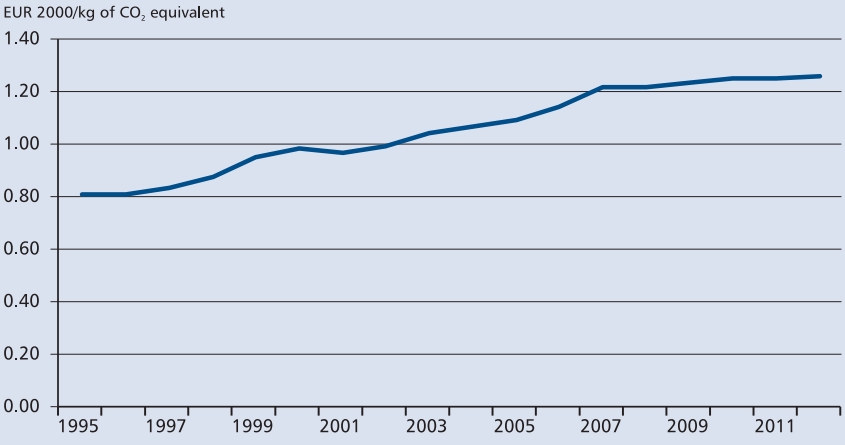
to which this group of green growth indicators relates:

- emission and energy productivity,
- material and water productivity,
- gross nitrogen budget.

2.1.1 Emission productivity

The indicator Emission productivity presents the ratio between the gross domestic product and the emissions of greenhouse gasses with no deductions. It is expressed in EUR, in fixed 2000 prices per kilogram of carbon dioxide equivalent.

Chart 1: Emission productivity, Slovenia



Source: ARSO

Climate change ranks among the important factors that impact the well-being of people and the environment as a whole. They are mainly caused by greenhouse gas emissions. In line with the Kyoto protocol, in the 2008-2012 period they should have decreased by 8% over the base year.

The statistical data reveal that the quantity of greenhouse gas emissions in Slovenia increased until 2008, and then started to gradually diminish. In the 2008-2012 period it was thus 3.2% lower than in the base year. In order to fulfil its commitments from the Kyoto protocol, Slovenia shall put forward the sinks which are the direct result of man's activity in forestry and in handling the land, namely in the amount of 1,320 kilotons of carbon dioxide equivalent (i.e. a 6.5% decrease in view of the quantity of the emissions in the base year). In doing so it shall even surpass the compulsory decrease stated in the Kyoto protocol.

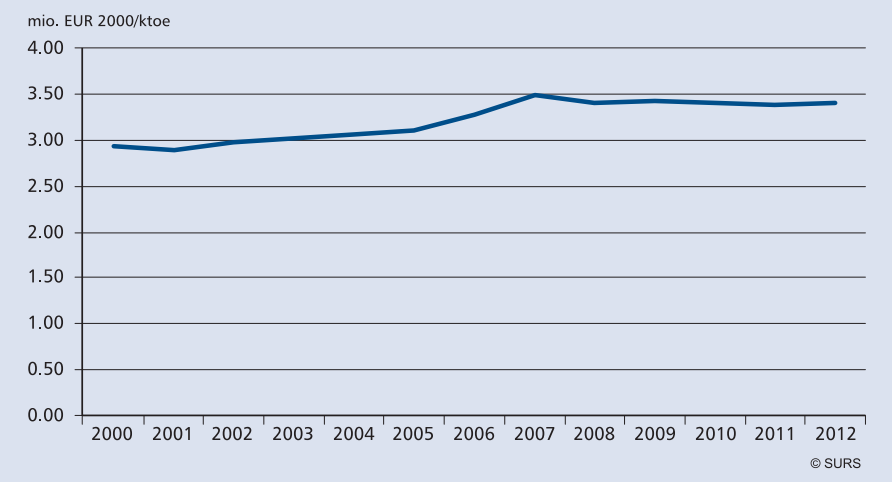
In 2008 the gross domestic product started to decrease and in the 2008-2012 period it decreased by 8.5%.

The value of the indicator emission productivity slowly but firmly increased from 1995 on and in 2012 it reached the value of EUR 1.26 per kilogram of carbon dioxide equivalent. From 1995 it increased by 55%.

2.1.2 Energy productivity

The indictor Energy productivity presents the ratio between the gross domestic product and the energy supply. It is expressed in EUR million, in 2000 fixed prices per 1,000 tons of oil equivalent.

Chart 2: Energy productivity, Slovenia



Source: SURS

The datum on energy supply reveals what amount of energy of all kinds (or respectively energy sources) is used in the country: from solid fuel, petroleum products, natural gas and nuclear energy to renewable sources of energy.

The indicator energy productivity illustrates the amount of economic production (economic productivity) that is facilitated by a certain amount of energy.

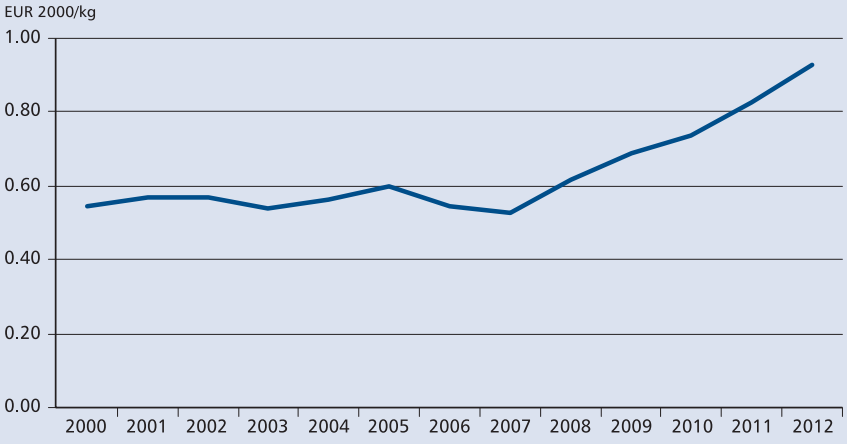
Energy supply and the gross domestic product in Slovenia increased until 2008; in 2009 they both decreased by the same percentage (8% each) over the 2008 data.

In the 2000-2005 period the value of the indicator energy productivity slowly increased (in total it increased by 6%). In 2006 and 2007 it increased a little faster, and in 2007 it was 13% higher than in 2005. After 2007 it was almost constant and its value was at about EUR 3.4 million per kiloton of oil equivalent.

2.1.3 Resource productivity: materials

The indictor of Resource productivity for materials presents the ratio between the gross domestic product and the domestic material consumption. It is expressed in EUR, in 2000 fixed prices per kilogram of material.

Chart 3: Resource productivity for materials, Slovenia



Source: SURS

Domestic material consumption measures the total amount of material directly used in an economy (excluding hidden flows). These materials can be solid, running or gasses and they are extracted from the natural environment and from net imports (net imports are the quantity of the total imports of material minus the quantity of the total exports of material).

Besides the domestic material consumption, the indicator material productivity covers also the gross domestic product, i.e. the value of all finished products and services created in a country in a certain period. Material productivity thus reveals how much material is required to make one unit of the gross domestic product.

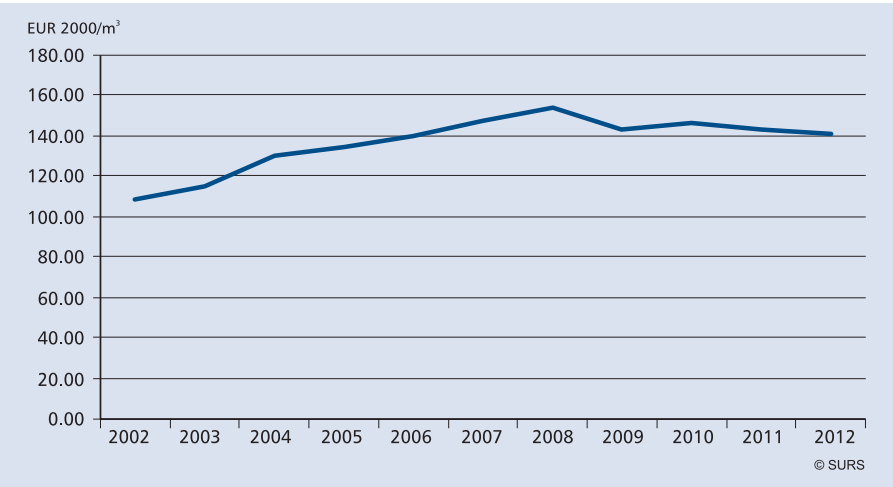
In the 2000-2007 period the value of the indicator material consumption varied between EUR 0.50 per kilogram of material and EUR 0.60 per kilogram of material. It was the lowest in 2007 with EUR 0.53 per kilogram of material. Then followed a steep rise and in 2012 it amounted to already EUR 0.93 per kilogram of material. In 2012 it was thus 77% higher than in 2007 and 12% higher than in 2011.

In comparison with the previous year (2007), the material productivity increased the most in 2008, namely by 18%.

2.1.4 Resource productivity: water

The indicator Resource productivity for water presents the ratio between the gross domestic product and the quantity of water from the public water supply (in cubic metres). It is expressed in EUR, in fixed 2000 prices per cubic metre.

Chart 4: Resource productivity: water, Slovenia



Source: SURS

Most of the water that is consumed by households, business entities, for extinguishing the fire and for the cleaning of roads is supplied from the public water supply. In 2012, the public water supply network in Slovenia amounted to 21,565 kilometres.

After the decrease in the quantity of the water supplied from the public water supply in 2003, the quantity of this water almost did not change and amounted to about 170 million cubic metres. The gross domestic product, however, dropped since 2008.

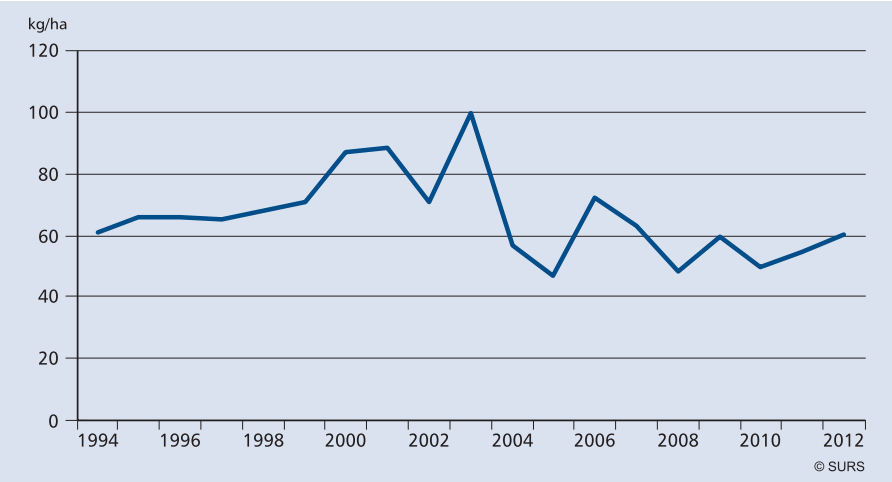
The value of the indicator resource productivity for water moved in line with these data: from 2003 to 2008 it increased, namely from EUR 108 to EUR 153 per cubic metre of water. After 2008 it began to decrease and until 2012 it dropped by almost 9% and was valued at EUR 141 per cubic metre of water.

2.1.5 Resource productivity: nitrogen stock

This indicator presents the difference between the nitrogen input in soil and the nitrogen output per hectare of utilised agricultural area. It is expressed in kilograms of nitrogen per hectare of utilised agricultural area.

7 N nitrogen

Chart 5: Resource productivity: nitrogen stock



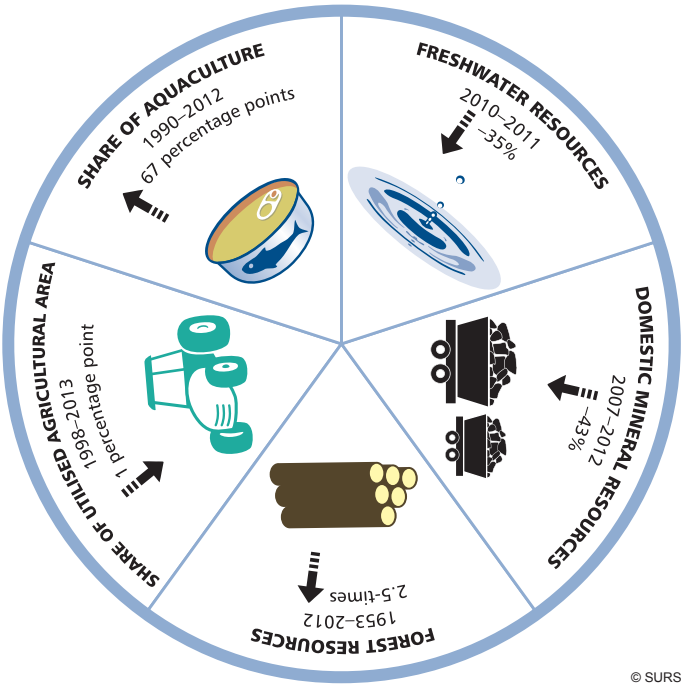
Source: Agricultural Institute of Slovenia

The surplus of nitrogen in soil has a bad impact on the environment and also on human beings. Nitrogen substances thus pollute the water, air and soil.

The largest part of nitrogen is input in soil with mineral fertilisers and the largest part of nitrogen output is extracted from the soil in harvested crops. When the crop is small due to draught, this is reflected in larger surplus of nitrogen in the soil.

The value of the indicator for resource productivity for nitrogen stock greatly changed in the last years. It was the lowest in 2005 with merely 45 kilograms per hectare of utilised agricultural area and also in 2008 and 2010 it amounted to less than 50 kilograms per hectare of utilised agricultural area. Thus, it was much higher in 2000, 2001 and 2003 with over 80 kilograms per hectare of utilised agricultural area. In 2012, however, the lowest absolute quantity of nitrogen in the last 20 years was input in soil, i.e. 59 kilograms per hectare of utilised agricultural area.

GREEN GROWTH INDICATORS FOR SLOVENIA



2.2 INDICATORS OF THE NATURAL ASSET BASE

Efficient management of natural resources and their sustainable use – the key to economic growth and environmental quality

Natural resources are an important basis for the implementation of economic activities and for our well-being. Their stocks are part of the natural capital and they provide raw materials, energy, water, air, land and soil. Acquisition and use of these resources have an impact on the quality of life and on the well-being of the present-day and future generations. Efficient management of natural resources and their sustainable use are the key to economic growth and environmental quality.

Monitoring the improvement

Improvement can be measured by monitoring the stocks of the natural resources, together with the flows of environmental services, and by making use of the indicators that reflect the level to which the natural resources are being maintained, especially in view of quantity, quality and value.

The main topics

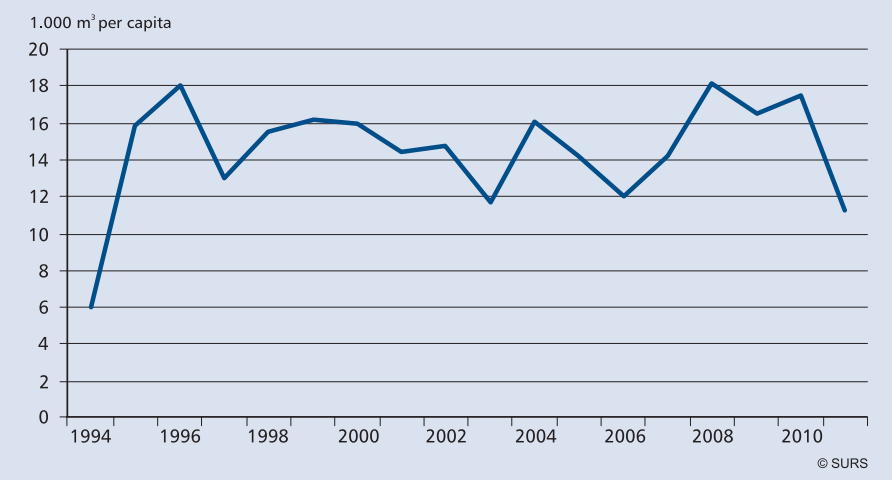
to which this group of green growth indicators relates:

- availability and accessibility of stocks of non-renewable natural resources, especially ores, incl. metal, industrial minerals and fossil fuels,
- biotic biodiversity and ecosystems, even diversity of species and habitats and productivity of land and soil.

2.2.1 Freshwater resources

The indicator Freshwater resources presents the addition of internal flow and the actual external inflow of water in the country. It is expressed in cubic metres per inhabitant.

Chart 6: Freshwater resources, Slovenia



Source: Eurostat

Water is a renewable natural source and is a prerequisite for life on Earth. It influences the diversity of fauna and flora and also the life and well-being of humans.

Slovenia is a water-rich country, yet some of its parts (especially on the Karst) are very vulnerable in terms of water sources. Increased pressure on the environment increases also the pressure on the water sources.

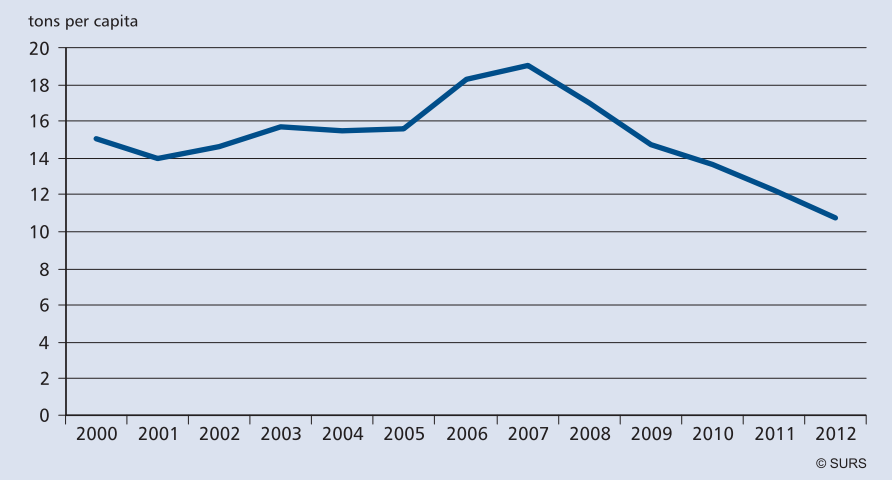
The chart illustrates that the quantity of available freshwater resources per inhabitant is not stable; to a large extent there is an impact of the draught periods.

The quantity of available freshwater resources per inhabitant was the lowest in 1994 when it varied between 6,000 and 7,000 cubic metres per inhabitant, and later it increased to between 11,000 and 19,000 cubic metres per inhabitant. In comparison with the previous year, in 2011 it was lower again, namely by 35% lower, and it thus reached the levels recorded in 2003 and 2006 which are known to be the draught years.

2.2.2 Extraction of domestic resources per inhabitant

The indicator Extraction of domestic resources per inhabitant presents the quantity of consumed natural resources, recalculated per inhabitant. It is expressed in tons per inhabitant.

Chart 7: Extraction of domestic resources per inhabitant, Slovenia



Source: SURS

Extracted domestic resources are materials of domestic origin, i.e. materials that are extracted from the natural environment, for instance minerals, energy, biomass, etc.

The chart illustrates the quantity of consumed natural resources that gradually increased until 2007 when it amounted to 19 tons per inhabitant. After 2007 it began to steeply decrease and in 2012 it amounted to less than 11 tons per inhabitant. From 2007 to 2012 it thus decreased by 43%.

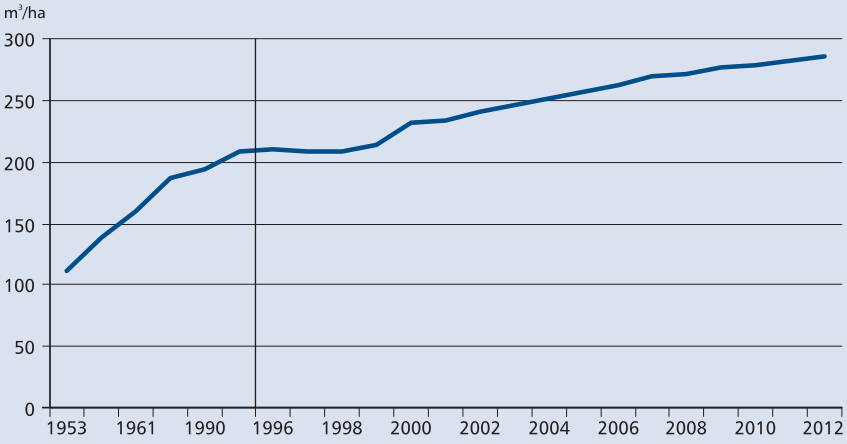
Compared to the previous year, the largest decrease was recorded in 2009, by 15%, namely over 2008.

Consumption of natural resources keeps decreasing, especially that of gravel and sand.

2.2.3 Forest resources

The indicator Forest resources represents the volume of live trees with bark and a diameter over 10 centimetres (or above the irregular shape of the tree trunk). It includes the tree trunk above the floor and the height of the tree-stump to the top or to a minimum diameter of 5 centimetres; it can include the branches, but these do not form part of the forest resources. It is expressed in cubic metres per hectare.

Chart 8: Forest resources, Slovenia



Source: Slovenia Forest Service

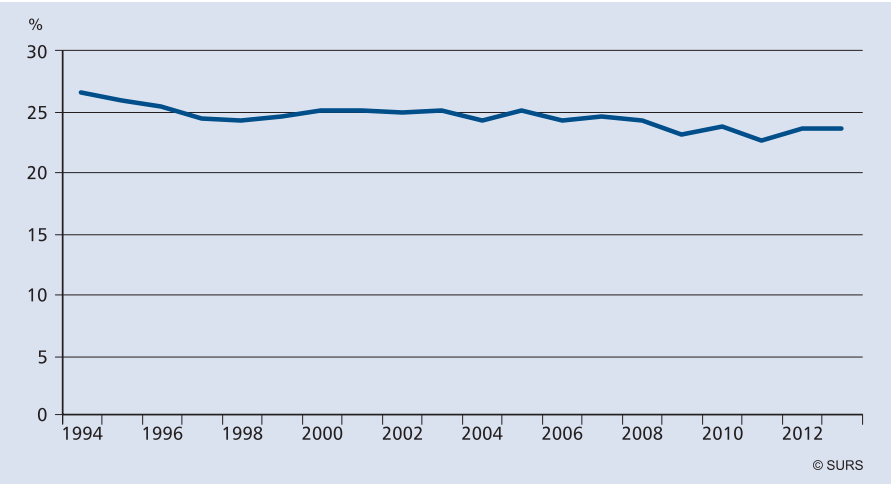
Forests cover over a half of Slovenia (58.4%) and this places Slovenia among the EU Member States with the most forests. One of the important indicators reflecting the situation in the forest is forest resources. The datum on the quantity of growing stock is an important information also in view of understanding the changing of and the production capabilities of the forest and also of setting up the strategy on sustainable use of the forest.

The Slovenian forest is well-preserved. According to the data of the Slovenia Forest Service, growing stock is increasing. In 2012 it amounted to 285 cubic metres per hectare. From 1953 on, when it amounted to 112 cubic metres per hectare, it increased 2.5-fold. From 1991 it increased by 47%.

2.2.4 Share of utilised agricultural area

The indicator Share of agricultural area presents the ratio between utilised agricultural area in use and the total area of the country. It is expressed in percentages.

Chart 9: Share of agricultural area, Slovenia



Source: SURS

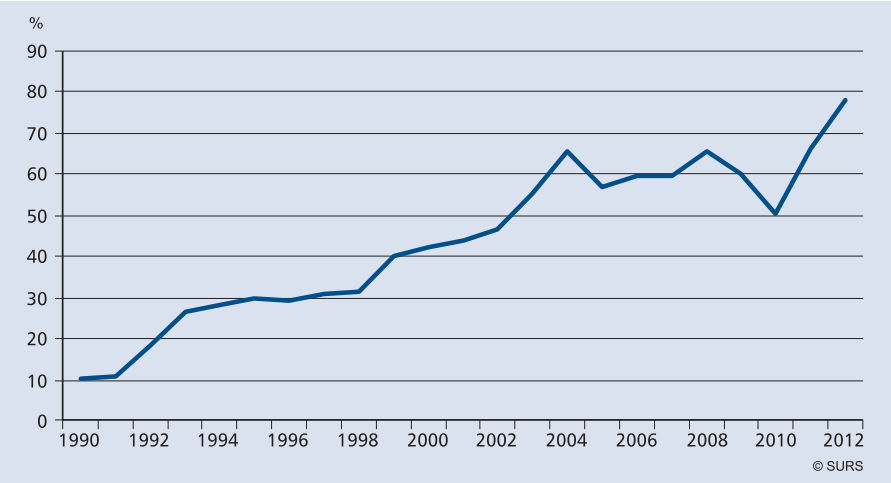
Utilised agricultural area (UAA) covers also the fields and gardens, meadows and pastures, orchards, olive groves, vineyards and nurseries cultivated by the agricultural holdings. Ownership of the agricultural area is not significant for the calculation of this indicator.

Agricultural area ranks among the natural wordly goods that are important for the production of food. Due to intensive construction and overgrowing, its surface keeps diminishing. In 2013 agricultural area covered about 24% of the surface of Slovenia, and in 1991, when Slovenia gained independence, almost 28%. In the last 20 years it thus diminished by almost 4 p.p. The largest decrease was recorded in the 1991-1998 period, amounting to 3 p.p. In the 1998-2013 period the decrease was smaller, namely by 1 p.p.

2.2.5 Share of aquaculture in total fishing production

The indicator Share of aquaculture in total fishing production presents the share of the water organisms which were bred in sea and in inland waters in the total fishing production. The fishing production comprises marine fishing (i.e. an economic activity that covers catching marine organisms) and aquaculture. It is expressed in percentages.

Chart 10: Share of aquaculture in total fishing production, Slovenia



Source: SURS

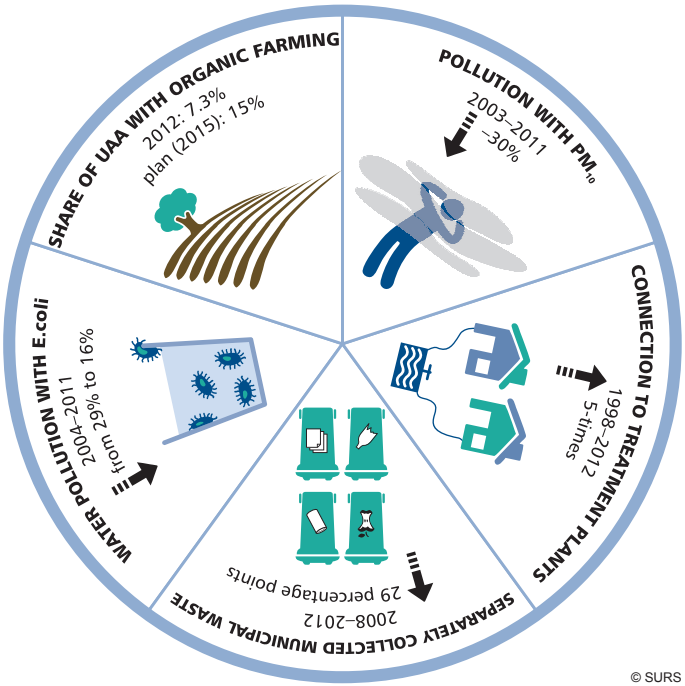
Aquaculture (breeding of water animals) is the economic activity of breeding fish fry and fish for selling, selling fish for consumption or breeding for own use.

The share of aquaculture in total fishing production in Slovenia rather increased in the last years: in the 1990-2012 period it increased from 11% to 78% or by 76 p.p.

Such a steep increase in the share of aquaculture in the total fishing production in the mentioned period was in part relative, i.e. due to decrease in the catch of marine organisms, and in part also absolute, i.e. due to the increase in breeding of water animals: in 2012 the marine catch was 94% lower than in 1990 and in 2012 by about 60% more water organisms were bred than in 1990.

Until 2004 the share of aquaculture in the total fishing production increased, then it slightly decreased in 2005, namely due to the increased marine catch. Then it declined also in 2010, as less water organisms were bred.

GREEN GROWTH INDICATORS FOR SLOVENIA



2.3 INDICATORS OF ENVIRONMENTAL QUALITY OF LIFE

Environmental influences are of key importance

Environmental influences are an important factor for the health condition and well-being of people. They indicate that the growth of the production and income are not necessarily linked to the increase in well-being. Deteriorations in the quality of the environment can be the consequence or reason for non-sustainable development patterns. The consequences can be seen in the economic and the social field: in lower agricultural production, in weakened functions of the ecosystems, in health costs and in general in lower quality of live.

The condition of the environment influences the quality of life

The conditions in the environment influence the quality of the life of people in many ways. They influence our lives directly and indirectly: air pollution and water pollution have a direct impact on our health, and so does the exposal to dangerous substances and exposal to noise, whereas the effects of weather change, the changes in water cycles, loss of biotic diversity and natural disasters have an indirect impact on our lives.

The main topic

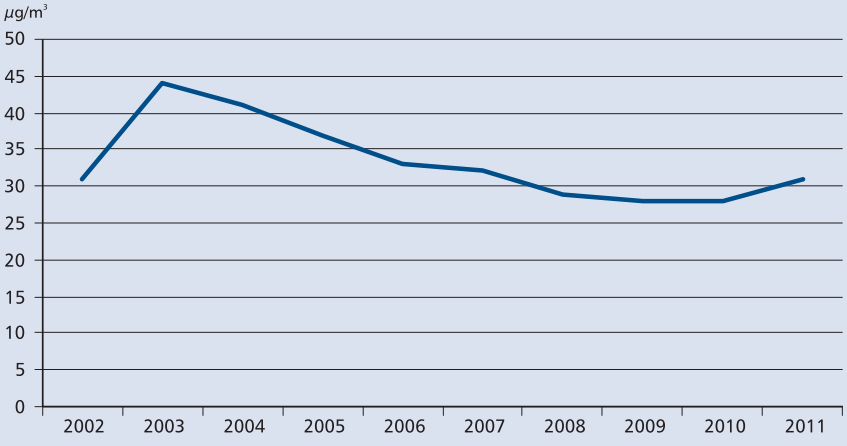
to which the group of green growth indicators relates:

- exposal of people to the pollution of the environment and environmental risks.

2.3.1 Environmental health and risks: pollution with PM_{10}

The indicator Environmental health and risks for pollution with PM_{10} presents the concentration of PM10 , to which the population is potentially exposed. It is expressed in micrograms per cubic metre of air.

Chart 11: Environmental health and risks: air quality, Slovenia



Source: Eurostat

PM_{10} particles (with aerodynamic diameter of particle under 10 μm) are extremely dangerous to our health as they have a bad influence on our respiratory organ, heart and veins. Their influence on the environment is also bad. These particles can be of natural or artificial origin; those of natural origin are pollen, dust, volcano ashes, smoke of forest fire, etc., and those of artificial origin are emissions from energy objects, industry, transport, individual fireplaces, etc.

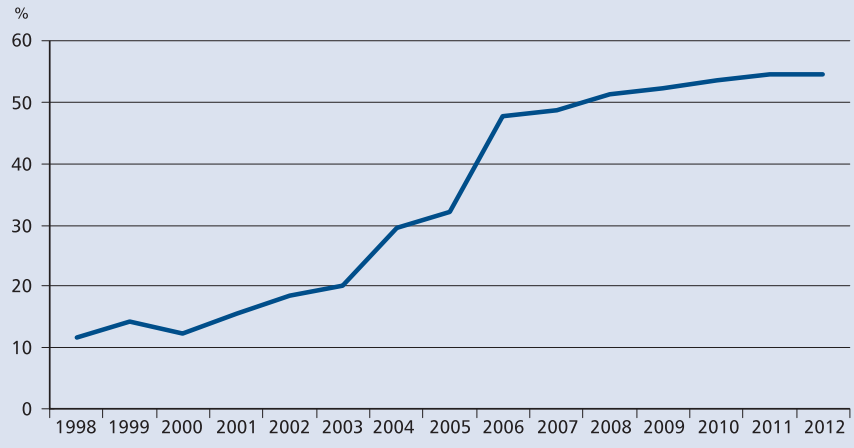
The indicator illustrates the potential exposal of the urban population towards PM_{10} particles in Slovenia. In 2003, due to a severe draught the value of this indicator steeply increased on annual basis from 31 to 44 micrograms per cubic metre of air; then it decreased until 2010 and amounted to 28 micrograms per cubic metre of air. In 2011 repeatedly an increase was recorded, namely by 11%. The decrease of the value of this indicator after 2003 was mainly the consequence of the construction of treatment plants on industrial objects, and in part it was attributable also to the favourable weather conditions.

The allowed annual (borderline) concentration of PM_{10} is 40 micrograms per cubic metre. The data reveal that in the last decade the urban population in Slovenia was potentially exposed to such concentration of PM_{10} only in 2003 and 2004, and in the remaining years the concentration of PM_{10} was much lower than the borderline values.

2.3.2 Environmental services and amenities: connection to treatment plants

This indicator illustrates the share of population connected to treatment plants in which the communal waste water is treated with at least the secondary treatment, but possibly also with tertiary treatment. It is expressed in percentages.

Chart 12: Environmental services and amenities: access to sewage treatment



Source: Slovenian Environment Agency

Secondary treatment removes the major part of organic waste pollution (mostly carbon compounds), and tertiary treatment treats also that of nutritive substances (nitrogen compounds and phosphorus compounds).

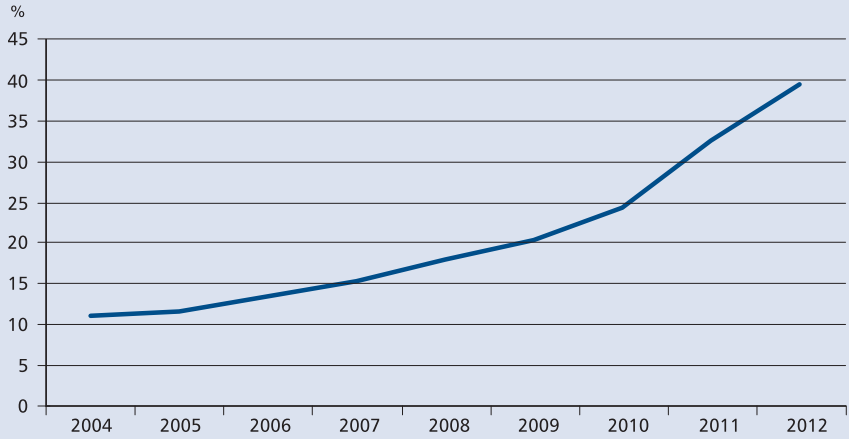
In Slovenia over 50% of the population is connected to treatment plants with at least secondary treatment. From 1998, when the first statistical data became available, until 2012 this share increased from 11% to 55%. It increased especially quickly in the 2000-2006 period, namely by 36 p.p., and then the increase was slower; in the 2006-2011 period it increased by additional 7 p.p. In this period also the share of population connected to treatment plants with tertiary cleaning increased. This means that also the quality of waste water treatment improved.

It is anticipated that in the following years even more people shall get connections to treatment plants, as the deadline for the completion of treatment plants expires at the end of 2017.

2.3.3 Share of separately collected municipal waste

This indicator illustrates the ratio between the quantity of all municipal waste and the quantity of the municipal waste collected separately in collection centres – except mixed municipal waste. It is expressed in percentages.

Chart 13: Share of separately collected communal waste, Slovenia



Source: SURS

The following municipal waste is collected: paper and cardboard, glass, plastics, kitchen waste, waste from metal, wood, textile, rejected clothing, edible oil and fat, paint, ink, glue and varnish, detergents, batteries and accumulators, electrical and electronic equipment and bulky waste. Most of the separately collected waste is recycled by priority.

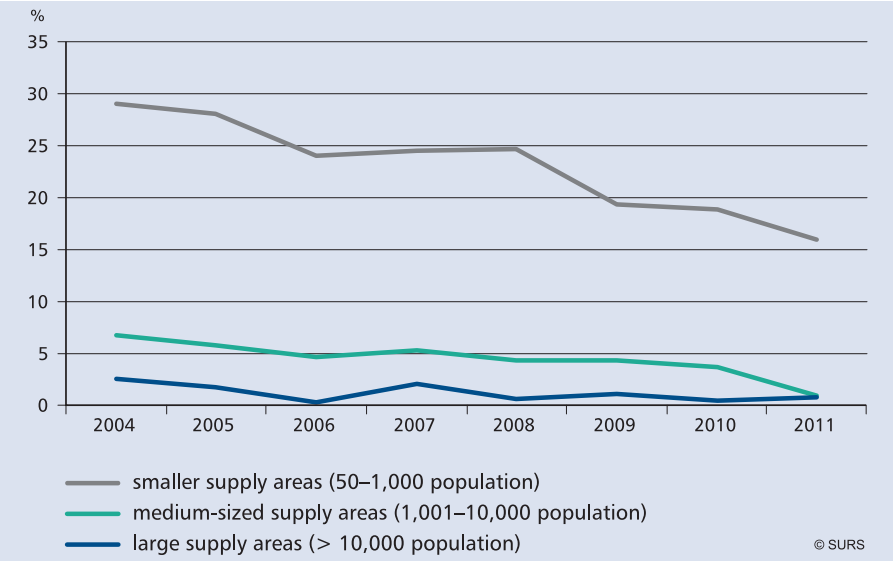
From 2004 on the share of separately collected municipal waste increases – partly because the separation of waste is being introduced, and partly due to the awareness of inhabitants. The municipal waste that is not collected separately and is handed over as mixed municipal waste must be mechanically and biologically treated before being dumped and the residue of such treatment is put on the landfill.

In the last decade the share of separately collected municipal waste increased by almost 30 p.p., namely from 11% in 2004 to almost 40% in 2012. The value of this indicator increased the most in 2011 when it increased by 8 p.p. over the previous year, and in 2012 when it increased by 7 p.p. over the previous year.

2.3.4 Share of unsuitable samples due to E.coli

The indicator Share of unsuitable samples due to E.coli presents the share of unsuitable samples (microbiological contamination of drinking water) with regard to all the taken samples, by size classes of water systems. It is expressed in percentages.

Chart 14: Share of unsuitable samples due to E.coli, Slovenia



Source: NIJZ

With regard to health, drinking water is adequate when it does not contain various microorganisms, parasites and other substances to such a degree that it could pose a threat to the health of people.

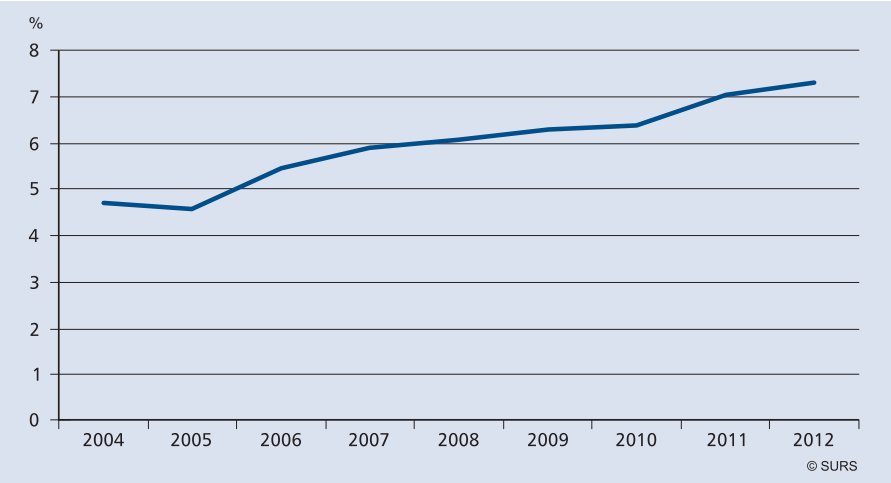
With regard to the pollution of drinking water, microbiological pollution and especially faecal pollution, incl. pollution with E.coli, is a large problem. Such pollution is most frequent especially in small water systems.

With years, the share of unsuitable samples in drinking water due to E.coli is on the decrease. From 2004 to 2011 it decreased in small water systems by 13 p.p., in medium ones by almost 6 p.p. and in large water systems by 2 p.p. The share of unsuitable samples in large waters systems was 1-3% and in medium ones 6-7%, except in 2011 when it decreased to 1%. The share of unsuitable samples in small water systems is the largest concern; it is decreasing, but in 2016 it still amounted to 16%.

2.3.5 Share of UAA with organic farming

The indicator Share of UAA with ecologic farming illustrates the ratio between the used agricultural area with organic farming or in conversion and the entire used agricultural area. It is expressed in percentages.

Chart 15: Share of UAA with ecologic farming, Slovenia



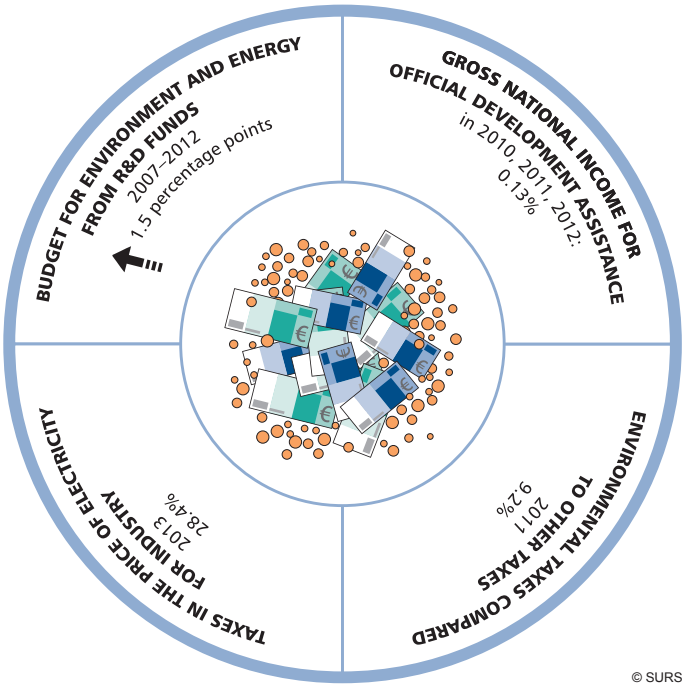
Source: MKO

Among the UAA with ecologic farming rank also the agricultural areas in use by agricultural holdings that are included in the control system of ecologic farming (they have the status of being an ecologic agricultural holding or one that is in conversion). On these agricultural holdings the food and fodder are produced ecologically, i.e. so that the natural resources, biotic diversity, well-fare of animals are preserved, and simultaneously the requirements of consumers are met in view of acquisition of healthy food.

Among the UAA with ecologic farming, besides arable land also permanent grassland, orchards, vineyards and olive groves are taken into account. The largest share of the whole area of such land is grassland (85%).

The share of UAA with ecologic farming increases from 2005; in the 2005-2012 period it increased from 4.5% to 7.3% or by 2.8 p.p., but this is far from the set goal which is that until 2015 15% of all UAA would have ecological farming.

GREEN GROWTH INDICATORS FOR SLOVENIA



2.4 INDICATORS OF ECONOMIC OPPORTUNITIES AND POLICY RESPONSES

The government, enterprises and the civil society decisively influence the enforcement of the green growth strategy

In enforcing the green growth strategy, the governments have an important role, as they can – through various measures – encourage more green production and consumption. These measures are economic ones and others; encouragement of cooperation, exchange of good practices among enterprises, development and promotion of use of new technologies and innovations, and wider harmonisation among sectoral policies. The main challenge is to seek the balance between the environment as the source of economic growth and international competitiveness, trade and employment, and the burden that is laid upon it.

Enterprises also have an important role in enforcing more green ways of management, in development and use of new technologies, in conducting the surveys and in encouraging innovations.

The governments, enterprises and the civil society have an important role also in informing the consumers and in their decisions to make purchases that decrease the influences of consumption on the environment.

The main topics

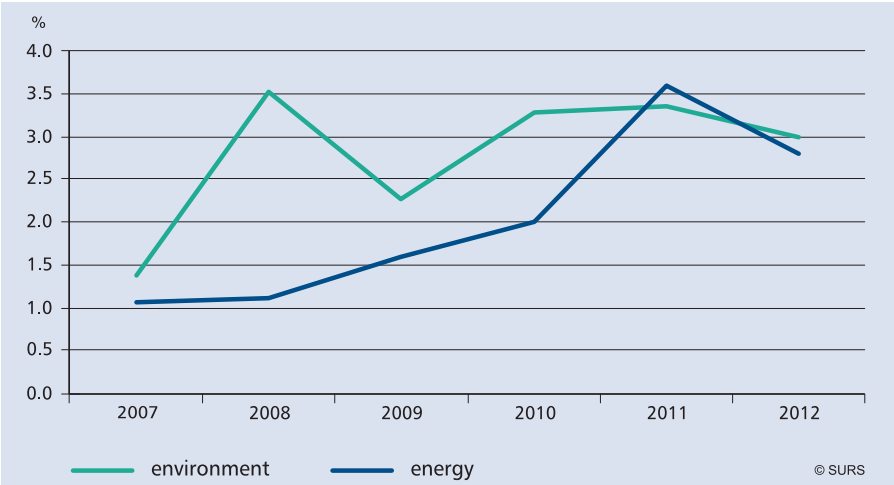
to which the group of green growth indicators relates:

- technological development and innovations that are important for growth and productivity in general, especially for green growth,
- international financial flows that are of key importance for accepting and spreading the technologies and knowledge,
- prices and financial transfers that are important signals for producers and consumers.

2.4.1 Share of government budgetary appropriations or outlays on R&D, earmarked for the environment and energy

The indicator Share of government budgetary appropriations or outlays on R&D, earmarked for attaining the economic goals directed into the environment and energy, illustrates the proportion between the government budgetary funds for R&D, earmarked to the environment and energy, and all the budgetary funds, earmarked for R&D activity. It is expressed in percentages.

Chart 16: Share of government budgetary appropriations or outlays on R&D, earmarked for the environment and energy, Slovenia



Source: SURS

Government budgetary appropriations or outlays on R&D are all the funds that the allocated to R&D from the government budget, irrespective of where these funds are spent (incl. the funds that are spent abroad). This indicator illustrates only part of the government budgetary funds, earmarked for R&D and directed into the environment and energy.

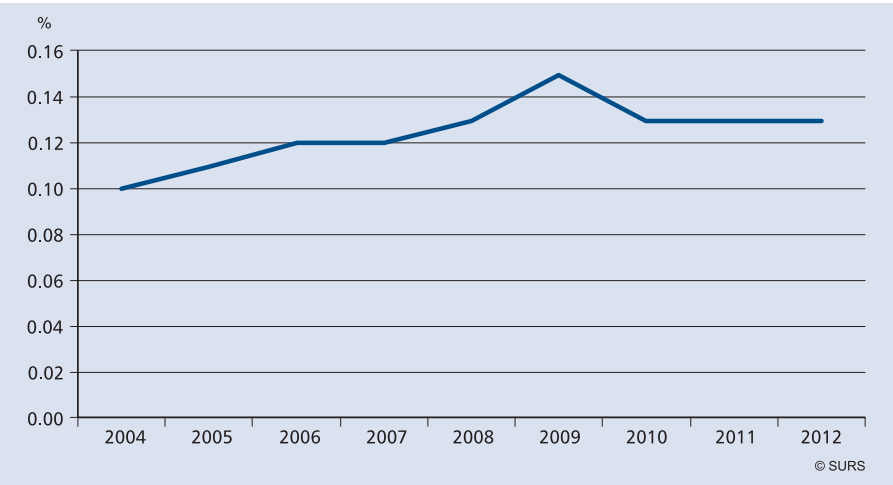
The government budgetary funds for R&D, allocated to R&D in the environment are volatile: in 2007 they amounted to 1.4% of all R&D funds; in 2008 they increased substantially, to 3.5%, and then they decreased again in 2009, by 1.2 p.p. In 2010 and 2011 they almost equalled (3.3%) and then in 2012 they decreased to 3%. The highest value was thus reached in 2008. The government budgetary funds for R&D, allocated to energy, slowly increased until 2011: from 2007 to 2011 they increased from 1.1% to 3.6%. In 2012 they decreased by 0.6 p.p., to 2.8%, and were thus again lower than the share of R&D funds for the environment.

R&D earmarked for the environment and energy thus has a budget of less than 7% of all government budgetary funds for R&D.

2.4.2 Share of gross national income for official developmental assistance (to developing countries)

The indicator Share of gross national income for official developmental assistance (to developing countries) illustrates the size of the share of gross national income for donations or loans that are offered by official organisations (government and local authorities and executive authorities) as assistance in ensuring the economic growth and prosperity in beneficiary countries (developing countries). It is expressed in percentages.

Chart 17: Share of gross national income for official developmental assistance



Source: Eurostat

Gross national income (GNI) is the sum of incomes generated by the citizens of the Republic of Slovenia. This indicator illustrates what share of GNI of Slovenia is allocated to the official developmental assistance to the developing countries. Namely the EU made the commitment that the joint official developmental assistance until 2015 shall amount to 0.7% GNI, and as an interim goal until 2010 it would amount to 0.56% GNI. The list of countries that are eligible for the official developmental assistance is determined by the OECD Development Assistance Committee.

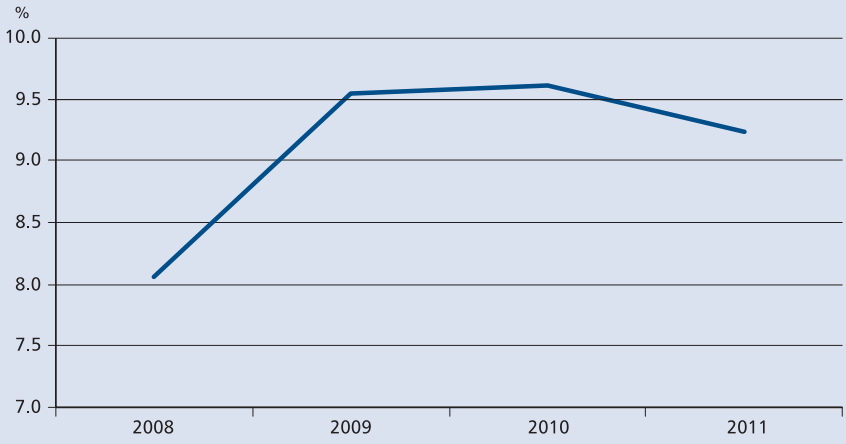
In Slovenia the share of GNI for official developmental assistance amounts to 0.1-0.15%. Until 2009 its increase was slow and thus from 2004 it increased by 0.05 p.p. In 2010 it decreased by 0.02 p.p., to 0.13%; according to the last available data it then maintained this value until 2012.

After 2010, the average values of this indicator for the entire EU started to decrease and in 2012 amounted to 0.39% of gross national income.

2.4.3 Share of environmental taxes of all taxes and social contributions

The indicator Share of environmental taxes compared to all taxes and social contributions illustrates the share of taxes from all taxes and social contributions that have to be paid due to environment pollution. It is expressed in percentages.

Chart 18: Share of environmental taxes compared to all taxes and social contributions, Slovenia



Source: SURS

At SURS we monitor the environmental taxes as part of the environmental economic accounts, namely from 2008. The environmental taxes comprise taxes on energy (incl. fuels), taxes on transport (excl. fuels), taxes on pollution and taxes on use of natural resources.

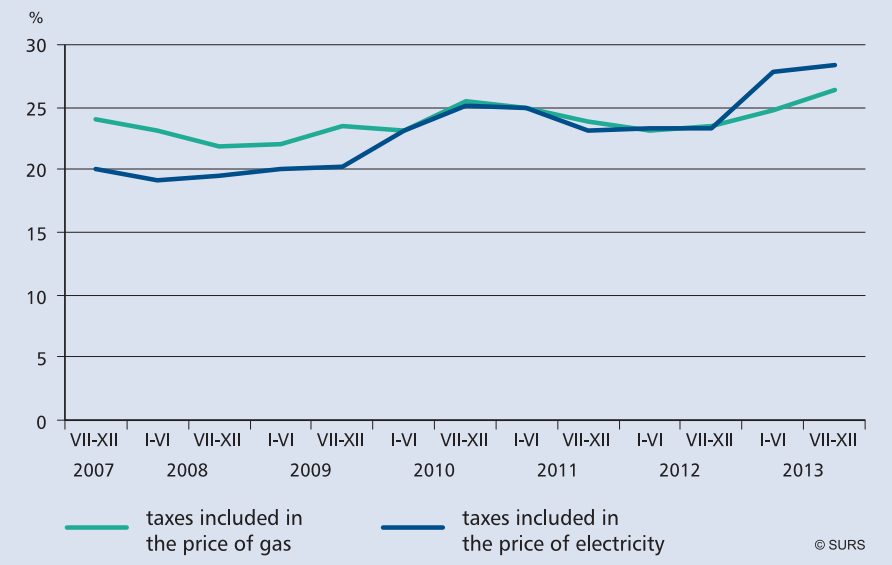
Environmental taxes represent less than 10% of all taxes within the country; in the last years they range between 8% and 10%.

In 2008 they amounted to 8.1% of all taxes, in 2009 they increased by 1.5 p.p., to 9.6%. In 2011 the decreased again, to 9,2%.

2.4.4 Share of taxes in the prices of electricity and natural gas for industry

The indicator Share of taxes in the prices of electricity and natural gas for industry illustrates the share of taxes in the entire electricity price for industry. The datum refers to the second half of the current year (July-December) for the standard consumer group IC (500 to < 2,000 MWh). The indicator share of taxes in the price of natural gas for industry illustrates the share of taxes in the entire natural gas price for industry. The datum refers to the second half of the current year (July-December) for the standard consumer group I3 (10,000 to 100,000 GJ). Both are expressed in percentages.

Chart 19: Share of taxes in the prices of electricity and natural gas for industry, Slovenia



Source: SURS

The share of taxes in the price of electricity for industry comprises the supplements to network costs, contributions for renewable energy sources and national energy sources, excise and value added tax, and from 1 Feb. 2010 also the contribution for increased efficiency of use of electricity. The taxes in the natural gas price comprise the tax for CO_2, the excise and value added tax, and from 1 Feb. 2010 also the contribution for increased efficiency of energy.

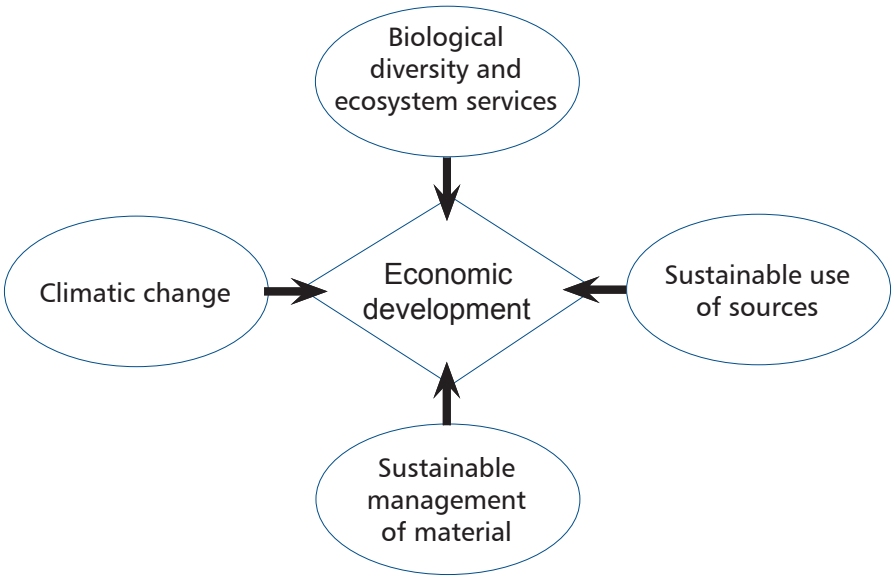
The share of taxes in the price of electricity and natural gas for industry was between 20% and 30%. The share of taxes in the price of electricity in principle gradually increased from 2007 on, and in 2013 it amounted to over 28% or 8 p.p. more than in 2007. In the 2007-2013 period, the share of taxes in the price of natural gas almost did not change. In 2007 taxes represented 24% and in 2013 they represented 26% of the price of natural gas.

3 CONCLUSIONS

This publication is the first occasion that we present the green growth indicators for Slovenia. From 30 indicators that were developed and proposed by OECD, here we selected 14 indicators. Then additional 5 indicators were added upon the selection of SURS and these additionally describe and explain the enforcement of green growth in Slovenia.

Green growth indicators are a subgroup of sustainable development indicators that are being developed and published at SURS from 2010. They differ from the green growth indicators due to the fact that they refer to three topics (environmental, economic and social), whereas green growth indicators refer only to the environmental and economic topic. In fact they illustrate and indicate to what degree we succeed in producing as much goods with the smallest possible negative impact on the environment and natural goods, and to what degree we manage to implement the green growth concept in relation to the environment and economy and how fast we are progressing towards the set goals.

Scheme 2: Key environmental challenges of green growth



We differ among four groups of green growth indicators:

1. Indicators of environmental and resource productivity
2. Indicators of the natural asset base
3. Indicators of environmental quality of life
4. Indicators of economic opportunities and policy responses

CONCLUSIONS AND ABSTRACTS

1.1	Emission productivity **From 1995 it slowly, but constantly increases.**
1.2	Energy productivity **After 2007 it is even and does not change.**
1.3	Resource productivity: materials **After 2007 it increases steeply.**
1.4	Resource productivity: water **After 2008 it decreases.**
1.5	Resource productivity: nitrogen stock **It substantially changes and is dependent on the drought.**
2.1	Freshwater resources **Changes are vast. The resources were lowest in drought years: 2003, 2006 in 2011.**
2.2	Extraction of domestic resources per inhabitant **From 2007 it keeps declining.**
2.3	Forest resources **It increases through the entire period (from 1953).**
2.4	Share of utilised agricultural area **In the last 15 years there were almost no changes.**
2.5	Share of aquaculture in total fishing production **In the last few years it greatly increased.**
3.1	Environmental health and risks: pollution with PM_{10} **From 2004 on, the exposal decreases and is below marginal values.**
3.2	Environmental services and amenities: connection to treatment plants **After 2006 the upward trend stopped.**
3.3	Share of separately collected municipal waste **In the last 3 years it increased by 15 p.p.**
3.4	Share of unsuitable samples due to faecal contamination of drinking water with E.coli **Share of unsuitable samples decreases in time.**
3.5	Share of utilised agricultural area with organic farming **It increases in time, but too slowly.**
4.1	Share of national budgetary funds for R&D, earmarked for the environment and energy **In 2012 it decreased again.**
4.2	Share of GDP for official developmental assistance **From 2010 there are no changes at 0.13%.**
4.3	Share of environmental taxes of all taxes **In the last few years it ranged between 8 and 10%.**
4.4	Shares of taxes in the prices of electricity and natural gas for industry **They amount to 20-30% of the price.**

CONCLUSIONS AND ABSTRACTS

The ratio between the gross domestic product and emissions of greenhouse gasses with no deductions. In EUR, in fixed 2000 prices per kilogram of carbon dioxide equivalent.

The ratio between the gross domestic product and the energy supply. It is expressed in EUR million in 2000 fixed prices per 1,000 tons of oil equivalent.

The ratio between the gross domestic product and the domestic material consumption. It is expressed in EUR, in 2000 fixed prices per kilogram of material.

The ratio between the gross domestic product and the quantity of water from the public water supply. It is expressed in EUR, in fixed 2000 prices per cubic metre.

The difference between the nitrogen input in soil and the nitrogen output per hectare of UAA. It is expressed in kilograms of nitrogen per hectare of UAA.

The addition of internal flow and the actual external inflow of water into the country. It is expressed in cubic metres per inhabitant.

The quantity of consumed natural resources, recalculated per inhabitant. It is expressed in tons per inhabitant.

The volume of live trees with bark and a diameter over 10+ cm. Including tree trunk of special dimesions. It is expressed in m^3/ha.

The ratio between UAA and the total area of the country. It is expressed in percentages.

The share of the water organisms which were bred in sea and in inland waters in the total fishing production. It is expressed in percentages.

The concentration of PM_{10}, to which the population is potentially exposed. It is expressed in micrograms per cubic metre of air.

The share of population connected to treatment plants with at least the secondary treatment, but possibly also with tertiary treatment. It is expressed in percentages.

The ratio between the total quantity of all municipal waste and that of the municipal waste collected separately (except mixed municipal waste). It is expressed in percentages.

The share of unsuitable samples (microbiological contamination of drinking water) with regard to all the taken samples, by size classes of water systems. It is expressed in %.

The ratio between the UAA with organic farming or in conversion and the entire UAA. It is expressed in percentages.

The share of government budgetary appropriations on R&D, for economic goals in the environment and energy, of all such funds. It is expressed in percentages.

The share of gross national income that represents donations or loans offered by official organisations to ensure the economic growth and prosperity in beneficiary countries. In %.

The share of environmental taxes, i.e. taxes we have to pay due to environmental pollution, of all taxes. It is expressed in percentages.

The share of taxes in the entire electricity price for industry and the share of taxes in the price of natural gas for industry. They are expressed in percentages.

"Be not afraid of moving slowly. Be afraid of standing still."

Chinese proverb

DEFINITIONS OF SOME CONCEPTS USED

Green growth is about fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities.

Materials or material resources. The term "materials" or "material resources" designates the usable materials or substances (raw materials, energy) produced from natural resources. These usable "materials" include energy carriers (gas, oil, coal), metal ores and metals, construction minerals and other minerals, soil and biomass.

In the context of Material Flow Analysis and Accounting, the term "materials" is used in a very broad sense so as to record all material related flows at all relevant stages of the material cycle.

It designates materials from renewable and non-renewable natural resource stocks that are used as material inputs into human activities and the products that embody them, as well as the residuals arising from their extraction, production and use and the ecosystem inputs required for their extraction, production and use.

Natural assets (or natural capital) also functions of natural capital. Assets that occur in nature and that provide environmental "functions" or services. They are also referred to as natural capital. They comprise 3 principal categories: natural resource stocks, land and ecosystems.

Natural resources. The term "natural resources" designates renewable and non-renewable resource stocks that are found in nature (mineral resources, energy resources, soil resources, water resources and biological resources).

Renewable natural resources are resources from renewable natural stocks that, after exploitation, can return to their previous stock levels by natural processes of growth or replenishment. Examples of renewable resources include timber from forest resources, freshwater resources, land resources, wildlife resources such as fish, agricultural resources.

Non-renewable natural resources are exhaustible natural resources whose natural stocks cannot be regenerated after exploitation or that can only be regenerated or replenished by natural cycles that are relatively slow at human scale. Examples include metals and other minerals such as industrial and construction minerals, and fossil energy carriers.

Environmental productivity. A partial productivity measure that relates economic output to the input of regulating services. Alternatively, emissions could be treated as undesirable or negative output rather than as environmental inputs. This is a matter of convenience and labelling but has no implication for measurement.

Material productivity designates an indicator that measures the output or value added generated per unit of materials used, i.e. energy carriers and other raw materials, excluding water and ecosystem inputs.

Resource productivity designates an indicator that measures the output or value added generated per unit of natural resources used. This is typically a macro-economic concept that can be presented alongside labour or capital productivity.

Water productivity. The level of economic output (in physical or in monetary terms) achieved from one unit volume of gross water inflows,or for one unit volume of waste water outflows.

Energy productivity. The level of economic output (in physical or in monetary terms) achieved from one unit of energy used/consumed.

ABBREVIATIONS

ARSO	Slovenian Environment Agency
EU	European Union
E.COLI	Escherichia coli
GDP	gross domestic product
GNI	gross national income
I3	consumer group for industry – natural gas, annual consumption: 10.000 < 100.000 GJ
IC	consumer group for industry – electricity, annual consumption 500 < 2,000 MWh
MWh	mega-watt hour
KIS	Agricultural Institute of Slovenia
MKO	Republic of Slovenia, Ministry of Agriculture and the Environment
NIJZ	Nacionalni inštitut za javno zdravje (National institute for public health)
OECD	Organisation for Economic Co-operation and Development
R&D	research and development
SURS	Statistical Office of the Republic of Slovenia
UAA	used agricultural area

UNITS OF MEASUREMENT

CO_2	carbon dioxide
EUR	Euro
EUR 2000/kg ekv.CO_2	Euro, measured in fixed 2000 prices per kilogram of carbon dioxide equivalent
EUR/kg	Euro per kilogram
EUR 2000/m^3	Euro, measured in fixed 2000 prices per cubic metre
mio. EUR 2000/ktoe	million Euro, measured in fixed 2000 prices per kiloton of oil equivalent
GJ	gigajoule
km	kilometre
kt	kiloton
ktoe	kiloton of oil equivalent
kg/ha	kilogram per hectare
m^3	cubic metre
m^3/inhabitant	cubic metre per inhabitant
m^3/ha	cubic metre per hectare
MWh	megawatt-hour
p.p.	percentage point
ton/inhabitant	tons per inhabitant
%	percentage
$\mu g/m^3$	microgram per cubic metre
PM_{10}	particulate matter PM_{10}
μm	micrometre

SOURCES AND LITERATURE

Green Growth Indicators. OECD. Retrieved on 12. 5. 2014 from the website: http://www.oecd.org/greengrowth/greengrowthindicators.htm

Na poti k zeleni rasti, povzetek za Slovenijo. OECD. Retrieved on 12. 5. 2014 from the website: http://www.oecd.org/greengrowth/47986026.pdf

SI-STAT Data portal. Ljubljana: Statistical Office of the Republic of Slovenia. Retrieved on 12. 5. 2014 from the website: http://pxweb.stat.si/pxweb/Dialog/statfile2.asp

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