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C Country analysis

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Country analysis

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PART C

Setting the scene — main results

This part of the report focuses on country level analysis and the relative environmental performance of the EEA member countries. For this purpose a *scorecard* is presented which uses indicators from the EEA core set of indicators (CSI) ([1]). The use of the CSI ensures that the data underpinning the scorecard is the best European environmental information available at this time.

The scorecard allows the reader to make policy-relevant and informative comparisons between countries and amongst issues against performance benchmarks ([2]). The scorecard covers the following key environmental issues: climate change, air pollution, waste and water, and some of the main sectors that impact on the environment: energy, transport and agriculture. Most of the indicators are also of relevance to additional issues such as sustainable consumption, sustainable use of resources, and human health.

Scorecards are based on limited sets of indicators and can therefore never be exhaustive in their coverage of environmental issues. Although the scorecard presented here should not be seen as a definitive overall analysis of environmental performance it does show patterns of results between the EEA member countries. Some of the variations in results come from natural climatic and geographic conditions as well as from historical, social, economic and environmental factors.

The grouping of the countries used in the scorecard reflects some of the patterns in performance, as well as some of the underlying factors. This grouping is an aid to understanding and no overall ranking is implied by the order in which countries or groups are listed in the scorecard.

- The group of countries with the most consistent pattern across all the indicators are the EU-10 Member States and the accession countries, Bulgaria and Romania. These countries still have economies with relatively high energy and emission intensities, but all 1990 air-related targets are within reach. A number of the countries in this group have high freight transport intensities, both per capita and per unit of GDP. It is also in this group that one finds the lowest generation of municipal waste (either because waste generation is lower, or because it is collected less systematically). Only Slovenia does not fit the overall pattern but resembles Belgium or Norway more closely, although it is more emission-intensive.

- Another group of countries in which all air targets are within reach includes the western European countries that have recently restructured their industries and/or have long experience of environmental policies. This group comprises Germany, the United Kingdom, the Netherlands, France and Sweden. These countries have economies that are generally less energy and emission intensive, but their energy use per capita is far higher than in the previous group.

- Three western countries (Portugal, Spain and Ireland) which have rapidly developing economies, have difficulties in reaching any of the environmental targets included in the scorecard, and generally have emission-intensive economies.

- Another group of countries (Luxembourg, Slovenia, Belgium, Norway, Austria, Italy, Denmark, Finland and Greece) have difficulties reaching either their Kyoto (burden-sharing) targets or their ozone precursor emission targets. Although there is considerable variation within this group, a common feature of all these countries is the relatively high emission of ozone precursors. Energy use and greenhouse gas

([1]) More information about how the scorecard was constructed and main decision points can be found in the last section of this part of the report.
([2]) Information on performance benchmarks and targets can be found on the core set of indicators website www.eea.eu.int/coreset.

emissions per capita are also on the high side. All of these may be related to the high transport intensities found in these countries.

- The remaining six countries cannot be properly compared with others as there are currently gaps in the data provided to the EEA, or they do not have targets for the selected indicators. A number of these have recently joined EEA and Eionet and data exchange procedures in these cases are still under development.

Understanding the diversity between countries and how this can systematically impact environmental policy implementation is very relevant to decision-making at European level. Once this diversity is taken into account, it can also be very instructive to examine differences in performance and how they relate to the different types of responses adopted at the country level. The timing of policy action and the level of ambition in setting national targets and objectives can also substantially influence apparent performance.

The importance of the scorecard lies in its relevance to policy-makers, who need to understand changes in the environment and how these result directly or indirectly from the implementation of policy. The aim is to provide a deeper understanding of country conditions, behaviour and response to environmental problems which can begin to explain some of the differences in performance, and perhaps highlight areas for future work.

The scorecard encourages such critical assessment by presenting an array of policy relevant environmental indicators across a broad selection of themes together on one page. The scorecard also facilitates communication, and the aim is to support shared policy learning between the EU, member countries and other actors from which lessons and good practices can be derived.

In making these assessments attention has been paid to adhere to the principles of fairness and acceptability to the countries being compared, and the methodology has been developed in conjunction with the countries themselves. In particular the following underlying principles are used throughout:

- In recognition of the inherited environmental legacy of a country, both geographical and political, the scorecard focuses equally on the present status and on progress made over time. Thus a country that is a poor performer at the moment has the chance to show that it has made progress, while a country that has excellent status at present is not unfairly targeted for slowing its rate of improvement.

- The diversity in economic and social starting conditions that exists within the wide EEA area is recognised and all country comparisons are therefore made on per capita environmental performance unless the political targets for an environmental indicator are specifically set in relation to GDP, in which case both comparisons are shown.

During the development of the scorecard (a multiple-year effort with countries and experts), the need to avoid the pitfalls of oversimplification, irrelevance for policy-making and lack of credibility or legitimacy with the countries, was recognised. The scorecard represents a cautious and transparent first step in an ongoing process with EEA countries which will continue to evolve over the coming years. In particular, the balance between ease of communication and relevance for supporting decision-making will be continuously reviewed.

This part of the report has three components: (i) **Thematic assessment:** an assessment of each of the indicators which explores trends across countries; (ii) **Country analysis:** an analysis for each country for each of the nine indicators presented in the scorecard; and (iii) **Methodology:** a final section describing how the scorecard was developed and the main decision points.

Reading the scorecard

- The nine indicators used in the scorecard are a subset of the EEA core set of indicators (CSI).
- The country scorecard uses two symbols. The arrow symbols are used for progress indicators (usually covering the period 1992–2002), while the solid colours represent the status indicators (based on 2002 or 2003 data).
- The country scorecard also uses two colour schemes. Green and red are used when the values being compared relate directly to agreed policy targets. Alternatively, and in most cases where there are no hard or useable policy targets or where the data do not allow country comparisons to be made against the actual targets, three shades of blue are used to show comparisons against average European performance (light blue indicates the top relative performers).
- Overall the lighter the colour or tone the better the performance.
- For the green and red scale target indicators, countries which are not on track to meet policy targets (assessed on a linear progression to target) are shown in red. When countries are on track they are marked green. Countries substantially above the target line are marked in light green indicating that even with the uncertainties in the data there is a high confidence of them being on track. Countries closer to the target line are marked in dark green. More detailed information on targets can be found on the CSI website (www.eea.eu.int/coreset).
- For the blue scale status indicators, country comparisons are based on absolute values in the current year, such that the top 25 % of the range of results and the bottom 25 % are clearly marked. In several cases, notably organic farming, the majority of countries falls into the lowest 25 % of the range.
- Outliers which significantly distort the distribution of the data are excluded (this is the case for municipal waste generation, share of organic farming and emissions of ozone precursors).
- For the blue scale progress indicators, countries are ranked according to the difference in their performance to the average progress in the EU-25 over the past ten years. Again, the top 25 % ([3]) of the range and the bottom 25 % are identified.

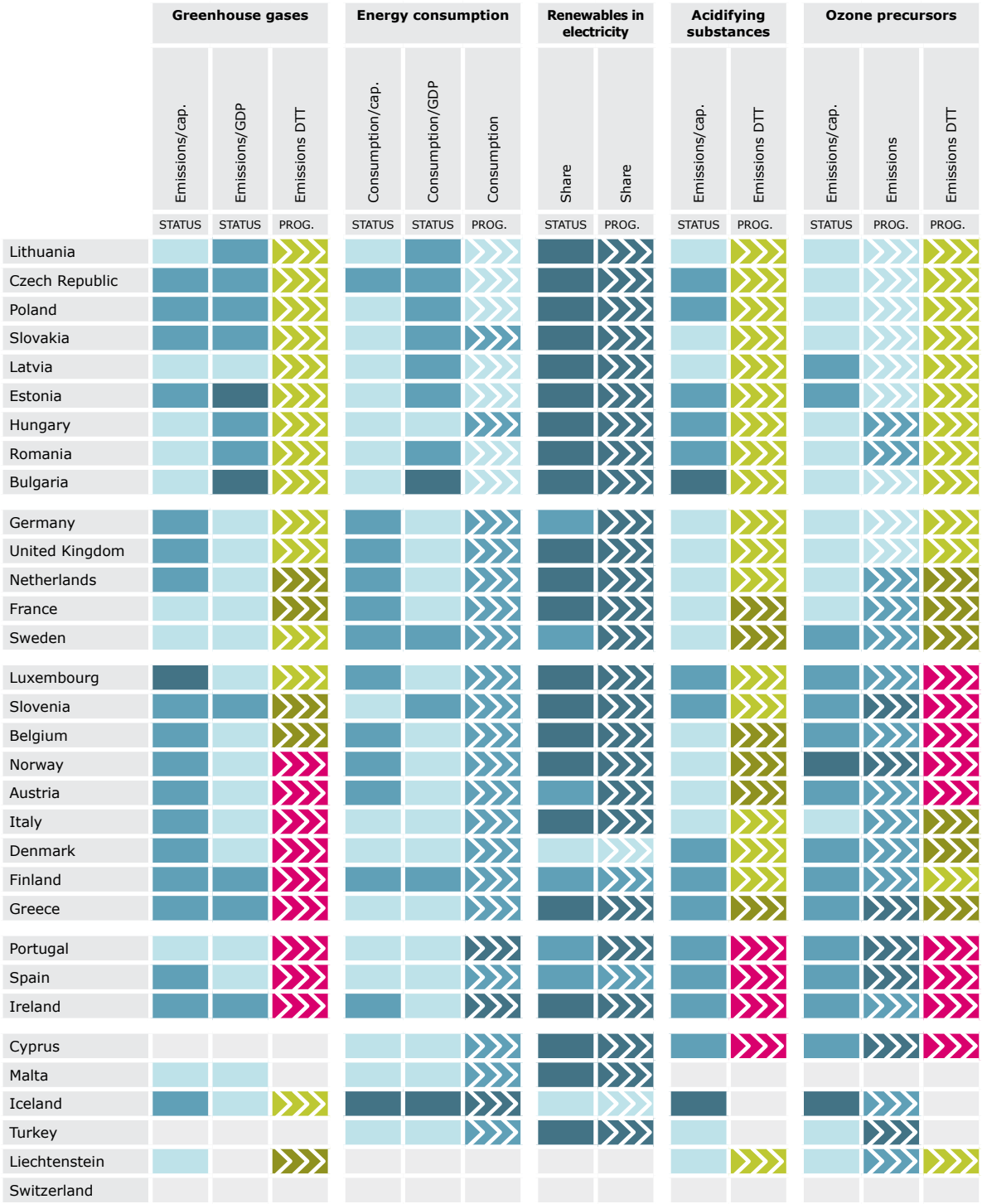
The scorecard is complemented by the country analysis section that has been prepared in partnership between the countries and the EEA. This section provides an opportunity for countries to raise issues specific to their situation and to bring in relevant information that serves to balance the scorecard results

The methodology section is designed to help in the reading and interpretation of the scorecard and outlines some of the key decision points encountered during the development of the scorecard. A more technical methodology for practitioners wishing to create scorecards is published separately.

([3]) For further information please refer to the box in the section 'Methodology and main decision points'.

EEA scorecard

In the EEA scorecard of relative environmental performance presented below countries are grouped by roughly similar patterns of results as well as socio-economic and geographical factors. The scorecard presents results for nine indicators from the EEA core set of indicators, for a combination of *progress* over time (usually ten years 1992–2002, boxes with arrows) and *status* for the latest year available (2002/2003, solid colour boxes). The scorecard also uses two colour schemes: red/green when the values being compared relate directly to agreed policy targets; and three shades of blue to show comparisons against average European performance (light blue indicates the top relative performers). For more information see the section *Methodology and main decision points*.



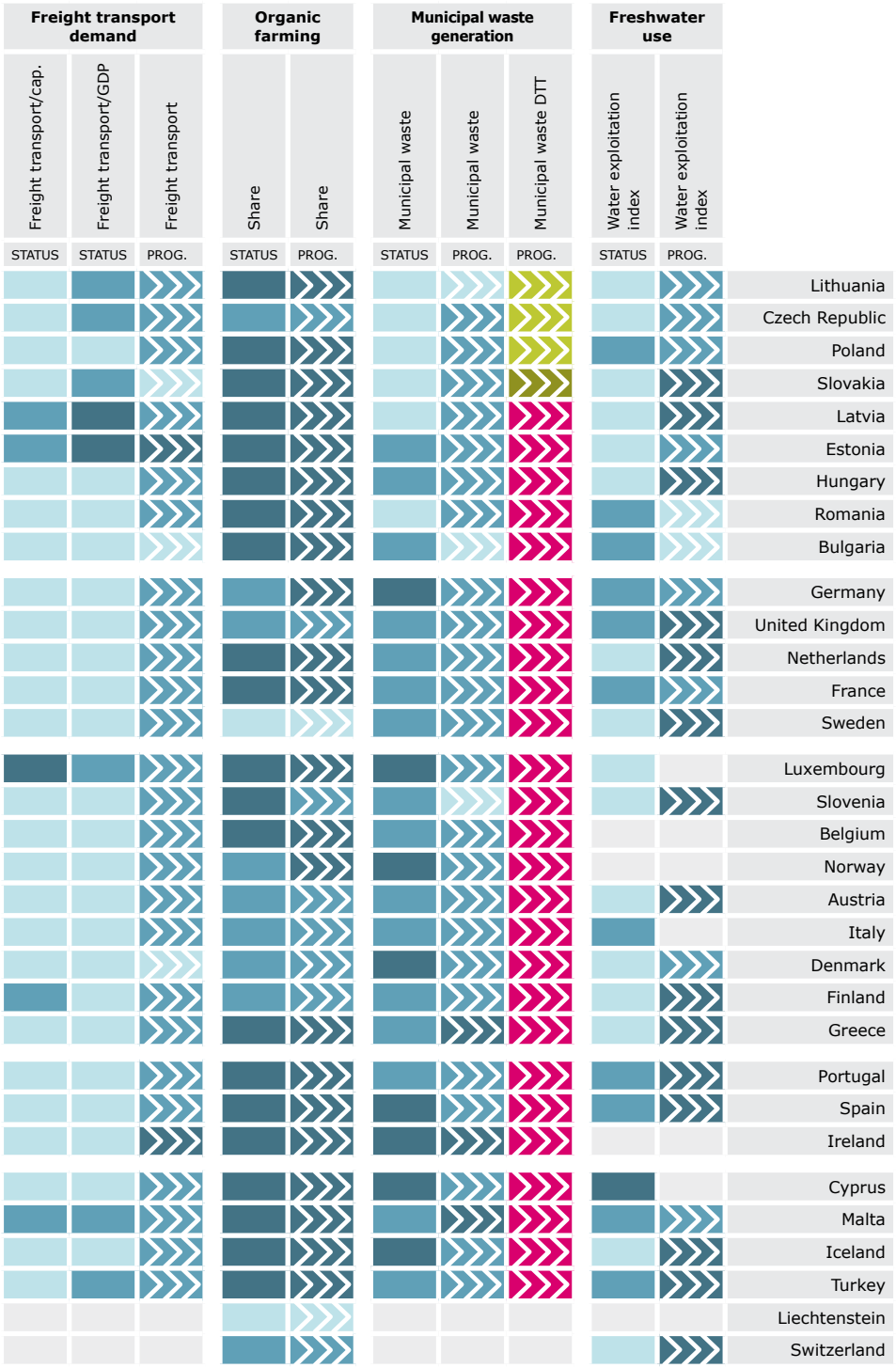
The listing of the countries does not represent an overall ranking

STATUS (2002/2003)
- Top 25 % of indicator values
- Middle 50 % of indicator values
- Lowest 25 % of indicator values

PROGRESS (1992–2002/2003)
- Top 25 % of indicator values
- Middle 50 % of indicator values
- Lowest 25 % of indicator values

Distance to target (DTT)
- On track to meet the target
- Within ± 5 percentage points of the target line
- Not on track to meet the target

Overall, the lighter the colour or tone the better the performance.



The listing of the countries does not represent an overall ranking

Greenhouse gas emissions

CSI 10

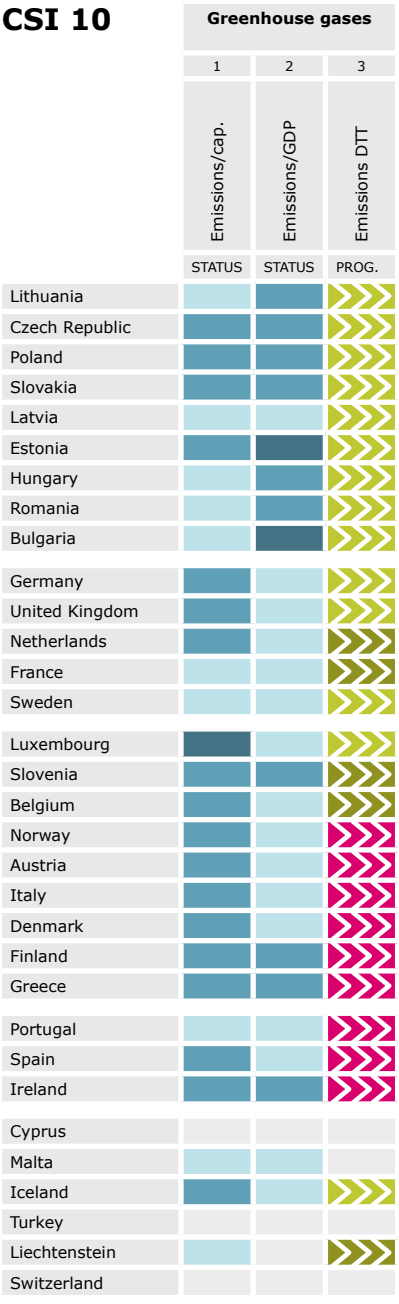


Figure 1 **Emissions of greenhouse gases per capita, 2002**

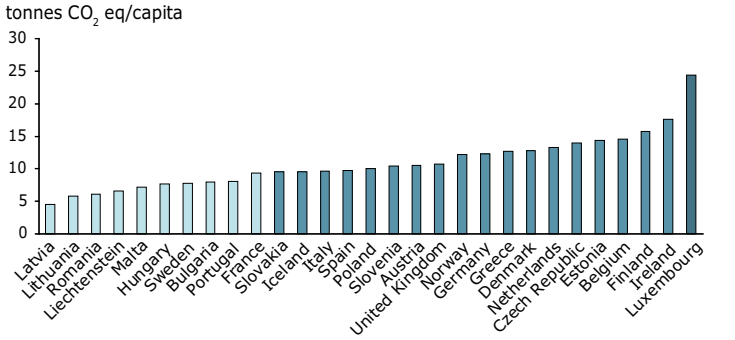


Figure 2 **Emissions of greenhouse gases per unit of GDP, 2002**

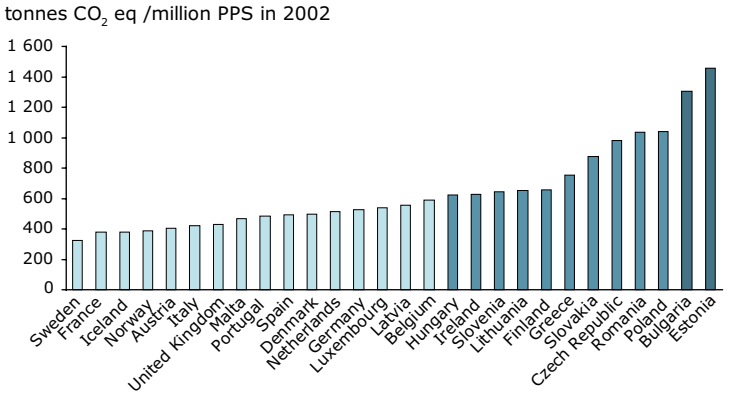
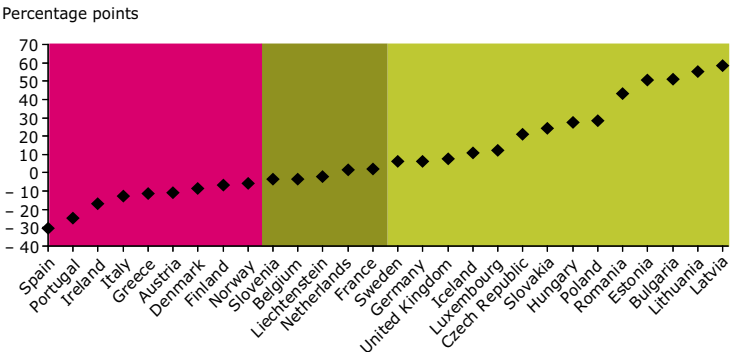


Figure 3 **Distance to Kyoto target, linear target path, 2002**



Notes: For technical explanations and caveats on country base-years and targets see CSI 10 and CSI 11 in the EEA indicator management system (www.eea.eu.int/coreset). The distance to target calculation is explained in the text. The comparison per unit of national income is done on the basis of gross domestic product (GDP) expressed in purchasing power parities (PPP). Hence the unit is not euro but purchasing power standard (PPS).

Sources: GHG emissions: EEA; GDP: Eurostat; Population: the World Bank.

Greenhouse gas emissions

Combating climate change and minimising its potential consequences are key objectives of the UN Framework Convention on Climate Change (UNFCCC) and a high priority for the EU. Achieving this aim would require substantial (15 to 50 %) reductions in global greenhouse gas emissions. As a first step, the parties to the UNFCCC in 1997 adopted the Kyoto Protocol, which requires developed countries to reduce emissions of the six greenhouse gases to 5.2 % below their levels in a given base-year (1990 in most cases) by the period 2008–2012. Individual country targets are found on the CSI website (www.eea.eu.int/coreset). The 'burden sharing targets' of the EU-15 Member States reflect the economic development of countries, but also the ambition of governments at the time the targets were agreed (1998).

In 2003, aggregate greenhouse gas emissions in the EU-15 Member States were 1.7 % below the base-year level, and emissions increased by 1.3 % between 2002 and 2003 (excluding land-use changes and carbon sequestration in forests). After more than half the time period between 1990 and the first commitment period (2008–2012) under the Kyoto Protocol, the reduction by 2003 was less than a quarter of that needed to reach the EU-15 target.

Progress in reducing greenhouse gas emissions is illustrated by comparison with an assumed linear target path to the Kyoto Protocol target (Figure 3). 2002 data were used since these were available for all countries ([1]). For some countries (Austria, Belgium, Denmark, Ireland, Luxembourg and the Netherlands) the expected use of the so-called Kyoto mechanisms, which allow the achievement of national targets by taking measures in other countries, is taken into account. The recently-launched European Union greenhouse gas emission trading scheme is not taken into account.

Austria, Denmark, Finland, Greece, Ireland, Italy, Portugal and Spain are not on track (more than five percentage points below the target path) and are therefore marked in red in the scorecard. Of the countries that are close to the target path, Belgium and Slovenia are slightly below the target line, while France and the Netherlands are slightly above. Given the inherent uncertainties in the data it is impossible to say with certainty whether or not these countries are on track, and they are therefore marked dark green.

The countries that are not on track do not stand out in terms of high emissions per capita or per unit of national income (GDP). The extreme ends of the bar graphs (the low side of the per capita graph and the high side of the per GDP graph) are occupied by the EU-10 and the accession countries. These are on track for reaching their Kyoto targets mainly as a result of the economic transition. However, due to data gaps, the uncertainty in the EU-10 data is higher than for the EU-15 countries.

Lowest emission intensity in 2002:
Latvia per capita (4.5 tonnes CO_2-equivalent/capita; Figure 1) and **Sweden** by GDP (320 tonnes CO_2-equivalent/million PPS GDP; Figure 2)

Highest emission intensity in 2002:
Luxembourg per capita (24 tonnes CO_2-equivalent/capita; Figure 1) and **Estonia** by GDP (1 460 tonnes CO_2-equivalent/million PPS GDP; Figure 2)

Factor difference:
x5 (per capita) and x5 (per unit of GDP)

([1]) At the time of writing, 2003 data in EEA indicator format were available only for the EU-15 countries. Ranking this 2003 data within the EU-15 group per capita or per unit of GDP does not result in significant changes compared with 2002. The relative distance-to-target indicator is however not possible to reproduce as new data on the use of the Kyoto mechanisms is still being submitted.

Total energy consumption

CSI 28

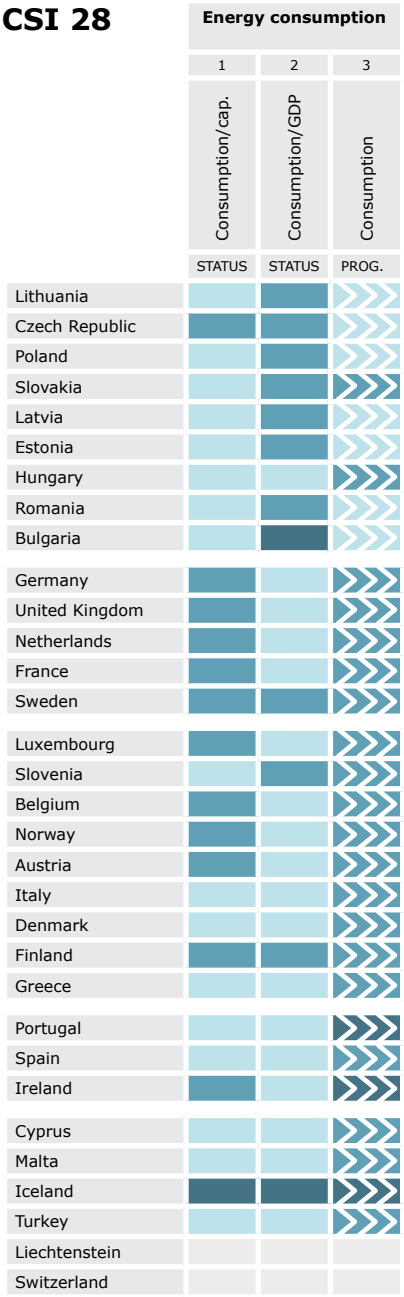


Figure 1 **Energy consumption per capita, 2002**

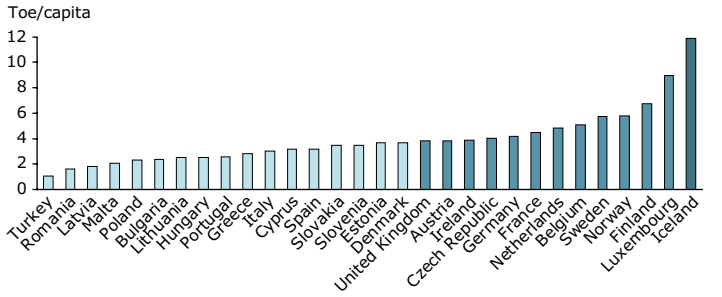


Figure 2 **Energy consumption per unit of GDP, 2002**

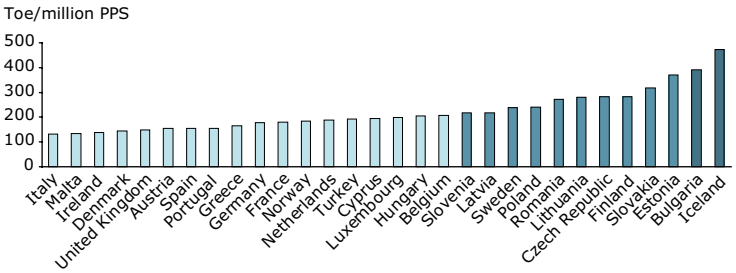
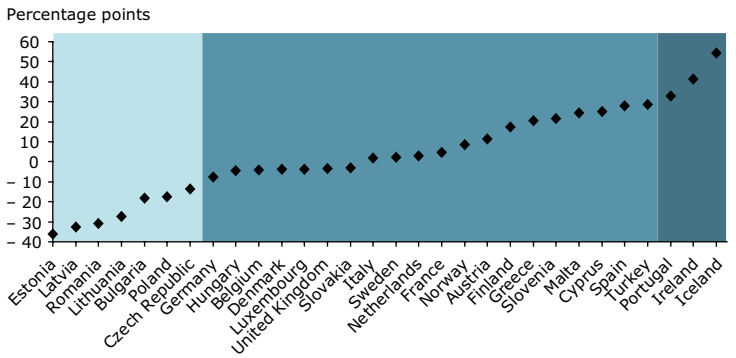


Figure 3 **Energy consumption changes, 1992–2002, compared with the EU-25 average**



Notes: For technical specifications see CSI 28 in the EEA indicator management system (www.eea.eu.int/coreset). All indicators are calculated on the basis of total, or gross inland, consumption. The comparison per unit of national income is done on the basis of gross domestic product (GDP) expressed in purchasing power parities (PPP). Hence the unit is not euro but purchasing power standard (PPS).

Sources: Energy and GDP: Eurostat; Population: the World Bank.

Total energy consumption

The largest contributor to greenhouse gas emissions in the EU is energy consumption, where emissions originate both during the transformation of one energy form to another and during final consumption. There are no direct targets for total energy consumption (which includes the energy losses during transformation, sectoral energy-use, and energy production). Total energy consumption increased by 11 % between 1992 and 2002 in the EU-15 and decreased by 5 % in the EU-10.

Drilling down into the data using the country scorecard, it can be seen that there is a wide variation in energy intensity among countries. Iceland stands out because of energy intensive industries and abundance of geothermal energy, which is used for heating and electricity production; the latter is used mainly by the aluminium industry, which has chosen Iceland as a production location because of the availability of cheap and 'green' electricity. Since the efficiency of producing electricity from geothermal energy is very low (an estimated 90 % of the energy content is lost), this pushes up the total consumption figure. The high consumption in Iceland, however, does not have the same environmental consequences as energy consumption in other countries. A number of the EU-10 Member States and accession countries also have high energy consumption per unit of GDP. The longer and colder winters under a continental climate contribute to relatively higher consumption in a number of these countries. However, besides that, the countries face the challenge of improving their efficiency by replacing old power plants and industrial installations, by improving maintenance, and through insulating and installing heating controls in buildings. At the other end of the scale are the countries with low energy intensity, such as Austria, Denmark, Ireland, Italy and Malta falling into the lowest 25 % of the distribution (Figure 2).

The Nordic countries Finland, Norway and Sweden, because of their geographical location, rank high on per capita consumption, with Finland and Sweden also ranking high on the energy intensity per GDP scale. The EU-10 Member States and the accession countries have relatively low per capita energy consumption compared with the EU-15 Member States.

Progress in reducing total energy consumption is compared with the EU-25 average. Largely due to economic transition the best progress compared with this average was in the EU-10 Member States and the EU accession countries (Figure 3). The least progress was seen in Iceland, Ireland and Portugal.

Lowest energy consumption in 2002:
Turkey per capita (1.1 toe/capita; Figure 1) and **Italy** by GDP (132 toe/million PPS GDP; Figure 2)

Highest energy consumption in 2002:
Iceland, but without the same environmental consequences. Next in row: **Luxembourg** per capita (9 toe/capita; Figure 1) and **Bulgaria** by GDP (392 toe/million PPS GDP; Figure 2)

Factor difference:
x8 (per capita) and x3 (per unit of GDP)

Renewable electricity

CSI 31

	Renewables in electricity	
	1	2
	Share	Share
	STATUS	PROG.
Lithuania		
Czech Republic		
Poland		
Slovakia		
Latvia		
Estonia		
Hungary		
Romania		
Bulgaria		
Germany		
United Kingdom		
Netherlands		
France		
Sweden		
Luxembourg		
Slovenia		
Belgium		
Norway		
Austria		
Italy		
Denmark		
Finland		
Greece		
Portugal		
Spain		
Ireland		
Cyprus		
Malta		
Iceland		
Turkey		
Liechtenstein		
Switzerland		

Figure 1 **Share of electricity from renewables other than large hydro in electricity consumption, 2002**

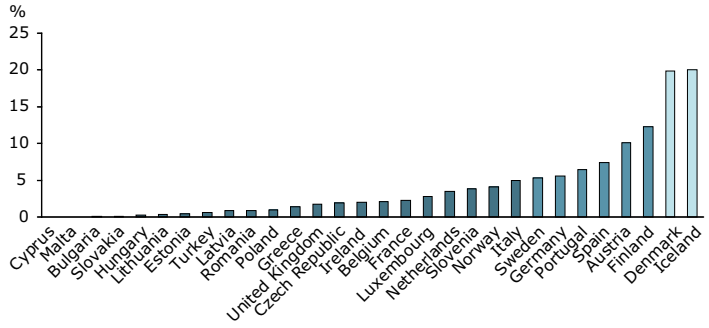
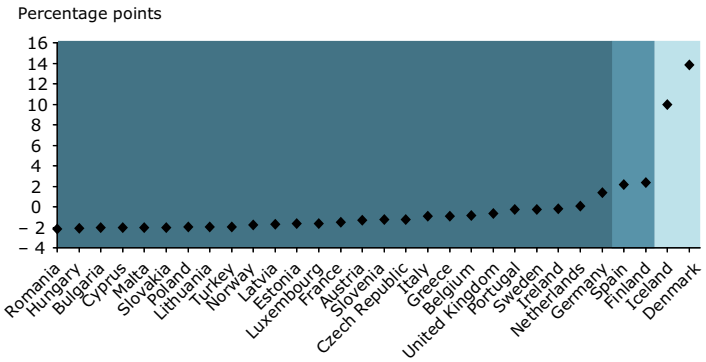


Figure 2 **Change, 1992–2002, in the share of electricity from renewables other than hydro in electricity consumption, compared with the EU-25 average**



Notes: For technical specifications and definitions of the variables see CSI 31 in the EEA indicator management system (www.eea.eu.int/coreset). Note that the comparison over time is on the basis of renewables other than all hydro, as the data set available for large hydro is poor prior to 2002.
Source: Eurostat.

Share of renewables in electricity (other than large hydro)

Increased market penetration of renewable energy will help EEA member countries to reach their commitments under the UNFCCC Kyoto Protocol. The White Paper for renewables (COM(97) 599 final) included an indicative target of increasing the share of renewable energy in total energy consumption in the EU-15 to 12 % by 2010. Four years later the EU Directive on the promotion of electricity from renewable energy sources in the internal electricity market (2001/77/EC) set an indicative target of 22.1 % of gross EU-15 electricity consumption to come from renewable sources, including large hydro, by 2010. It required Member States to set and meet annual national indicative targets consistent with the directive. For the EU-10 Member States, national indicative targets are included in the Accession Treaty: the 22.1 % target set initially for the EU-15 for 2010 has become 21 % for the EU-25.

Countries with a high share of all renewables in electricity generation are Norway and Iceland (both close to 100 %), Austria (66 %), Sweden (47 %) and Latvia (39 %). The distance to the national targets for the share of renewable energy in electricity consumption is included in CSI 31. Countries with a more than ten percentage point distance to the indicative target include Austria, Greece, Italy, Portugal, Slovakia, Spain, and Sweden.

As can be seen from Figure 1 of CSI 31 (see Part B of this report), much of the available renewable electricity in Europe comes from existing large hydropower plants (> 10 MW). As hydropower production depends to a large extent on rainfall in a specific year, country comparison in a certain year can be flawed. In addition, with the exception of a few countries, the growth potential of large hydropower plants in Europe is limited, due in part to a lack of suitable sites, environmental concerns and the water framework directive. Hence, to focus attention on environmental protection it makes sense to compare trends in the use of renewable electricity excluding the share produced by large hydropower plants. Unfortunately, data prior to 2002 do not allow hydropower plants to be differentiated by size for all countries and therefore for the progress indicator, which uses 1992 data, hydro of all sizes is excluded in the present analysis — this is a temporary measure until improved data become available.

Cyprus and Malta are alone among the 31 EEA member countries in having no renewable electricity at all. They are closely followed by Bulgaria, Estonia, Hungary, Latvia, Lithuania, Romania, the Slovak Republic and Turkey which all had less than a 1 % share of renewables (other than large hydropower plants) in total electricity in 2002. The capacity in Turkey has increased in more recent years. After Iceland, with its geothermal energy sources, Denmark leads in Europe with a share of 19.9 % of electricity from renewables other than large hydropower plants, largely wind energy (Figure 1).

Denmark's lead is reflected in the progress made between 1992 and 2002 when there was a 16 percentage point increase in the share of renewables other than hydropower plants. During the same period Iceland increased by 12 percentage points, while Finland, Germany and Spain also showed a substantial increase (between 3.4 and 4.4 percentage points; Figure 2).

With the exception of Spain, all countries that are more than 10 percentage points away from the renewable electricity target (see Figure 1 in CSI 31), have shown a lower than average progress (Figure 2) in using renewables other than hydro. This implies that countries that are not meeting their renewable electricity targets are not investing sufficiently in these renewables.

Highest share:
Iceland and **Denmark**
20 % of electricity from renewables other than large hydro in 2002, see text above and under total energy consumption

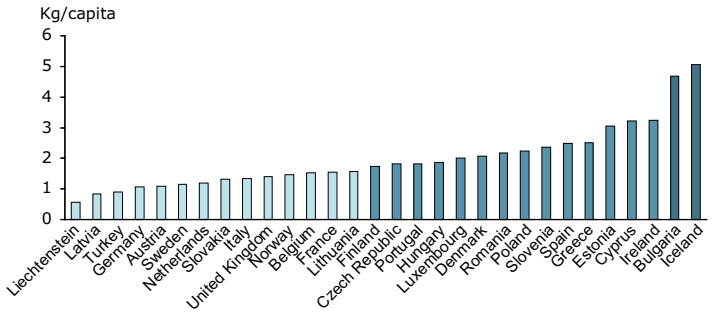
Lowest share:
Cyprus and **Malta** no renewable electricity in 2002

Emissions of acidifying substances

CSI 01

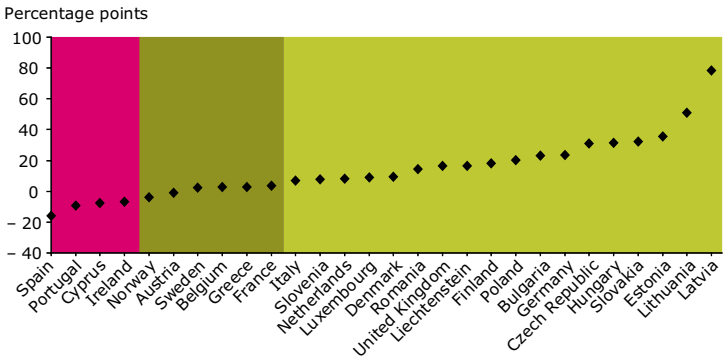
	Acidifying substances	
	1	2
	Emissions/cap.	Emissions DTT
	STATUS	PROG.
Lithuania		
Czech Republic		
Poland		
Slovakia		
Latvia		
Estonia		
Hungary		
Romania		
Bulgaria		
Germany		
United Kingdom		
Netherlands		
France		
Sweden		
Luxembourg		
Slovenia		
Belgium		
Norway		
Austria		
Italy		
Denmark		
Finland		
Greece		
Portugal		
Spain		
Ireland		
Cyprus		
Malta		
Iceland		
Turkey		
Liechtenstein		
Switzerland		

Figure 1 **Emission of acidifying substances per capita, 2002**



Note: SO_2, NH_3 and NO_X (expressed as NO_2); The factors are NO_X 0.021, SO_2 0.031 and NH_3 0.058. Results are expressed in acidification equivalents.

Figure 2 **Emission of acidifying substances: distance to NECD targets, linear target path, 2002**



Notes: For technical specifications see CSI 01 in the EEA indicator management system (www.eea.eu.int/coreset).
Sources: Emissions: EEA; GDP: Eurostat.

Emissions of acidifying substances

Emissions of acidifying substances into the atmosphere result in deposition that can damage ecosystems, buildings and materials. Emissions of the key acidifying gases, nitrogen oxides (NO_X), sulphur dioxide (SO_2) and ammonia (NH_3), are covered by the EU National Emission Ceilings Directive (NECD) (2001/81/EC) and the Gothenburg protocol under the United Nations Convention on Long-range Transboundary Air Pollution (CLRTAP) (UNECE 1999). The NECD generally involves slightly stricter emission reduction targets than the Gothenburg Protocol for EU-15 Member States for the period 1990–2010. The Gothenburg Protocol entered into force in May 2005.

Emissions of acidifying substances in Europe have been reduced substantially (by 44 % in the EEA member countries excluding Malta, between 1990 and 2002), mainly due to the increased use of pollution-abatement equipment, e.g. flue gas desulphurisation, together with the use of low-sulphur fuels in power plants

Countries have individual targets for each of the acidifying substances to be reached in 2010. These targets have been established with the aim of reducing the exceedance of deposition above a critical load. A critical load is the highest deposition that will not cause long-term harmful effects on ecosystems. In Scandinavia where soils have a low buffering capacity, critical loads are low. The opposite holds for the Mediterranean countries. Country targets reflect the gap between the 1990 emissions and these critical loads taking into account long-distance transport of pollutants. Of course the agreed targets are also the result of a political negotiation. For this indicator, both targets and emissions have been recalculated in 'acidification equivalents' to allow for aggregation. Progress towards the targets is measured as the distance to an assumed linear target line.

There is almost an order of magnitude variation between the countries emitting most and least acidifying substances per capita in 2002. Latvia, Germany and Austria are among the lowest per capita emitters, together with Liechtenstein and Turkey. Iceland is the highest, which has a lot to do with a very small population; a large part of their sulphur emissions stem from their fishing fleet. Others on the relatively high side are Bulgaria, Cyprus, Estonia, and Ireland, all of which emitted more than 3 kg of acidifying substances per capita in 2002 (Figure 1).

Cyprus, Ireland, Portugal and Spain are not on track to meet their 2010 targets. Norway and Austria are close to being on track and the EU as a whole is well on track, due to the good performance of Germany, the United Kingdom and the EU-10 Member States (Figure 2).

Lowest emission intensity in 2002:
Liechtenstein
0.56 kg acidifying emissions/capita

Highest emission intensity in 2002:
Iceland 5.06 kg acidifying emissions/capita (but see text above), next in row
Bulgaria 4.67 kg acidifying emissions/capita

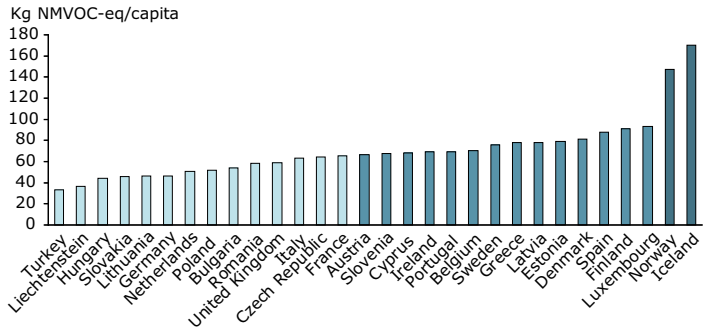
Factor difference:
x9

Emissions of ozone precursors

CSI 02

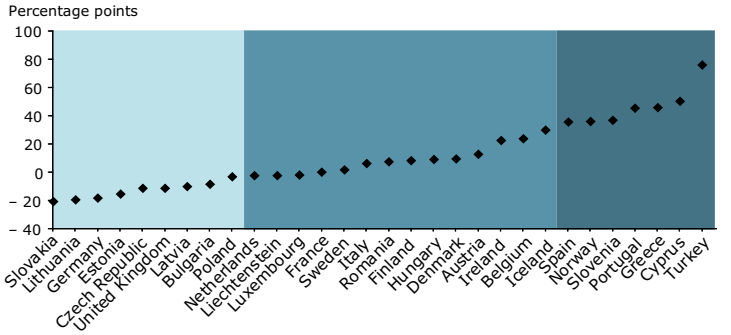
	Ozone precursors		
	1	2	3
	Emissions/cap.	Emissions	Emissions DTT
	STATUS	PROG.	PROG.
Lithuania			
Czech Republic			
Poland			
Slovakia			
Latvia			
Estonia			
Hungary			
Romania			
Bulgaria			
Germany			
United Kingdom			
Netherlands			
France			
Sweden			
Luxembourg			
Slovenia			
Belgium			
Norway			
Austria			
Italy			
Denmark			
Finland			
Greece			
Portugal			
Spain			
Ireland			
Cyprus			
Malta			
Iceland			
Turkey			
Liechtenstein			
Switzerland			

Figure 1 **Emissions of ozone precursors per capita, 2002**



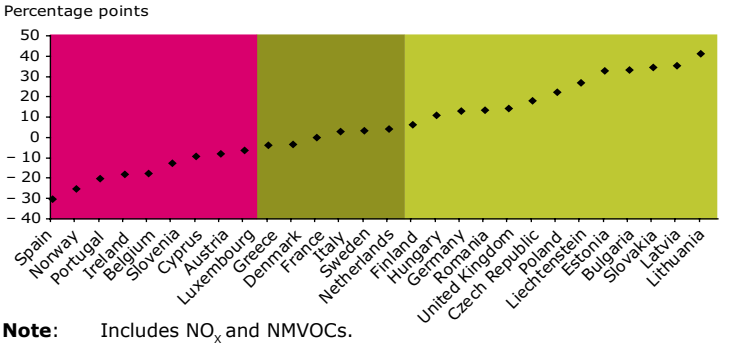
Note: Includes NO_x, NMVOCs, CO and CH_4.

Figure 2 **Change, 1990–2002, in emissions of ozone precursors, compared with the EU-25 average**



Note: Includes NO_x, NMVOCs, CO and CH_4.

Figure 3 **Emissions of ozone precursors, distance to NECD targets, linear path, 2002**



Note: Includes NO_x and NMVOCs.

Notes: For technical specifications and aggregation methodology see CSI 02 in the EEA indicator management system (www.eea.eu.int/coreset). The distance-to-target calculation is explained in the text. Quartile groupings in the progress column and graph are calculated excluding data on Turkey.

Sources: Emissions: EEA; GDP: Eurostat.

Emissions of ozone precursors

High concentrations of ground-level ozone adversely affect the human respiratory system and are harmful to crops and forests. The key ozone-forming precursor gases are NO_X, NMVOCs, CO and CH_4. Emissions of NMVOCs and NO_X are covered by the EU National Emission Ceilings Directive (NECD) (2001/81/EC) and the Gothenburg Protocol of the UNECE Convention on Long-range Transboundary Air Pollution. Each country has its own target for each of these two substances. There are no EU emission targets set for either CO or CH_4. However, there are several directives and protocols that indirectly affect emissions of these two substances. For example, CO is covered by the second daughter directive under the Air Quality Directive, and CH_4 is included in the basket of six greenhouse gases under the Kyoto Protocol.

Ozone formation depends on climatic conditions and is mainly a warm-weather phenomenon. The southern European countries are therefore more predisposed to ozone formation. This means that there is not a level playing field in terms of the relation between ozone precursor emissions and ozone formation, and poor performance in emission reduction in southern countries will probably lead to greater levels of impact, for example on human health, than similar poor performance in more northern countries.

This indicator includes the status (current emissions per capita) and the progress (emission changes 1990–2002) for these four precursors. The distance-to-target comparison is made only for NO_X and NMVOCs, for which there are NECD targets. The distance to target is measured to an assumed linear target path towards each country target. Both targets and emissions have been recalculated in NMVOC equivalents.

The EU-15 as a whole is on track to reach the targets for emission reduction in 2010. However, at country level only four countries are clearly on track (Finland, Germany, Liechtenstein and the United Kingdom). Five additional countries (Denmark, France, Greece, Italy and Sweden) are within + or – 5 percentage points of the linear target line (2002) and are also likely, although less certain, to meet the target. On the other hand, Austria, Belgium, Ireland, Luxembourg, Norway, Portugal and Spain are not on track to meet their NECD targets (and neither are Cyprus and Slovenia in the EU-25, and Norway). The EU-10 Member States have substantially decreased their emissions over the past decade, led by the Slovak Republic with a 57 % reduction (Figure 3).

Estonia, Germany, Lithuania and the Slovak Republic have shown the greatest overall reduction in the basket of four tropospheric ozone-forming gases over the ten years between 1990 and 2002, with over a 50 % reduction in emissions in each case.

Lowest emission intensity in 2002:
Turkey 33 kg NMVOC equivalent/capita

Highest emission intensity in 2002:
Iceland 170 kg NMVOC equivalent/capita and
Norway 147 kg NMVOC equivalent/capita

Factor difference:
x5

Freight transport demand

CSI 36

	Freight transport demand		
	1	2	3
	Freight transport/ cap.	Freight transport/ GDP	Freight transport
	STATUS	STATUS	PROG.
Lithuania			
Czech Republic			
Poland			
Slovakia			
Latvia			
Estonia			
Hungary			
Romania			
Bulgaria			
Germany			
United Kingdom			
Netherlands			
France			
Sweden			
Luxembourg			
Slovenia			
Belgium			
Norway			
Austria			
Italy			
Denmark			
Finland			
Greece			
Portugal			
Spain			
Ireland			
Cyprus			
Malta			
Iceland			
Turkey			
Liechtenstein			
Switzerland			

Figure 1 **Freight transport demand per capita, 2003**

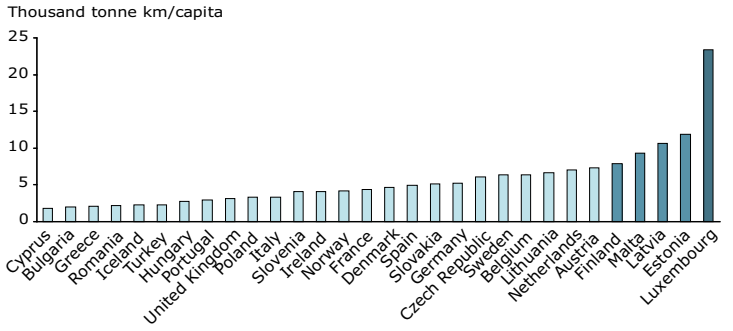


Figure 2 **Freight transport demand per unit of GDP, 2003**

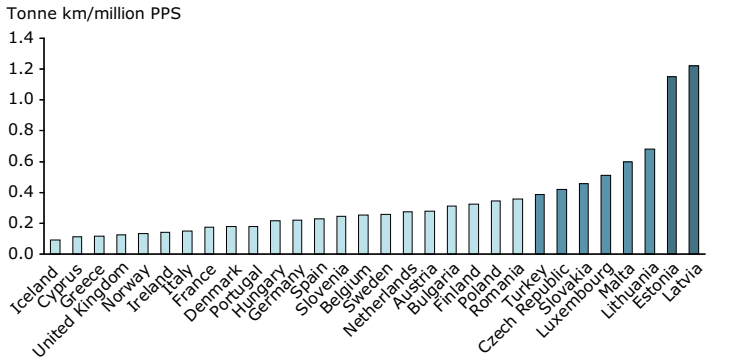
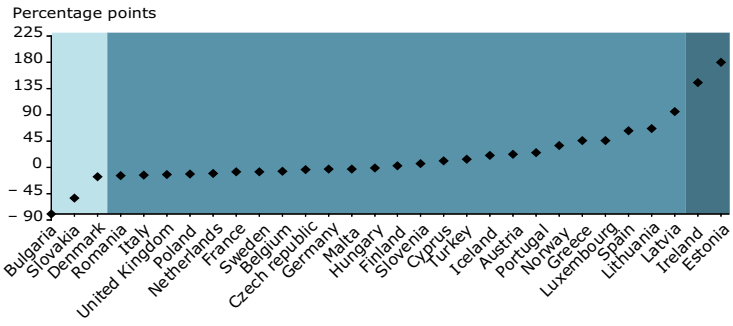


Figure 3 **Change, 1995–2003, in freight transport demand, compared with the EU-25 average**



Notes: For technical specifications see CSI 36 in the EEA indicator management system (www.eea.eu.int/coreset). The comparison per unit of national income is done on the basis of gross domestic product (GDP) expressed in purchasing power parities (PPP). Hence the unit is not euro but purchasing power standard (PPS).

Sources: Freight transport: Eurostat; GDP: Eurostat, Population: the World Bank.

Freight transport demand

Transport is a key problem area for Europe's environmental policy. Freight and passenger transport demand have both grown substantially since 1995, thereby making it increasingly difficult to limit the environmental consequences of transport.

The EU has set itself the objective of decoupling freight transport demand from GDP. This objective was first mentioned in the transport and environment integration strategy which was adopted by the Council of Ministers in Helsinki in 1999. In the Sustainable development strategy adopted by the European Council in Gothenburg, the objective of decoupling is described as a possible tool to help reduce congestion and other negative side-effects of transport. In the review of the transport and environment integration strategy in 2001 and 2002, the Council reaffirmed the objective of reducing the link between the growth of transport and GDP. In the EU's sixth environment action programme, decoupling of economic growth and transport demand is described as one of the key objectives in order to deal with climate change and alleviate the health impacts of transport in urban areas.

While some success in decoupling passenger transport from economic growth has been achieved, this is not echoed for freight transport, which increased by 18 % between 1995 and 2003. The passenger transport demand indicator showing modal share (CSI 35) is currently under revision to include air transport, and therefore cannot be included in the current EEA country scorecard (see the indicator selection table in the methodology section). On the basis of the present definitions, Europe is not showing signs of progress to the modal split target in freight transport (in the period 1998–2002 the share of road freight increased by 4 %).

From the country scorecard it may be noted that the three Baltic countries consistently end up at the high end of transport demand, both per capita and per unit of GDP, as well as in the relative growth of freight transport. Part of these increases is related to their geographical location on the transport route between Russia, Ukraine and western Europe. Another part of the explanation is low wages, giving these countries a comparable advantage for the location of international transport companies.

Care must therefore be taken when interpreting the scorecard to take the geographical location of countries into consideration, for example so that island states are not compared with the central European and Baltic transit states. Island states are often characterised by high freight transport efficiencies resulting from smaller distances and fewer centres of high population that need to be served by freight transport. From the scorecard it can also be seen that countries which are peninsulas also tend to have generally lower levels of freight transport, possibly for reasons similar to those of islands.

Because this indicator defines freight transport by country of registration rather than actual traffic on the road network of a particular country, many of the apparent trends seen, including decoupling, may instead refer to the relative competitive advantage of a country compared to its neighbours in attracting international transport companies.

Lowest freight transport demand in 2003 were in two island states:
Cyprus per capita (2 ktonne km/capita; Figure 1) and **Iceland** by GDP (90 tonne km/PPS GDP; Figure 2)

Lowest freight transport demand in states other than island states or 'peninsulas' were Hungary per capita (3 ktonne km/capita; Figure 1) and **France** by GDP (175 tonne km/PPS GDP; Figure 2)

Highest freight transport demand in 2003: Luxembourg per capita (23 ktonne km/capita; Figure 1) and **Latvia** by GDP (1220 tonne km/PPS GDP; Figure 2)

Highest freight transport demand in an island state: **Malta** 9 ktonne km/capita Figure 1, and 600 tonne km/PPS GDP; Figure 2

Factor difference (non-island states): x8 (per capita) and x7 (per GDP)

Area under organic farming

CSI 26

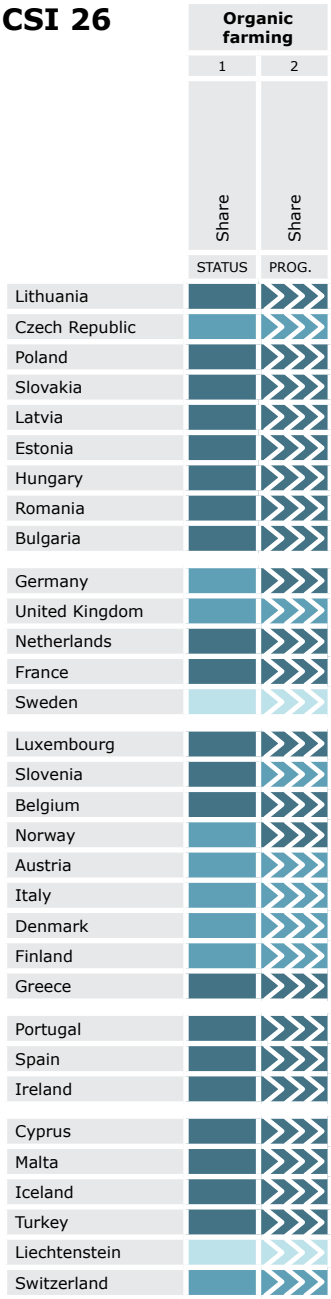


Figure 1 **Share of organic farming in total utilised agricultural area, 2002**

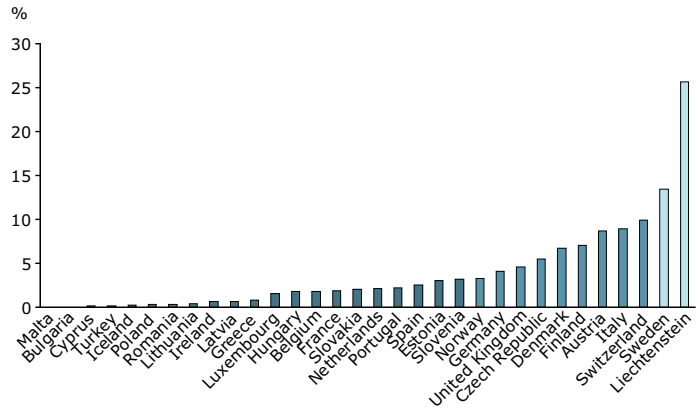
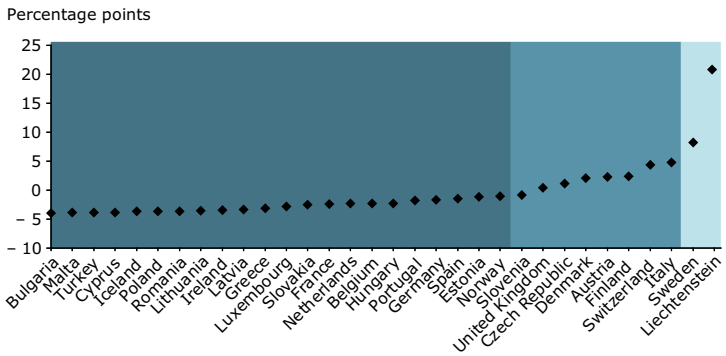


Figure 2 **Change, 1992–2002, in the share of organic farming in total utilised agricultural area compared with the EU-25 average**



Notes: For technical specifications and definition of organic agriculture see CSI 26 in the EEA indicator management system (www.eea.eu.int/coreset). Percentages refer to the area of certified and policy-supported organic land and land being converted to organic agriculture to total utilised agricultural area. The quartile partition in country groups is made excluding Liechtenstein data.

Sources: Institute of Rural Sciences, University of Wales, Aberystwyth

Area under (and share of) organic farming

Organic farming aims to be a more environmentally sustainable form of agricultural production. Its legal framework is defined by Council Regulation 2092/91 and amendments. The adoption of organic farming methods by individual farmers is supported through agri-environment scheme payments and other rural development measures at the Member State level. In 2004 the EU Commission published the European Action Plan for Organic Food and Farming (COM(2004) 415 final) to further promote this farming system.

This indicator tracks progress in that direction. However, it is only one element in the overall impact of agriculture on the environment. Due to economic transition and other factors, inputs of fertilisers and pesticides in many of the EU-10 Member States, the accession countries and Turkey are still low. Some of the farmed land in many of these countries does not receive fertiliser or pesticides and could be considered similar to organically farmed land from an environmental perspective. However such land is not classified as organic and therefore is not recorded in this dataset. In some cases the barriers to certification still to be overcome are structural, i.e. the organisational infrastructure to support the certification process is lacking. This indicator cannot be used to draw conclusions about the environmental impact of agriculture in different countries.

The share of organic farming has increased, but overall farming is organic on only 4 % of the total utilised agricultural area in the EU-15, 1.4 % in the new EU-10 and only 0.4 % in the remaining EEA countries.

As there is no specific EU target for the share of organic farming area, apart from a generic aim of increasing the share of organic farming, the country comparisons are undertaken on the basis of comparison with the EU-25 average increase. Some EU Member States have national targets for the area under organic farming, often aiming to reach 10–20 % in 2010. Despite progress in the share of organic farming at the European level, its share in many countries is still low. Only eight countries have 5 % or more of their utilised agricultural land under organic farming (Austria, the Czech Republic, Denmark, Finland, Italy, Liechtenstein, Sweden and Switzerland). Eleven countries (Bulgaria, Cyprus, Greece, Iceland, Ireland, Latvia, Lithuania, Malta, Poland, Romania and Turkey) have less than 1 %.

Austria, the Czech Republic, Denmark, Finland, Italy, Liechtenstein, Sweden, Switzerland, and the United Kingdom all show progress equal to or better than the EU-25 average.

Highest share in 2002: Liechtenstein
25.6 % certified organic land, but note that Liechtenstein has only 3 840 ha of utilised agricultural area. **Sweden** on the other hand has 3.8 million ha of which 13 % ([1]) is classified organic land

Lowest share in 2002: Malta
No organic farming reported in its 13 000 ha of utilised agricultural land
followed by **Bulgaria** with 0.01 % of certified organic land of 5.5 million ha of utilised agricultural area

([1]) Swedish organic farming area includes a large share of farmland that is not certified according to Regulation 2092/91, but farmed in line with the regulation's specifications.

Municipal waste generation

CSI 16

	Municipal waste generation		
	1	2	3
	Municipal waste	Municipal waste	Municipal waste DTT
	STATUS	PROG.	PROG.
Lithuania			
Czech Republic			
Poland			
Slovakia			
Latvia			
Estonia			
Hungary			
Romania			
Bulgaria			
Germany			
United Kingdom			
Netherlands			
France			
Sweden			
Luxembourg			
Slovenia			
Belgium			
Norway			
Austria			
Italy			
Denmark			
Finland			
Greece			
Portugal			
Spain			
Ireland			
Cyprus			
Malta			
Iceland			
Turkey			
Liechtenstein			
Switzerland			

Figure 1 **Municipal waste generation per capita, 2003**

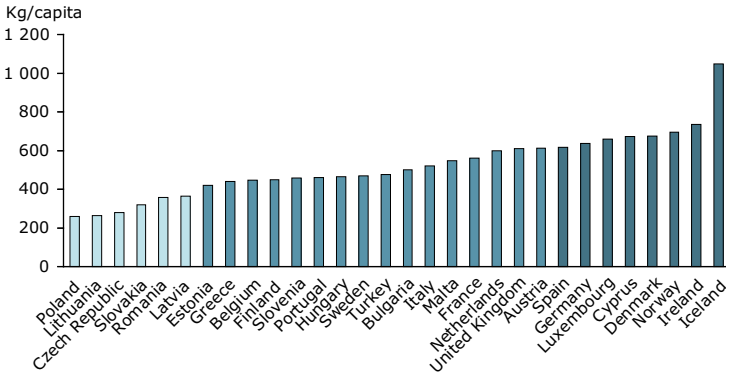


Figure 2 **Change, 1995–2003, in municipal waste generation compared with the EU-25 average**

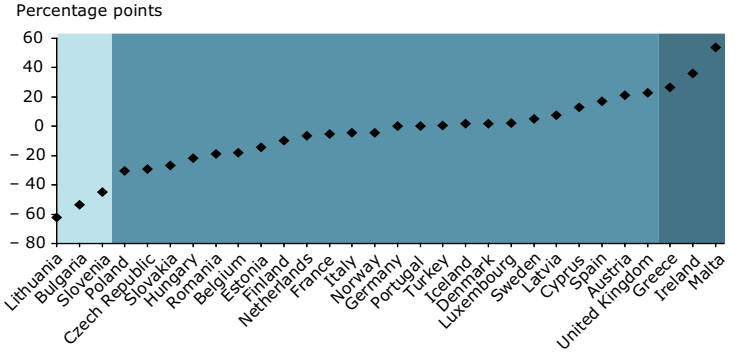
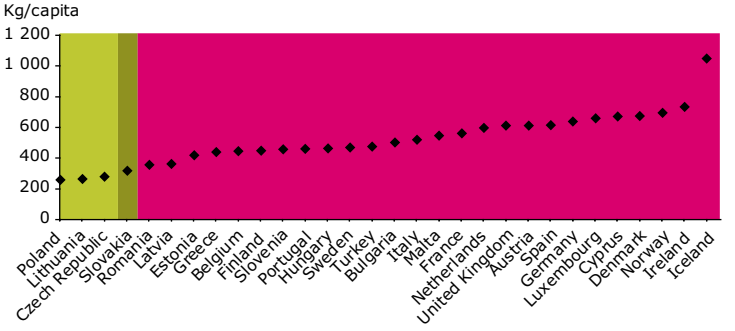


Figure 3 **Municipal waste generation distance to the '300 kg/capita target', 2003**



Notes: For technical specifications see CSI 16 in the EEA indicator management system (www.eea.eu.int/coreset). Definitions for municipal waste change from country to country which makes comparisons on a detailed level impossible (see text). In the status column and graph partitioning in quartile groups is done excluding the Icelandic data.
Sources: Eurostat and EEA.

Municipal waste generation

The amount of waste collected by or on behalf of municipalities (municipal waste) continues to increase and, although there are no recent updated targets for municipal waste, this trend is moving in the wrong direction, in Europe.

Key components for improving resource efficiency to ensure that society's consumption of renewable and non-renewable resources does not exceed the carrying capacity of the environment are: better waste management; reducing the volumes of waste generated; and encouraging the reuse, recovery and recycling of waste that are still generated.

In general, Europe is performing poorly in this area with a vast majority of countries experiencing a growth in the collection of waste in the period 1995–2003. The EU's fifth environment action programme (1993–2000) contained a target of 300 kg household waste per capita (expressed as returning to the 1985 level by 2000). There was very little success in meeting this target, and although it was not included in the sixth environment action programme and no new targets have since been set, the 300 kg per capita target is still a useful benchmark. Thus, it is this target which is used for comparing country performance.

However, waste collection systems vary between countries. For example including or excluding bulky waste, waste from rural areas, from small businesses, garden waste and some other categories in municipal waste means that the absolute country figures are difficult to compare. Trends over time in the generation of waste can be obscured by changes in the methods for collection. Different national definitions and methods for gathering the statistics further decrease comparability.

More importantly, however, the progress that several countries are making in stopping the illegal dumping of waste shows up on this indicator as a higher level of waste generation, where in fact such action is clearly environmentally beneficial. This indicator therefore becomes functional only once an optimal level of waste collection is attained, after which trends over time become meaningful. Caution should therefore be applied in the use of this indicator to gauge progress for some countries, in particular the candidate and accession states.

Nevertheless, for most other countries the general picture arising from this indicator provides some insights into both economic development and waste management. However, because of definitional issues caution should be exercised in using the data for comparisons.

The country scorecard shows that the Czech Republic, Latvia, Lithuania, Poland, Romania and the Slovak Republic are close to the old 300 kg per capita benchmark. Cyprus, Denmark, Iceland, Ireland, Luxembourg and Norway produced 650 kg or more municipal waste per person in 2003, more than twice the old target.

Lowest amount of municipal waste in 2003:
Poland 260 kg/capita

Highest amount of municipal waste in 2003:
Iceland 1049 kg/capita including a relatively high share of company waste ([1]) and **Ireland** 735 kg/capita

Factor difference:
x3

([1]) In Iceland, all collected waste is registered as 'municipal waste' but this has recently been changing, as municipal waste and company waste are increasingly collected separately which makes a better assessment of the different waste streams possible. These readjusted figures show that the value of 1 049 kg/year municipal waste generated per capita as cited above is likely to represent 559 kg/capita company waste and 490 kg/year of household waste. Similar considerations may also apply to other countries.

Use of freshwater resources

CSI 18

	Freshwater use	
	1	2
	Water exploitation index	Water exploitation index
	STATUS	PROG.
Lithuania		
Czech Republic		
Poland		
Slovakia		
Latvia		
Estonia		
Hungary		
Romania		
Bulgaria		
Germany		
United Kingdom		
Netherlands		
France		
Sweden		
Luxembourg		
Slovenia		
Belgium		
Norway		
Austria		
Italy		
Denmark		
Finland		
Greece		
Portugal		
Spain		
Ireland		
Cyprus		
Malta		
Iceland		
Turkey		
Liechtenstein		
Switzerland		

Figure 1 **Water exploitation index, 2002**

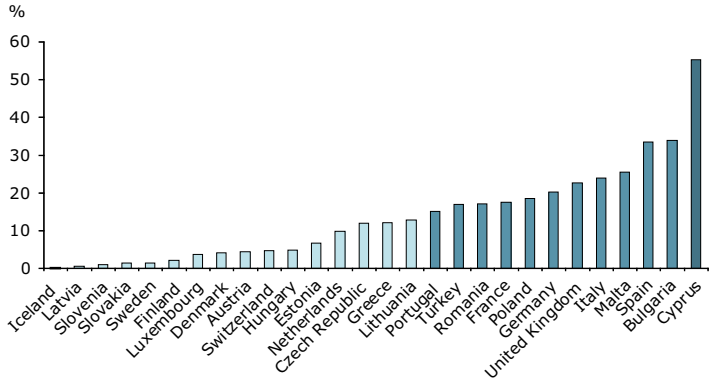
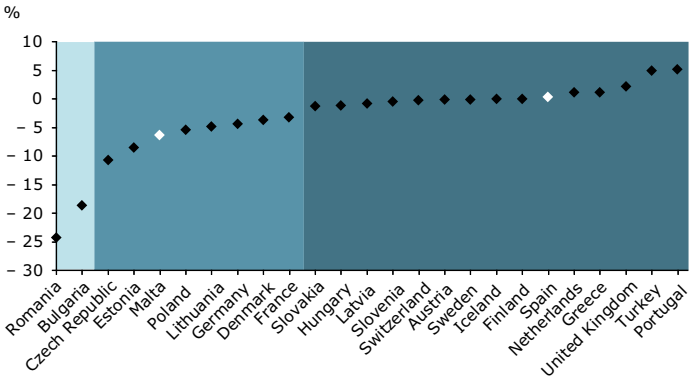


Figure 2 **Change, 1990–2002, in the water exploitation index**



Note: Malta and Spain were water stressed in 2002 (as were Cyprus and Italy, but progress for these two countries could not be calculated). Bulgaria, Germany and the United Kingdom all have large power plant cooling water abstractions. However, these abstractions are not considered to contribute to water stress.

Notes: The water exploitation index is the mean annual total water abstraction divided by the mean annual total renewable freshwater resource. For technical specifications see CSI 18 in the EEA indicator management system (www.eea.eu.int/coreset). For the United Kingdom data are only available for England and Wales.

Sources: Eurostat, EEA, national sources.

Use of freshwater resources (water exploitation index)

Water abstraction decreased in 17 EEA countries between 1990 and 2002. But several countries in southern Europe still experience water stress, abstracting a considerable part of available water.

The EU's sixth environment action programme aims at ensuring that rates of abstraction from water resources are sustainable over the long term, which implies improvement of the efficiency of water use in different economic sectors. There are no specific quantitative targets directly related to this indicator, as climatic conditions and land-use differ strongly across Europe. However, the Water Framework Directive (2000/60/EC) requires countries to promote sustainable use based on long-term protection of available water resources and ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status by 2015.

While the use of water for cooling (in electricity production and energy) is of little concern with regard to the available amounts of water, other uses do raise concerns. Countries with a high water stress, that is a high ratio of abstraction against water resources, have problems with groundwater table lowering, degradation of natural wetlands and salt water intrusion into coastal aquifers. The latter happens particularly in the Mediterranean region. The main water-consuming sectors are irrigation, urban use, and manufacturing industry. Water use for irrigation has been growing in many countries. Traditionally much of the irrigation in Europe consisted of gravity-fed systems where surface water is transported through small channels. In an increasing number of regions in the north and the south, sprinkler irrigation withdrawing groundwater is becoming common practice. This increases water consumption and contributes to the impacts mentioned above.

The decrease in agricultural and industrial activity in the EU-10 and Romania and Bulgaria during the transition process led to decreases of about 70 % in water abstraction for agricultural and industrial uses in most of the countries. Agricultural activities reached their minima around the mid-1990s, but more recently countries have been increasing production.

These developments can be summarised in terms of the water exploitation index, which is defined as the mean annual total abstraction of freshwater divided by the mean annual total renewable freshwater resource at the country level. Resources include inflow from upstream countries. To enable comparison, it is expressed as a percentage. The warning threshold for the index, which distinguishes a non-stressed from a stressed region, is around 20 %. Severe water stress can occur where the index exceeds 40 %, indicating unsustainable water use.

Excluding countries that abstract a lot of water for cooling purposes, there are four countries that can be considered as water-stressed (Italy, Malta, Spain and Cyprus). Only Cyprus has a water exploitation index exceeding 40 %. In water-stressed countries such as Cyprus there is increasing reliance on the desalination of seawater to meet rising needs. Five countries (the Netherlands, Greece, the United Kingdom, Turkey and Portugal) increased their water exploitation index in the period 1990–2002 because of increases in total water abstraction.

Least problem country in 2002:
Iceland Share of available water that is abstracted: 0.1 %

Problem country in 2002:
Cyprus Share of available water that is abstracted: 55.3 %

Factor difference:
x500

Country perspectives

The following country-by-country analyses were prepared in partnership with the countries to provide additional country level perspectives on the scorecard analyses. The selection of indicators included in the scorecard is the responsibility of the EEA and does not necessarily reflect the priorities of the countries. To allow a deeper understanding of the issues at country level, some figures included here are from national sources and so may not be fully comparable with data compiled by Eurostat, the EEA or other international bodies. The EEA takes full responsibility for the final result.

In an increasingly diverse European Union and set of EEA member countries, performance across a range of environmental issues and policies will be strongly influenced by the different starting positions and legacies in the countries such as geographic and climatic pre-conditions and socio-economic legacies and governance.

When put alongside the scorecard, these country analyses serve to flag up different issues. Together they help to open up a debate about country and European environmental performance which we hope will support shared policy learning.

For example, one of the key questions that arises from this assessment is: 'What does good environmental performance actually mean for a specific country'. This is highlighted by the way in which for some countries resource limitation is not a relevant issue, for example energy and water in Iceland. Understanding then how such a country should be assessed in a European context therefore becomes a key question and the scorecard serves an important function in helping to raise such questions.

Thus the aim of the country analysis is to complement the scorecard by providing a deeper understanding of country conditions, behaviour and response to environmental problems.

Each country analysis is introduced by an overarching summary for each country, followed by an assessment of each of the nine indicators included in the scorecard. Since the objective here is to connect the bottom-up country reality with the top down European assessment, the texts were prepared in partnership with the countries.

For ease of reference, the country level analyses are presented in alphabetical order. When reading the analyses, reference should be made to each country's line in the scorecard (which is also presented on each country page) and to the ranking graphs for each country (figures grouped at the end of this part of the report).

In addition Table 1 is provided to illustrate the socio-economic diversity of Europe. The table presents the EEA member countries in groups allowing the different sizes of the economies in these countries to be contrasted. This is an additional reference to help in understanding the analysis.

More detailed information at country level can be found in the latest national environmental reports catalogued in the SERIS data base http://countries.eea.eu.int/SERIS. For further information please contact the relevant national focal point. Contact details can be found on http://org.eea.eu.int/organisation/nfp-eionet_group.html.

Table 1 Population and GDP for EEA member countries 2003

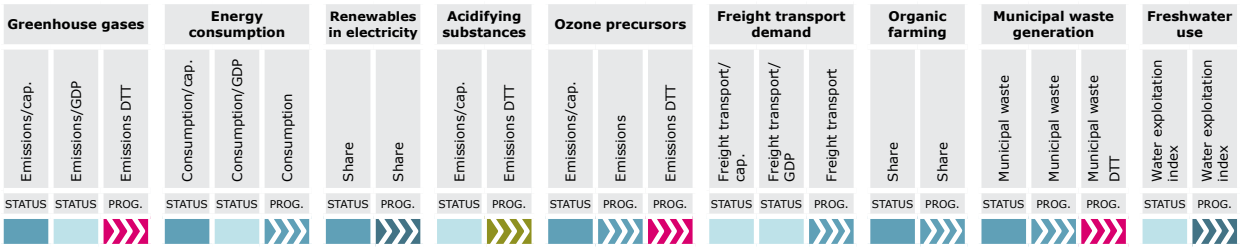
Country	Population (1 000s)	GDP (million EUR)	
Germany	82 551	2 072 162	Over 70 million inhabitants
Turkey	70 712	166 092	
France	59 725	1 407 304	
United Kingdom	59 280	1 078 600	
Italy	57 646	944 770	
Spain	41 101	582 408	Over 30 million inhabitants
Poland	38 195	141 807	
Romania	22 200	29 598	
Netherlands	16 215	385 436	
Greece	10 680	120 249	10 million inhabitants
Belgium	10 348	249 185	
Czech Republic	10 202	49 084	
Portugal	10 191	100 758	
Hungary	10 120	46 002	
Sweden	8 956	232 716	
Austria	8 059	217 399	
Bulgaria	7 824	10 959	
Switzerland	7 344	275 660	
Denmark	5 387	162 099	5 million inhabitants
Slovakia	5 381	20 066	
Finland	5 210	131 784	
Norway	4 560	141 203	
Ireland	3 947	94 404	
Lithuania	3 454	7 473	
Latvia	2 321	6 007	
Slovenia	1 964	20 548	
Estonia	1 350	4 515	
Cyprus	770	9 132	Under 1 million inhabitants
Luxembourg	448	20 823	
Malta	399	3 095	
Iceland	286	7 088	
Liechtenstein	33		

Note: These figures, from the EEA data service, are those used as the normalising variables in the scorecard.

Sources: GDP 1995 constant prices: Eurostat; Population: the World Bank.

Austria

Austria is one of the leading countries in organic farming and renewables. Despite a generally high level of environmental protection and eco-efficiency, it has problems meeting agreed reduction targets for greenhouse gas and NO_x emissions. Pressure on the environment is increasing due to a continuing rise of passenger and freight transport, causing various environmental problems, including air emissions, noise and fragmentation of ecosystems and landscapes.



Greenhouse gas emissions

Because of rising emissions, in particular from the road transport and energy production sectors, total 2002 greenhouse gas (GHG) emissions were 8.5 % above 1990 levels. Austria needs to reduce emissions if its Kyoto Protocol target of 13 % below 1990 levels is to be met by the 2008–2012 commitment period. In particular, GHG emissions from transport have shown an increase of 82 % between 1990 and 2003 (though a considerable amount is due to 'fuel tourism' caused by low fuel taxes and thus prices in Austria). In 2005, the Austrian government launched a broad consultation process re-evaluating the national climate strategy with a view to taking appropriate measures.

Energy consumption

Total energy consumption increased by almost 5.6 % between 2000 and 2002. Fossil fuel sources contribute approximately 77 % of the total energy demand. Additional measures to abate increasing energy consumption are needed.

Renewable electricity

Production of renewable energy is increasing, mainly as a result of the *Ökostromgesetz* (target: additional 4 % of renewable energy in electricity production in 2008). Austria generates 67 % of its electricity from hydropower (including large hydropower plants) and 0.5 % from other renewable energy sources, based on data from 2002. However, the use of renewable energy sources (biofuels directive) in the transport sector, which is expected to increase substantially until the year 2008, is also relevant even though it is not included in this specific indicator.

Emissions of acidifying substances

Compliance with the ceilings of the EU national emission ceilings (NEC) directive for SO_2 and NH_3 will be achieved; high reductions, in particular in SO_2, have already been accomplished. The major challenge is NO_x, in particular emissions from the transport sector. Some reasons for higher NO_x emissions are: 'fuel tourism' (fuel prices in Austria are lower than in some neighbouring countries); high share of transit traffic and diesel vehicles (with higher specific emissions than petrol cars); higher real-life emissions of vehicles than during test cycles. Additional ambitious measures in main source sectors are currently being discussed.

Emissions of ozone precursors

Compliance with the ceiling of the NEC directive for NMVOC is likely to be achieved. For NO_x see comments above under 'acidifying substances'.

Country perspective

Population: 8 059 000
Size: 83 860 km²
GDP: 217 399 million euro

Freight transport demand

Pressure on the environment is increasing due to a continuing rise of both passenger and freight transport, causing various environmental problems, including air emissions as well as noise and fragmentation of ecosystems and landscapes.

Freight transport has grown steadily in recent years, in particular since the second half of the nineties. Freight transport demand has doubled between 1980 and 2002; roughly two-thirds of this transport is road transport. Increasing contribution of fuel tourism and transit traffic have further contributed to increasing emissions, as shown in the national inventory. A recent study indicates that up to one-third of the motor fuels sold in Austria is not consumed in Austria. With the implementation of the biofuels directive into national law a slowdown in the growth of national GHG emissions by the Austrian transport sector is expected.

Share of organic farming

The share of organic farming area in Austria increased once more from 8.8 % in 2002 to 9.6 % in 2003. This progress is particularly due to a considerable increase in organic arable farming. The total area of certified and supported organic farms (according to IACS, the integrated assessment and controlling system) amounts to 326 703 ha as of 2003.

Municipal waste

The high figures are not only the result of the generated waste quantities but also of a comprehensive waste collection system which covers all households in Austria, and of high waste quantities collected from communal services. Nearly half of the increase between 1995 and 2001 is caused by an improvement in data collection. During the same period, the percentage for recycling and composting of municipal waste increased from 51 % to 63 %, while the share of waste going to landfills dropped from 46 % to 33 %.

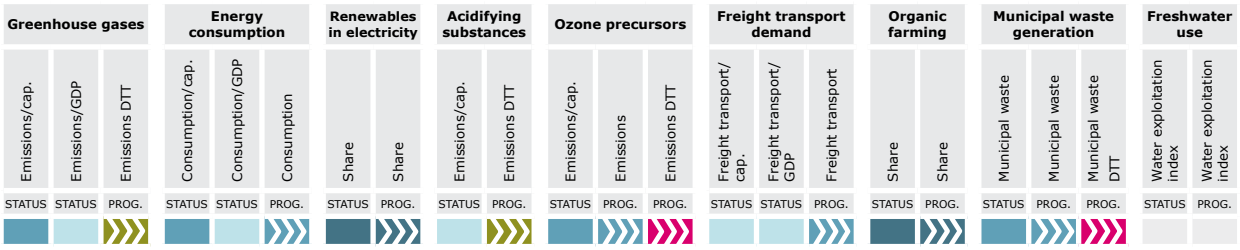
Use of freshwater resources

Between 3 505 and 3 850 million m³ water are abstracted from freshwater sources every year. From 1985 to 2002 the situation was more or less stable regarding total water abstraction. Variability from year to year can mainly be explained by variations in hydropower generation which are compensated by electricity production from caloric power plants, thus leading to variations in water abstraction used for cooling. However, since 1985, water abstraction for industrial production purposes has decreased from 43 % to 32 % of the total amount, whereas water abstraction for cooling purposes for production of electricity has increased from 32 % to 48 %. Irrigation plays a negligible role in Austria: less than 2 % of the water abstracted is used for irrigation purposes. The present per capita abstraction of freshwater is about 470 m³ (including cooling-water used for the production of electricity). Since important efforts have already been taken in the past to increase efficiency and to reduce losses, no major further reductions can be expected in the near future.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Belgium

Belgium has a high population density and is the main crossroads of western Europe. This leads to considerable pressure on the environment and the land. Belgium is performing moderately across most indicators. However, the country presents good results for municipal waste generation and is having some success with tackling freight transport. An area for particular attention is ozone pollution.



Greenhouse gas emissions

Total emissions in 2002 were at the same level as in 1990, but Belgium seems to be on track to reach the Kyoto target (7.5 % below the 1990 level). The regions showed different results for 1990–2002 GHG emissions: 3.1 % increase in Flanders; 7.3 % reduction in the Walloon region; and 9.6 % increase in the Brussels-Capital region. In Flanders GHG emission trends in the period 1990–2002 showed a 26 % increase from transport but reductions from industry (– 11 %) and agriculture (– 10 %). The Brussel-Capital region showed increases from the domestic sector (15 %), the tertiary sector (8.7 %) and the transport sector (3.6 %, with a dramatic increase of 376 % of chlorofluorocarbon (CFC) emissions) and a strong decline from the industry sector. Measures to reduce emissions include voluntary agreements with energy-intensive industries, performance standards for residents, and support for combined heat and power generation in Flanders. Internal and external measures (investing in the World Bank Community Development Carbon Fund) are being introduced in the Walloon and Brussels-Capital regions.

Energy consumption

Flanders reports improvements in energy intensity due to efforts in the industry and energy sectors since 1998. The Walloon region reports an increase in final energy consumption by 7.6 % (1990–2002). Final energy consumption in the Brussels-Capital region increased by 18 % between 1990 and 2003, to 2.16 million tonne oil equivalent in 2003. Flanders aims to reduce household energy use by 7.5 % in 2010 compared with 1999, despite an increase of 37 % from 1990 to 2002, through several measures to promote the rational use of energy. The Walloon *Plan pour la maîtrise durable de l'énergie* shows that total energy demand could be reduced by 9 % in 2010, compared with 1990, with detailed targets for various sectors. The key sectors in the Brussels-Capital region are housing, tertiary and transport, and the most important energy carriers are natural gas, oil and electricity.

Renewable electricity

There was an almost threefold increase in 2002 but the total share only reached 2 %. The share of renewable energy in electricity production in Flanders is growing (0.75 % in 2003). The use of the organic fraction of household waste will contribute to reaching targets. In the Walloon region, the share reached 2.3 % in 2003: hydroelectricity fell in 2003 due to unfavourable climatic conditions, and wind energy is growing rapidly but is less than 2 % of the total. The Brussels-Capital region applies 'green certificates' covering renewable energy production in the two other regions to boost demand.

Emissions of acidifying substances

Belgium seems to be on track to meet the NECD targets. Emissions in Flanders fell by 41 % (1990–2003), but deposition of acidifying substances is higher than the critical loads in 53 % of the nature area. New measures for the different industrial sub-sectors and lower

Country perspective

Population: 10 348 000
Size: 30 528 km²
GDP: 249 185 million euro

emissions from agriculture should enable the targets to be met. Emissions have also fallen in the Walloon and Brussels-Capital regions.

Emissions of ozone precursors

If no extra measures are taken, Belgium will not reach the target. In Flanders volatile organic compound (VOC) emissions decreased by 43 % during the period 1990–2003, NO_x emissions by 12 %. The Walloon plan prioritises the reduction of VOC emissions. Progress has already been made through the use of catalytic converters and the reduction of solvents in paints. Emissions of VOCs and NO_x fell by 25 % in the Brussels-Capital region (1990–2003).

Freight transport demand

Freight transport demand is still growing. In Flanders it has increased by 30 % (1995–2000), but has stabilised since 2000. The use of waterways is increasing (46 % in 1990–2003). Total transport demand in the Walloon region keeps increasing; freight transport by 17 % (1995–2000). Road transport represents up to 85 % of freight transport. Total road traffic in the Brussels-Capital region increased by 15 % (1990–2003) (small reduction in 2003).

Share of organic farming

The area under organic farming stabilised at around 1.7 % of the total agricultural area in 2004. Organic farming in Flanders covered only 0.5 % of the total agricultural area (2004) but new subsidies have recently been endorsed. In Wallonia 2.7 % utilised agricultural area is under organic farming (2004) and the number of farms converting to organic farming is still increasing. The Brussels-Capital region, although very urbanised, is developing a 'green network' of public spaces, including some nature reserves and parks. Some areas of this 'green network' are managed in a differentiated way, e.g. extensive gardening and protection of threatened species.

Municipal waste

There has been good progress in slowing the growth of municipal waste. Household waste generation in Flanders is decreasing: stabilisation in 2001, 0.2 % reduction in 2002 and 3.4 % in 2003. Waste generation per capita has fallen since 2001. 70 % of household waste is collected separately, most of this is reused, composted or recycled. Wallonia has seen a slow but irregular decline in municipal waste since 1997. A large proportion is recovered: in 2003 more than half went to material reclamation plants and less than 20 % to landfill. The amount of municipal waste collected in the Brussels-Capital region was stable between 1999 and 2002. Raw municipal waste fell by 9.4 % (1996–2002). Selective collection of waste for recycling of packaging increased by 42.9 % and of other types of paper and paperboards by 50.1 %.

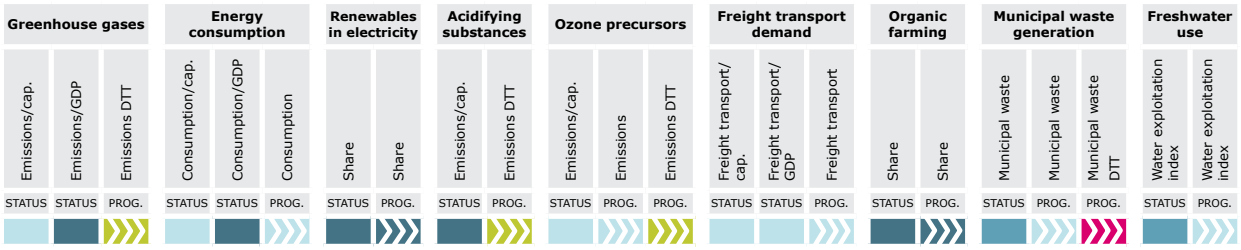
Use of freshwater resources

Total use of water (excluding cooling-water) in Flanders decreased by 14 % (1991–2002). Industry use decreased by almost 40 % in the period 1996–2000. Water availability in Flanders is low and two-thirds is imported. Among the lowest in Europe the Walloon region uses 105 litres per person per day for domestic needs. This is due to increasing water prices, the use of more efficient equipment and increasing use of rainwater. In 2004, the Brussels region used 113 litres per person per day for domestic needs. 61 % of water in the Brussels-Capital region is used by households, 25 % by the tertiary sector and 11 % by fire control and other public services, including network losses.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Bulgaria

Bulgaria is performing well across the indicators. Emissions of ozone precursors have already exceeded the 2010 targets. Furthermore, most progress indicators show relatively good trends. Bulgaria is maintaining its vigilance to ensure that environmental trends do not deteriorate as economic and social changes occur, especially in the lead up to EU accession.



Greenhouse gas emissions

Greenhouse gas emissions substantially decreased in Bulgaria in the period 1988–2002. In 2002 Bulgaria reduced GHG emissions by 79 million tonnes (minus 56 %) compared to the base-year 1988. The main reasons for this reduction were:

- governmental policies for transition to the market economy, restructuring of industry, privatisation and liberalisation;
- energy policy towards liberalisation of the energy market and removal of subsidies;
- decrease of the population; and
- decrease of the GDP.

The result is that Bulgaria can confidently expect to comply with the emission target for the first commitment period.

Energy consumption

Bulgaria has implemented the EU directives on the liberalisation of the electricity market, which will substantially influence the way the Bulgarian government can manage environmental emissions from the energy sector and will induce a shift from 'command-and-control' type of policy instruments to market-based instruments, such as the Emissions Trading Scheme and green certificates.

Renewable electricity

For 2003 renewable energy sources provided 7.75 % of total electricity production. For renewable electricity production, the Renewable Electricity Directive (Council Directive 2001/77/EC on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market) is the most important piece of legislation. The adopted energy law in Bulgaria incorporates the measures listed in the Directive and provides the framework for green certificates. In 2004 the government started with the preparations of the implementation of the green certificates scheme in Bulgaria. The system is planned to become operational in 2006.

Emissions of acidifying substances

According to the CLRTAP and its protocols, national emissions of acidifying substances should, by 2010, be reduced by 57 % for SO_2, 26 % for NO_X and 25 % for NH_3 compared to the base-year 1990. In 2003 the national SO_2 emissions were reduced by 52 %, NO_X by 42 % and NH_3 by 64 % compared to the base-year. This means the targets for 2010 are in reach.

Emissions of ozone precursors

The national non-methane volatile organic compounds (NMVOC) emissions have to be reduced by 15 % by 2010 compared to the base-year 1990. The decreasing trend of NMVOC emissions shows a reduction of 45 % in 2003, which means the target for 2010 has already

Country perspective

Population: 7 824 000
Size: 110 910 km²
GDP: 10 959 million euro

been met. The reduction of NO_x in 2003 by 42 % compared to the base-year also means that the target for 2010 has already been fulfilled.

Freight transport demand

The changes in the Bulgarian economy after 1989 have led to a significant initial drop in the transport of goods. After 1997 the general tendency has gradually reversed. However, processes taking place across the different types of transport modes are diverse. Land transport trends in Bulgaria are similar to those in the European Union. Road transport continues to grow, showing a serious increase with respect to the amount of transported goods and work done (in tonne km). At the same time its main competitor, rail transport, shows a continuous drop in the amount of transported goods and work done. Marine transport remains a key means of long-distance transportation due to its advantages for transporting goods of significant size, while river transport has up to now been of little importance in the Bulgarian economy.

Share of organic farming

The development of organic farming in Bulgaria has been relatively slow, but is now increasing rapidly. Bulgaria has favourable soil and climatic conditions for organic farming and is already developing a reputation as a high-quality producer of speciality organic products (e.g. essential oils and medicinal herbs) with good export potential. There are also good opportunities for the development of a domestic market for organic products, including fresh and processed fruits and vegetables. At the end of 2004 the area under organic farming was approximately 11 771 ha, representing 0.2 % of the used agricultural area. 11 259 ha have passed the transition period while the remaining 512 ha are already in a process of transition. In 2005, a national strategy and an action plan for the development of organic farming were prepared, covering the period 2006–2013.

Municipal waste

Unlike in the rest of Europe, household waste production is on the decrease. The majority of collected municipal waste is landfilled. 0.4 % of this waste was designated for recovery operations in 2002, but further development of infrastructure will be needed to come within reach of the national priorities for decreasing landfill of biodegradable waste.

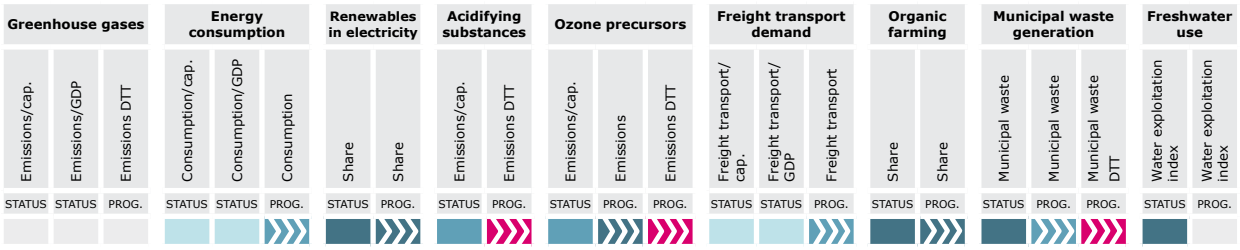
Use of freshwater resources

The total quantity of used freshwater in Bulgaria for the period of 1999–2003 is relatively stable and ranges from 6 820 to 6 918 millions m^3. In 2000–2001 this quantity decreased from 6 130 to 5 833 million m^3. The quantity of freshwater from surface water sources used in 2003 was 6 450 million m^3, while the amount of used freshwater from groundwater sources was 467 million m^3. The main consumers of freshwater are industry and agriculture. The share for drinking water consumption decreased twofold between 1999 and 2003, due to higher water prices and measures taken to decrease water losses in the water supply systems.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Cyprus

Cyprus has a large potential for renewable energy and organic farming and is implementing plans and measures to promote progress. Improvement is needed in air emissions and waste. While the 1992–2002 period studied is not representative, progress has been made following EU accession. The legislative changes and the necessary measures and programmes now in full implementation are expected to significantly improve the country's environmental performance.



Data is not avalable for the non goverment controlled areas of Cyprus.

Greenhouse gas emissions

Cyprus has no quantified targets yet, however as a contracting party to the Kyoto Protocol it is expected that it will have to commit to important reductions in the rates of its greenhouse gas emissions. In response to this, a strategic plan for the reduction in the rate of increase of greenhouse gas emissions is being gradually implemented. This concentrates on the promotion of renewable energy sources, the use of natural gas, energy conservation and efficiency, transport management, changes in agriculture and industry and waste management. Additionally, a greenhouse gas emissions trading system has been prepared and approved by the EU. These measures are expected to reduce greenhouse gas emissions.

Energy consumption

The energy intensity in Cyprus is above average but progress is being made in energy efficiency and conservation, although there is still considerable room for improvement. Measures have been taken towards this, including the implementation of an action plan (2002–2010), the adoption of a new law on the promotion and utilization of renewable energy sources and energy conservation, and a new grants scheme for the promotion of renewable energy sources and the rational use of energy in all sectors.

Renewable electricity

Although Cyprus is one of the leading countries in the use of solar water heating systems, where solar energy constitutes approximately 2 % of the country's primary energy consumption, the share of renewables in electricity is still very small. Based on new measures that have been implemented, the target is to increase the share of renewables to 6 % by the year 2010 through the utilization of the wind, hydro and biomass potential, together with the use of photovoltaics and co-generation.

Emissions of acidifying substances

Emissions of acidifying substances are still high in Cyprus and there has been a 5 % increase in emissions in 2002 compared to 1990 levels. Legislation has been enacted for the control of air quality and atmospheric pollution together with integrated pollution prevention and control, therefore progress is expected in the near future.

Emissions of ozone precursors

Although emissions of ozone precursors in Cyprus are relatively low compared to other European countries, they have been increasing and the emission levels for 2002 were 14.3 % above 1990 levels. However, legislation has been enacted for the control of air quality and atmospheric pollution together with integrated pollution prevention and control, and therefore progress is expected in the near future.

Country perspective

Population: 770 000
Size: 9 250 km²
GDP: 9 132 million euro

Freight transport demand

Freight transport has increased by 29.7 % in 2003, compared to 1990 levels. The per capita freight transport demand is very low compared to other European countries. Shipping covers most of the transport demand, while road transport is relatively low due to the small size of the island and the short travel distances.

Share of organic farming

The share of organic farming in Cyprus is still relatively low and in 2002 amounted to less than 1 % of the total utilised agricultural area of the country. However, relevant legislation has been enacted, while measures for the development of organic agriculture have been included as part of the strategic development plan for agriculture (2004–2006). These measures have been designed to encourage organic farming and contribute to the creation of an economically viable sector by providing support for the conversion from conventional to organic agriculture. They include economic incentives and educational and awareness programmes for farmers and consumers. Such measures are expected to increase the share of organic farming in the future.

Municipal waste

In 2002 Cyprus was producing approximately 0.654 tonnes of municipal waste per person per year, meaning that waste production is on the increase with the volume of waste generated in 2002 being 29.2 % above 1995 levels. A waste management strategy has been drafted which includes objectives for the reduction, re-use and recycling of waste, as well as treatment and disposal. Additionally, a programme has been established to encourage the recycling of packaging waste in various municipalities. These measures are expected to reduce the volume of waste generated and promote reuse and recycling.

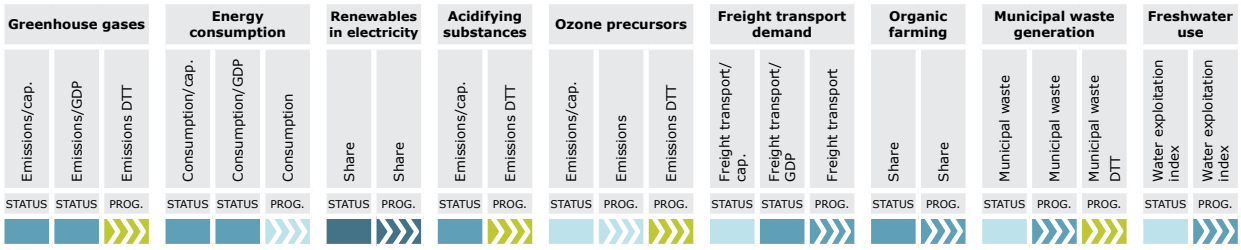
Use of freshwater resources

Although water abstraction per capita is comparatively low, Cyprus is not an efficient user of water for irrigation and water abstraction per irrigated area is very high. The government water policy is currently focused on the exploitation of other non-conventional water sources, such as recycled water. Additionally, measures are being taken to reduce irrigation water demand, including financial incentives and educational and awareness programmes.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Czech Republic

The Czech Republic shows both good progress and performance across the indicators and is on track to maintain and improve the quality of its environment in the future. Fast economic growth is now expected following EU accession and therefore issues which may gain in importance include emissions of acidifying substances, energy intensity, greenhouse gas emissions and freight transport intensity.



Greenhouse gas emissions

The total emissions of greenhouse gases decreased by 25 % between 1990 and 2003 and reached 143.4 million tonnes CO_2-equivalents in the year 2003. This implies that the Kyoto Protocol targets (to decrease by 8 % compared with 1990) are being fulfilled. Although the trend of GHG emissions is quite favourable, the absolute values are still a problem — however the emissions of greenhouse gases per capita in the Czech Republic are significantly above the average of the EU-15.

Energy consumption

The final energy consumption in 2004 was 1 099.3 PJ which is significantly lower than during the first half of the nineties due to the transformation of industry and the implementation of lower energy intensity technologies. However, energy consumption is now slowly increasing by approximately 1 % per year. Energy intensity is 60 % higher than the EU-25 average and still remains an issue. The implementation of the national programme for economical energy management and use of renewable and secondary energy resources is expected to improve the situation. This defines sustainable objectives for energy conservation and the use of renewable and secondary energy sources. The second phase of this programme will run from 2006 to 2009.

Renewable electricity

In 2004 the share of electricity generation from renewable sources was 4 % of the gross electricity consumption and 2.9 % of primary energy sources. Even though this has increased slightly from 2003, it remains too low to achieve the national indicative target of 8 % of gross electricity consumption from renewable sources by 2010. Following EU Directive 2001/77/EC to promote renewable electricity, the recently adopted Czech Act No. 180/2005 Coll. will significantly help to meet this target. Through guaranteed feed-in prices, this Act guarantees the recovery of investments in renewable energy sources (the lack of financial security for investors has been the main barrier to a more widespread use of renewable energy sources so far).

Emissions of acidifying substances

Since 1990 a dramatic decrease in emissions has taken place: almost 90 % for SO_2; 40 % for NO_X; and about 50 % for NH_3. The current and future expected decreasing trends of these emissions are politically supported by the implementation of two national programmes for the reduction of emissions (reduction in general and from especially large combustion sources). This situation should enable the national emission ceilings set for SO_2 and NH_3 to be complied with by 2010. However, there may be problems achieving the emission ceiling for NO_X by 2010 due to the extrapolation of the presently stagnating or even slightly increasing NO_X emission trends.

Country perspective

Population: 10 202 000
Size: 78 870 km²
GDP: 49 084 million euro

Emissions of ozone precursors

Because of its geographic location, the Czech Republic belongs to a middle vulnerable region with respect to ozone formation. Since 1990 a considerable decrease in emissions of all ozone precursors has taken place. The two national programmes mentioned above for the reduction of emissions into the atmosphere will contribute to further reductions.

Freight transport demand

From 1995 until recently, the trend in freight transport has followed GDP. In the period 1995–1998 there were significant variations in actual freight transport demand due to changes in the economy. In the period 1998–2001 there was a constant value of 36 tonne km/1 000 CZK (approximately 1 tonne km/euro). From 2002 to 2003 freight traffic performance increased more than GDP, but in 2004 it decreased in value, indicating decoupling for the first time.

Share of organic farming

Organic farming started in the early 1990s. In 2004, there was a total of 836 organic farmers and 263 299 ha of agricultural land managed organically, i.e. 6.16 % of the total agricultural area. Organic farming is mostly applied by farms in mountainous and sub-mountainous regions on permanent grassland. About 90 % of the organic area is grassland, the share of arable land amounted to 7.5 %, perennial crops to 0.4 % and the rest are other areas. The most important animals in organic husbandry are beef cattle. The largest expansion of land used for organic farming occurred in the years 1998–2001, particularly in connection with the renewal of government payments to organic farmers in 1998. Since 2004, organic farming has been supported within the framework of new agri-environmental schemes in the Czech horizontal rural development plan.

Municipal waste

The production of municipal waste increased from 1995 to 2002 and reached 4.6 million tonnes in 2002. Since 2002 municipal waste production has slightly decreased (between 2003 and 2004 minus 4.4 million tonnes). Landfilling remains the most usual form of disposal: with 67 % in 2004. 11.7 % of municipal waste was recycled in 2003; the amount of recycled and recovered municipal waste is increasing. Incineration has increased significantly since 1999, moving from less than 0.5 % of overall waste volume to almost 10 % in 2003.

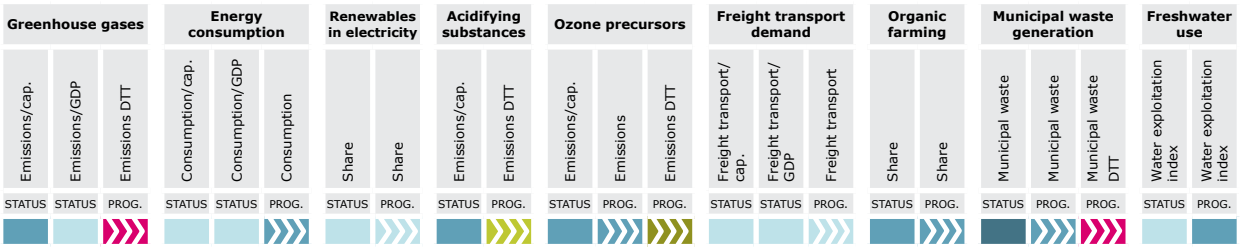
Use of freshwater resources

In 2004 total withdrawals from surface waters amounted to 1 626.1 m^3 and from groundwaters 401.9 m^3. The public supply system accounted for 24 % of total withdrawals from surface waters and 86 % from groundwaters (2003–2004). The energy industry made up the largest share of withdrawals from surface waters (54 % in 2004). Agriculture is not an important consumer of water, accounting for 4 % of surface water withdrawals in 2003 (2 % for groundwater). The overall decreasing trend in withdrawals of surface waters (1990–2001) has not continued, however, the decrease for 1990–2003 was 41.3 %. In 2002 and 2003, there was an increase of withdrawals of 19.6 % seen in all categories of water use. Power engineering and heat generation contributed the largest share of the increase. Preliminary data for 2004 indicates that the trend has reversed and withdrawals from surface waters have dropped by 4.1 % since 2003 (by 4.5 % for groundwater).

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Denmark

Denmark is a European leader in the areas of renewable energy, water use and organic farming. However, per capita it is still performing less well in some areas such as municipal waste generation and, whilst managing to keep close to target, also air emissions.



Greenhouse gas emissions

In 2002 Denmark's greenhouse gas emissions were 1 % below base-year levels. If the base-year is adjusted for electricity trade in 1990, GHG emissions were, in 2002, 9 % below base-year level with a distance-to-target indicator of + 3.5 percentage points. Main factors for decreasing emissions with regard to 2001 were decreases in fossil fuel combustion in households and industry, and emission decreases from agricultural soils. Between 1990 and 2002, large emission decreases from agricultural soils and from households counter-balanced increasing road transport emissions. Projections based on current measures are below target for 2010. Denmark will not achieve the Kyoto target based on these projections without additional measures. Denmark intends to achieve the Kyoto target through use of the Kyoto mechanisms and additional cost-effective domestic measures.

Energy consumption

In the period 1990–2003, the Danish gross energy consumption (adjusted for fuel consumption linked to foreign trade in electricity and climate variations in relation to a normal weather year) increased by 1 %, while GDP for the same period has increased by 30 %. In the same period efficiency measures have led to a reduction of adjusted CO_2 emissions of 14.9 %. The total national electricity consumption has increased by 14.2 % in the same period.

Renewable electricity

The share of renewable energy has gradually increased over the period. In 2003 renewable sources, including waste, constituted 24.8 % of national electricity consumption. Wind energy accounted for the majority of the consumption (15.8 %), but biomass has also increased in importance, contributing 4 % in 2003.

Emissions of acidifying substances

In 1990 the relative contribution in acid equivalents was almost equal for the three gases. In 2003 the most important acidification factor in Denmark was ammonia nitrogen and the relative contributions for SO_2, NO_X and NH_3 were 9 %, 40 % and 51 % respectively. From 1980 to 2003, SO_2 emissions decreased by 93 %. This large reduction is mainly due to the installation of desulphurisation plants and the use of fuels with lower sulphur content in public power and district heating plants. From 1985 to 2003, NO_X emissions decreased by 32 %, the contribution from public power and district heating plants decreased in this period by 47 % due to installation of low NO_X burners and de-nitrifying units. Almost all Danish emissions of NH_3 result from agricultural activities. The total ammonia emissions decreased by 32 % from 1985 to 2003. This is due to a vigorous national environmental policy during the last twenty years.

Country perspective

Population: 5 387 000
Size: 43 090 km²
GDP: 162 099 million euro

Emissions of ozone precursors

The emissions of non-methane volatile organic compounds (NMVOC) in Denmark originate from many different sources and can be divided into two main groups: incomplete combustion, and evaporation. Road transportation vehicles are still the main contributor to emissions from incomplete combustion, even though the emissions have declined since the introduction of catalytic converters in 1990. Evaporative emissions mainly originate from the use of solvents. Emissions from energy industries increased during the nineties because of increasing use of stationary gas engines, which have much higher emissions of NMVOC than conventional boilers. Total anthropogenic emissions decreased by 39 % between 1985 and 2003, mainly due to an increasing use of catalytic converters in cars and reduced emissions from the use of solvents. For NO_x, refer to the text under acidifying gases.

Freight transport demand

Transport trends in Denmark have not really moved in a sustainable direction. Inland freight transport may show weak signs of decoupling, while a shift towards rail transport is not taking place. For passenger transport there are signs of some decoupling. The Great Belt Link (inaugurated in 1998) has also meant a significant reduction in domestic air travel, boosting intercity rail (as well as road transport). The new Copenhagen Metro has led to increased urban rail use.

Share of organic farming

The relatively high percentage of area under organic farming in Denmark is due to a combination of a market-driven demand for organic dairy products and public support for conversion to organic cash crop production in order to reduce environmental impacts from farming. The large increase in organic areas in the late 1990s was followed by stagnation after 2000 due to falling market prices of organic food.

Municipal waste

In line with other European countries, household waste production has increased in the last 10 years, but has stabilised in the last few years. The majority of this waste is being incinerated (60 % in 2003), 31 % is being recycled and 6 % is being landfilled. The national targets are 33 % recycling, 60 % incineration and 7 % landfilled by 2008.

Use of freshwater resources

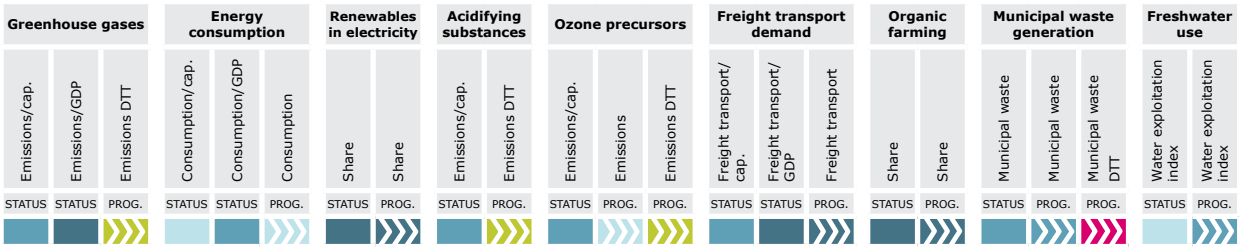
Drinking water abstraction in Denmark is based on groundwater resources. Sustainable use has been encouraged by the introduction of water taxes and promotion of awareness regarding wastage in the distribution systems. Use of water for irrigation depends strongly on weather conditions. There has, however, been a general decrease, especially following the introduction of tax on abstraction permits.

A recent important finding concerning the link between water and agriculture is that, since the implementation of the first action plan on the aquatic environment in 1987, the total discharges of nitrogen to coastal waters have fallen significantly. The decrease in nitrogen is attributable to a considerable reduction in both leaching from agricultural land and in wastewater discharges. With corrections for variations in run-off, the reduction in the marine nitrogen load is calculated at approximately 40 %.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Estonia

Estonia is showing good progress in several areas: achievement of air emissions targets, total energy consumption, use of freshwater resources and municipal waste generation. However, it is performing poorly in the area of freight transport, and has a low per capita performance for air emissions, as well as low performance per GDP for energy consumption and greenhouse gas emissions.



Greenhouse gas emissions

From 1990 to 2002, GHG emissions decreased by 55 % mainly due to economic restructuring and political measures. In April 2004 the government approved the national programme for the reduction of greenhouse gas emissions (2003–2012). In 2002 GHG emissions per capita were among the highest in Europe. Estonia's Kyoto target is to reduce these by 8 % by 2008–2012 against 1990. Energy related activities are the most significant contributors to GHG emissions. Oil shale is the main indigenous fuel with low net caloric value (8.5–9 MJ/kg), high ash (45–50 %) and sulphur (1.4–1.8 %) content.

Energy consumption

Primary energy use has stabilised after a downtrend at the beginning of the 1990s, reaching 200 000 TJ/a. In line with the objectives of the national development plan, the consumption level equals that of 2003 (201 892 TJ). Energy consumption per capita is relatively high due to climatic conditions and low population densities, somewhat similar to Nordic neighbours. Energy intensity per unit of GDP is similar to other (industrialised) EU-10 Member States.

Renewable electricity

The national indicative target (12 % of gross national energy consumption by 2010) has already been achieved due to the relatively high use of wood and wood waste for heat production, followed by biomass.

In 2002 the share of renewable electricity was 0.2 %. In 2003 it stayed below 1 % despite a 2.7 increase from 7 GWh in 2002 to 19 GWh in 2003, mostly of wind and small hydro. In December 2004 the Estonian Parliament approved the long-term public fuel and energy sector development plan until 2015. This sets the main objectives of the energy sector and establishes the country's main political interests in the energy field. It foresees a 1.5 % share of renewable electricity sources in 2005 and a national target of 5.1 % for 2010. This will need investment in equipment for the production of renewable energy of 130–190 million euro.

Emissions of acidifying substances

Due to the decline in energy production, SO_2 emissions have decreased by about 63 % (1990 to 2003). The power industry is the greatest polluter (85.5 % of emissions). Under the EU accession treaty there is a transitional period for the rate of desulphurisation of combustion plants using oil shale. Estonia's objectives here are:

- to reduce total SO_2 emissions from stationary and mobile sources below 100 000 tonnes per year by 2010;
- to reduce SO_2 emissions from oil shale power plants below 25 000 tonnes per year by 2012; and
- to fix the maximum sulphur content in ship fuel at 1.5 % (in the development plan for transport 2004–2013).

Country perspective

Population: 1 350 000
Size: 45 100 km²
GDP: 4 515 million euro

Emissions of ozone precursors

From 1990 to 2003 volatile organic compound (VOC) emissions decreased by 42.8 %. Emissions of non-methane volatile organic compounds (NMVOCs) from transport decreased by 69 %. This is compared to the decrease in petrol and diesel consumption by 45 % and 36 % respectively. Emissions from non-industrial fuel combustion (households, agriculture, business and public sectors) have grown by 38.8 % due to an increase of wood and wood waste combustion. Between 1990 and 2003 emissions of CO decreased (~ 67 %) mainly due to a decrease in vehicle fuel use and recently by an increased use of diesel cars. In 2003 the largest CO polluters were small combustion facilities using solid fuel and household stoves (61 %), and transport (33 %). Transport is the largest source of nitrogen oxides pollution (57.8 %). Reduced NO_x emissions from mobile sources (1990–2003) are mainly due to the same factors as for volatile organic compounds (VOCs) and CO. The increase in the number of cars with catalytic converters has also played a role.

Freight transport demand

There has been a general growth in the number of vehicles over the past decade which is still growing since people prefer their own car to public transport. 69 % of cars and 70 % of lorries are older than 10 years. Although official statistics do not include transit traffic flows in freight transport demand, this also plays an important role.

Share of organic farming

In total there were around 4 000 ha of controlled agricultural land in 1999 (0.4 % of agricultural land in production). In 2000 there were at least 238 farmers with about 10 000 ha, who had applied for the state label 'MAHEMÄRK'. The marketing of organic products is weak and consumers have difficulties finding organic products in the shops. The most common marketing methods are on-farm sales, selling to hospitals, schools, kindergartens and local shops.

Taking into account the present agricultural situation and existing developments, there is great potential for the rapid development of the sector. It is estimated that there will be a 50 to 100 % annual increase of production over the next few years.

Municipal waste

Municipal waste constitutes around 4 % of total waste generation. About 60 % of mixed municipal waste is from households, the rest is from institutions and enterprises. Between 1999 and 2003, per capita municipal waste generation averaged 410 kg. In the same period the percentage of municipal waste sent to landfill significantly decreased, comprising only 67 % of the total amount of municipal waste generated in 2003. This was mainly due to the implementation of the packaging act and the packaging excise duty act, promoting the recovery of packaging and packaging waste, of alcoholic and non-alcoholic beverages and the extension of the separate collection of waste and sorting of municipal waste by fractions in the new Tallinn waste sorting plant.

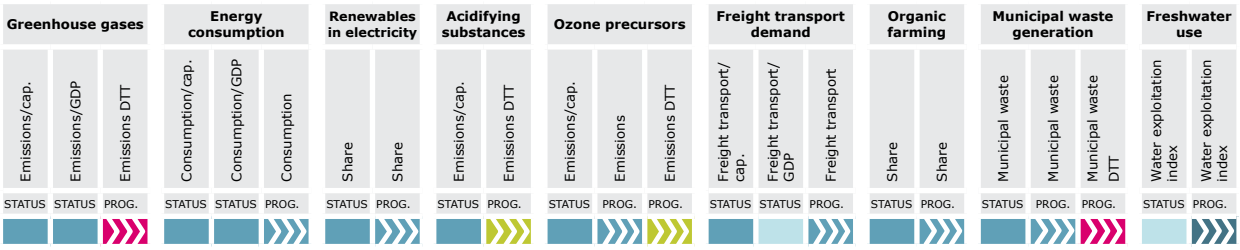
Use of freshwater resources

In 2004 the abstraction of water was about 1.7 km^3 (1.4 km^3 surface water, of which 1.3 km^3 was cooling-water and approximately 0.31 km^3 groundwater, of which 0.26 km^3 was mining water). This was almost half of that in 1991. Economic changes, the decrease of production, reorganisation of technology and increased water taxes (prices) has given rise to more sustainable water use in industry and households. Since 1996, the abstraction of water has remained about constant. A slight increase occurred in 2003 and 2004 due to increased consumption of water by power stations, mines and fish farms. However, the Water Exploitation Index is still in the low stress range of 10–20. Estonia's long-term average annual run-off amounts to over 11 km^3 per year (more than 8 000 m^3 of water per person per year).

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Finland

Finland is performing well in renewable electricity for which it is ranked third, and is in the top ten for organic farming and municipal waste. However, the country shows medium performance across the other indicators, ranking in the bottom few countries for per capita performance in four out of six cases. In general Finland shows more positive trends for progress indicators, but in the areas of waste, water use and GHG emissions, Finland still has to improve to meet its targets.



Greenhouse gas emissions

In 2002 total greenhouse gas emissions exceeded the 1990 level by 6.8 %. Finland's target is to keep its greenhouse gas emissions in the first commitment period at the 1990 level. Greenhouse gas emissions in Finland depend on many issues: prevailing economic situation, energy intensive industries; volumes of hydro-power produced; imports of energy and renewable sources; and climatic conditions. In the energy sector CO_2 emissions increase between 1990 and 2002 by 15 %. According to the latest United Nations Framework Convention on Climate Change report (April 2005), greenhouse gas emissions in Finland were 70.4 Tg CO_2 in 1990 and 77.2 Tg CO_2-equivalent in 2002. From these figures Finland's greenhouse gas emissions in 2002 exceeded the 1990 level by 9.7 % percent.

Energy consumption

The energy intensity per capita is rather high in Finland. This is due among other things to the climate, long distances to be covered, transport, and energy-intensive industry. Energy conservation has been practiced for a long time, however, and for more than twenty years the aim has been to produce as much electricity as possible from combined heat and power plants (CHP), where Finland ranks among the international top countries. Other means include for example voluntary energy conservation agreements and audits, and promotion of sustainable consumer behaviour

Renewable electricity

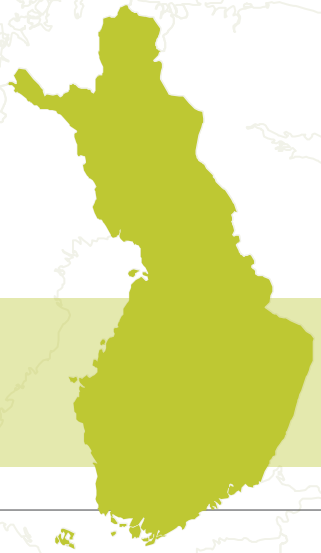
The share of renewable energy in electricity production has been increasing substantially and the action plan for renewable energy sources (2003–2006) aims at an increase of 30 % by 2010 compared to 2001. The proposed actions in the plan include the development and commercialisation of new technology and financial steering instruments such as energy taxation, investment aid and subsidies for the production chain of forest chip wood, and the general improvement of the competitive strength of renewable energy sources.

Emissions of acidifying substances

Emissions have decreased since 1990 with SO_x showing the largest decrease to a level well below the EU national emission ceilings (NEC) directive ceiling. Air emissions depend on climatological conditions, export/import of electricity, availability of hydropower, and many other factors that cause variation in annual emissions.

Emissions of ozone precursors

Ground level ozone concentrations are mainly low in Finland and the few occurrences of elevated levels are due to long-range transport of emissions. The emissions of the ozone precursors used in the indicator have been decreasing and the existing emission reduction targets are within reach.



Country perspective

Population: 5 210 000
Size: 338 150 km^2
GDP: 131 784 million euro

Freight transport demand

The fact that Finland is large and sparsely populated sets the scene for transport demand. Even though rail freight transport has maintained its market share relatively well in Finland (around 25 % of all freight transport kilometres), road transport has continuously increased and waterway transport has diminished. Nevertheless, shipping plays an important role for Finnish foreign-trade transportation. Around 85 % of the Finnish foreign trade is carried by ships. To develop short-sea-shipping is a main goal but the inland waterways are not well suited to freight transport.

Municipal waste

Trends in municipal waste quantities for the last few years have seen a decrease in total quantities generated, both in terms of tonnes/annum and per capita. There has been an 11 % decrease in total quantities generated between 2000 and 2003. For the same time period, gross domestic product (GDP) grew by an average of 6 %. In Finland, roughly 450 kg of municipal waste per capita are generated every year, which is some 100 kg less than the European average. The majority of this waste is landfilled (60 %); while 29 % is recovered as material and 9 % as energy.

Share of organic farming

The share of organic farming has increased rapidly and this increase is expected to continue. Also the average size of organic farms has grown. Many factors, including the development of subsidies, will affect the rate of increase in organic farming.

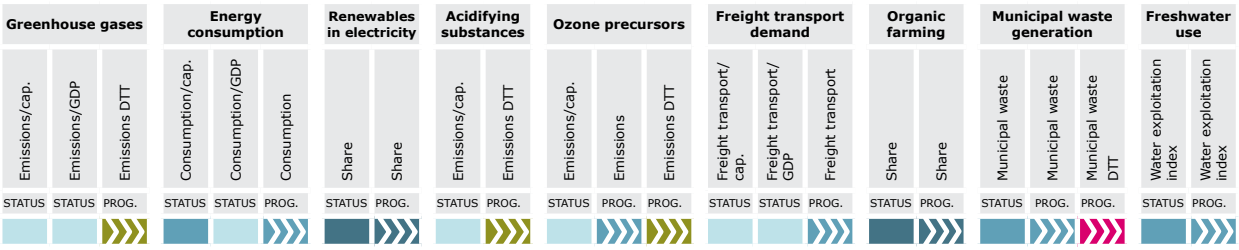
Use of freshwater resources

Water abstraction per capita in Finland is above average but the abstracted amount of water is a very small proportion of the available water resources. Regarding the agricultural use of water, the irrigated area is very small and the amount of water used for irrigation is only about 2 % of the total abstracted amount.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

France

France is near the median position among European countries for most of the selected indicators. Being a large country, France has to face a wide variety of environmental issues. The development of electricity production from nuclear power has contributed to low greenhouse gas emissions. Trends suggest that policy targets in the scorecard, except municipal waste production, are well on the way to being reached.



Greenhouse gas emissions

Under the Kyoto Protocol, France is committed to stabilising its emissions of greenhouse gases by 2008–2012 compared to the level of 1990. Over the period 1990–2003, France managed to stabilise its emissions, in particular due to the importance of the nuclear electricity production. However, the emissions from the transport sector, which represent the largest share of the total emissions (27 % of the national total in 2002) continue growing (1.7 % a year between 1990 and 2002). Emissions from the residential and tertiary sectors are growing too.

Energy consumption

Energy consumption increased by approximately 1.6 % a year between 1990 and 2000, mainly due to the demand from transport and residential-tertiary sectors. The pace of growth has slowed since 2000 (+ 0.6 %).

Renewable electricity

With one of the largest forest areas in western Europe, the second higest potential for wind energy, and high geothermal and hydro-energy production, France is rich in renewable energy resources. Of currently exploited energy, 50 % comes from wood biomass, 30 % from hydropower and 12 % from waste incineration. Other renewable sources are still little developed. Approximately 13 % of the primary electricity production is of renewable origin.

Emissions of acidifying substances

Acidifying emissions fell by almost 30 % between 1990 and 2003. Only ammonia emissions from agricultural activities were maintained at practically the same level over the period.

Emissions of ozone precursors

Ozone precursor emissions have almost halved since 1990. Nevertheless, the presence of ozone remains one of the most frequent causes of poor urban air quality, especially in the Mediterranean regions and Rhône-Alps where the average number of sunshine days a year is high.

Freight transport demand

Inland freight transport grew faster than the GDP between 1995 and 1999. Since then it has decreased appreciably to 6 % in 2003 under the level of 1995 per unit of GDP.

Country perspective

Population: 59 725 000
Size: 551 500 km²
GDP: 1 407 304 million euro

Share of organic farming

With less than 2 % of the utilised agricultural area, organic farming constitutes a relatively small proportion of agricultural production.

Municipal waste

Calculated per capita, the quantity and trends of municipal waste are similar to the EU-15 average. For waste management France is characterised by a higher share of incineration (34 % against 19 % for EU-15), and a lower share of waste reuse and dumping.

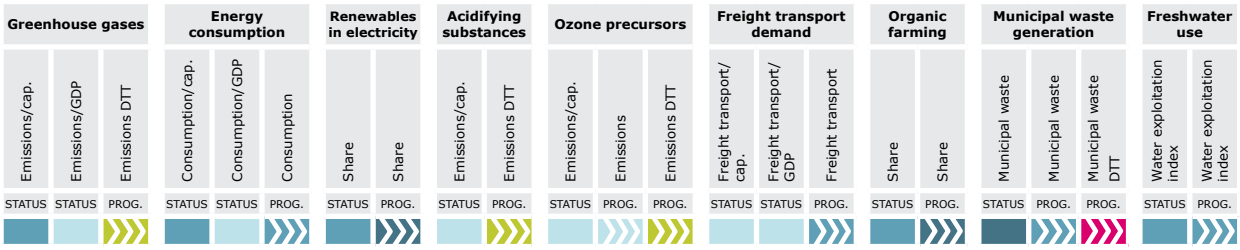
Use of freshwater resources

Available water reserves are sufficient on a national scale. However, locally, certain rivers or aquifers face water stress in summer periods and are then made subject to use restrictions.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Germany

One of the most densely populated countries in Europe, Germany shows above-average progress in reducing per capita emissions and municipal waste and has relatively high levels of eco-efficiency but its per capita performance could be improved. Progressive waste management policies are in place but there is still room to improve performance. Legislation and ecological reforms encourage energy savings and development of profitable renewable energy.



Greenhouse gas emissions

Total greenhouse gas emissions (in GHG eq.) were reduced by almost 19 % compared to the base-year. Reasons for this trend include: an improvement in energy efficiency, a switch in the types of fuel used (to gaseous and liquid fuels instead of solid fuels) and a replacement of 'old technologies' following German reunification in the early 1990s; new policies and measures resulting from climate protection programmes; and a decoupling of economic growth and energy consumption which relates to greenhouse gas emissions (especially carbon dioxide). This trend is also influenced by changing personal energy consumption habits and the implementation of eco-taxes. Reaching the burden-sharing reduction target (– 21 %) does not seem possible solely by using domestic actions. This will result in additional emission reductions by using the flexible mechanisms of the Kyoto Protocol and the EU emission trading scheme.

Energy consumption

As a highly industrialised country, energy consumption per capita is rather high compared to other European countries and energy intensity per GDP better reflects the energy efficiency in the energy and industry sector. In recent years energy consumption has decoupled from economic growth. Energy conversion efficiency has improved as highly efficient units replace older generating plants. Although additional measures to improve efficiency and reduce energy consumption in the industry sector have led to lower energy consumption per production unit, progress has slowed significantly in recent years.

Renewable electricity

The production of renewable energy in Germany is increasing, accounting for 3 % of the primary energy supply in 2002. The contribution of renewables to electricity production more than doubled between1992 and 2002. Electricity production by renewable sources is promoted by the German renewable energy sources act from 2000, which gives priority to feeding electricity from renewable energies into the grid at fixed price levels. It has triggered a boom in the construction of wind and biomass installations. Further measures to promote the use of renewable energy include the Act on the Further Development of the Ecological Tax Reform (2003), which provides incentives for saving energy and improving energy efficiency.

Emissions of acidifying substances

Emissions of acidifying substances have been reduced by more than two-thirds. This was mainly influenced by reductions in SO_2 emissions (– 88 % compared with 1990) and NO_X (– 48 %). To a large extent both compounds come from energy related processes so that the basic drivers for these trends could be summarised as: fuel switching; improved energy efficiency; replacement of 'old technologies'; and implementation of abatement technologies (e.g. DENOX, DESOX, car catalysts). More than 90 % of NH_3 emissions come from agricultural activities. After German reunification, there

Country perspective

Population: 82 551 000
Size: 357 030 km²
GDP: 2 072 162 million euro

was a reduction in livestock numbers in former eastern Germany. This meant that emissions were reduced by almost 20 % up to 1994, but that since then emissions have more or less stabilised. Germany is working on additional policies and measures for further reducing acidifying substances (especially NO_X and NH_3).

Emissions of ozone precursors

Emissions of ozone precursors were reduced by approximately 54 % in the period 1990–2002. This trend is based on similar developments for all substances included (2002 compared to 1990: NO_X – 48 %, NMVOC – 58 %, CO – 62 % and CH_4 – 42 %). Germany has reached one of the best European emission ratios per GDP. The emission reductions are based on activities to improve energy efficiency, fuel switching, economic reconstruction, implementation of new technologies in the road transport sector, the replacement of natural gas distribution systems in the former GDR and the gasoline distribution systems in total. Similarly, livestock reduction in the early 1990s led to emission reductions for CH_4. Germany is working on further measures to reduce emissions from solvent use which dominate the NMVOCs.

Freight transport demand

Freight transport in Germany has been increasing but during the past three years development has levelled off and is in line with economic development. The increase mainly relates to road transport while the share of rail and inland shipping has decreased.

Share of organic farming

The share of organic farming in Germany was just 1 % in 1992 but increased to 4.1 % in 2002. The number of organic farms also rose from below 1 % to 4 % in the same time period. The market share for organically produced food amounted to 2.3 % (= 3 billion euro) in 2002. The yearly increase in share of organic farming and number of farms reached 22 % in 2000 and has been declining since then (2001: 15.6 %, 2002: 6 %). In a European comparison of the share of organic farming, Germany with 4.1 %, is in middle-place. However, comparing the actual area used for organic farming, Germany ranks in third place.

Municipal waste

In Germany the amount of municipal waste collected from households and small- and medium-sized enterprises has been relatively stable during recent years and has even decreased slightly. This has been influenced by an advanced waste management policy. Elements of this policy include the phasing-out of landfilling for municipal waste, and introducing both the concept of total recycling of municipal waste by 2020 (Strategy 2020), and mandatory take-back obligations for packaging waste. These elements have encouraged both recycling and avoidance of waste.

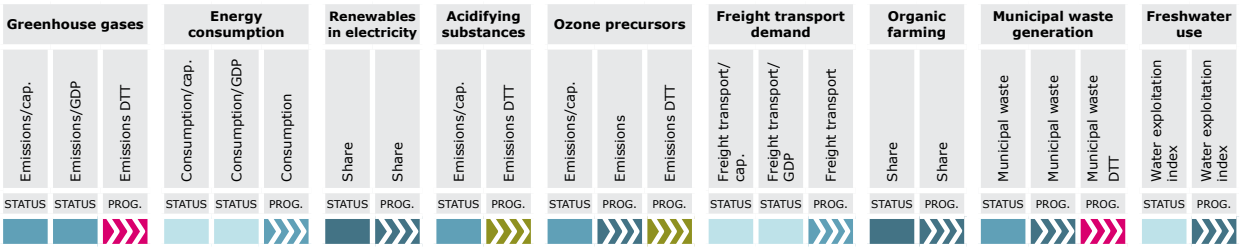
Use of freshwater resources

In Germany, the private and economic sectors use only 22 % of naturally available water. The volume of water consumption in the main sectors is continually decreasing. In fact, the demand for private households is 15 % below the 1991 level; water abstraction for cooling purposes in thermal power stations also decreased 15 % from the 1991 level, and the abstraction for manufacturing and quarrying industries decreased about 29 % over the same period. Water use for agricultural irrigation is not significant and has stabilised at a low level.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Greece

Progress has been made integrating environment into sectoral and economic policies to reduce environmental pressures. The most important environmental issues in Greece are: land use, waste management and water resources management. The relatively non-degraded natural environment has a rich biodiversity, a large variety of habitats, high-quality bathing waters and coastal areas and relatively good air quality.



Greenhouse gas emissions

Greenhouse gas emissions increased steadily during the last decade, the most important gases being CO_2 and CH_4. The production and use of energy, as well as waste disposal and agriculture are the primary sources of emissions. Recent projections indicate that with a consistent implementation of its 2003 plan Greece will come close to meeting its target. An upcoming evaluation of the effectiveness plan will indicate if, and to what extent, Kyoto mechanisms need to be used.

Energy consumption

Per capita demand for primary energy in Greece is lower than the EU average. This high energy intensity presents opportunities to reduce the energy demand through rational use of energy resources and the promotion of energy-saving technologies. Up to now, the Greek energy sector has been dependent on conventional fuels, contributing significantly to the release of atmospheric pollutants. More specifically, in the electricity production sector, the choice to exploit domestic lignite resources as an appropriate response to the energy crisis of the 1970s, needs reconsidering in the light of network integration, market liberalisation and environmental protection. The total operational electrical capacity of natural gas plants will be increased by 52 % by 2010, of hydropower plants by 18 % and of renewables by at least 100 % while the capacity of lignite plants will be decreased by 3 %.

Renewable electricity

Renewable energy sources contributed 4.7 % of total energy demand in 2002 (5 % in 2003). Two-thirds of the total production comes in the form of heat from biomass and active solar systems, and the remaining third comes from hydropower plants and wind. It must be noted that electricity production from large hydro is largely affected by weather conditions (rainfall) and the availability of water in the reservoirs. The share of electricity from RES to total electricity consumption was 6 % for 2002, which was below the EU-15 average of 13.5 %. Due to high rainfall it was 9.6 % in 2003, almost half of the target set by the RES-E directive of 20.1 % by 2010.

Emissions of acidifying substances

Emissions of air pollutants increased following GDP growth with the exception of NO_x and SO_2. The reform and diversification of the energy sector offer:

- rational use and conservation of energy in the building sector;
- measures for the transport sector;
- measures for industry; and
- institutional and organisational measures.

Country perspective

Population: 10 680 000
Size: 131 960 km²
GDP: 120 249 million euro

Emissions of ozone precursors

Despite the partial decoupling of air pollutants from economic growth recorded during the last few years, considerable efforts are underway to ensure a permanent downward trend and to meet the targets set within the EU framework, particularly for NO_x and non-methane volatile organic compound (NMVOC) emissions. Between 1990 and 2002 emissions increased and were above the level that would be needed to meet 2010 NECD targets. Focus for these actions is the energy sector, responsible for the largest part of air quality degradation.

Freight transport demand

Following trends recorded throughout the EU during the last decade, the demand for transport services in Greece is rapidly growing. The main reason is change in the pattern of production and consumption. However, when comparing transport demand per capita and GDP, Greece is ranked among the best performing countries.

Share of organic farming

Organic farming in Greece started in 1992 with the inception of the Common Agricultural Policy (CAP) reform. The percentage of land dedicated to organic farming compared to total cultivated area has increased impressively over the last years reaching 1.41 % in 2004. Olive and citrus tree plantations were the dominant early organic cultivations, but during the last decade increased consumer demand and CAP incentives have given rise to a greater variety of crops such as arable and vineyards. One additional area of significant increase has been organic livestock production.

Municipal waste

Economic development, intense urbanisation and changes in consumption patterns have resulted in an increase in solid waste generation. The quantity of municipal waste generated increased 42.5 % from 1995 to 2002. Initiatives by local municipalities to reduce packaging waste, and the extensive involvement of private companies mainly in paper packaging recycling, are examples of Greece's practical approach to improving the waste management situation. Inappropriate waste disposal and management practices still persist, leading to the degradation of surface and groundwaters, air pollution and forest fires. However, significant progress has been made in the management of hazardous waste, and sludge and electricity production from biomass gases and waste has increased from 1 GWh in 1999 to 126 GWh in 2002.

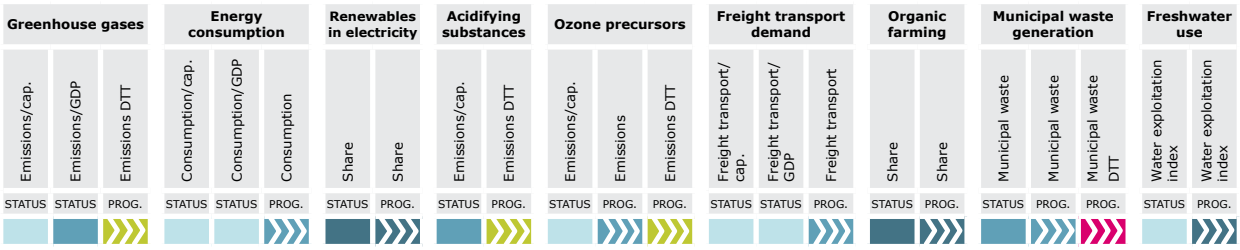
Use of freshwater resources

The problems of water management mainly concern issues of quantity and not of quality. The uneven distribution of water resources and rainfall creates water availability problems. Agriculture is the most significant water consumer and demand for irrigation has doubled in the last twenty years. Irrigation is of paramount importance for agriculture productivity in Greece where water deficiencies in arid and semi-arid areas can severely curtail crop yields. Irrigation accounts for over 80 % of total water abstractions. Between 1992 and 2002, water abstraction for agricultural use was reduced by about 2.5 %. It is estimated that over the next years, further reductions will be achieved. These will arise from the implementation of new CAP and EU regulations, modernisation and renovation of irrigation networks, application of new technologies for irrigation, and the training of farmers in good agricultural practices. Significant progress has been made in wastewater management and approximately 70 % of the national population was serviced by wastewater treatment plants in 2004. For the 2004 bathing season, 99.9 % of Greek coasts complied with national requirements, while 97.6 % of coasts met EU requirements.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Hungary

Hungary shows average performance across the scorecard, and although less eco-efficient than the EU-15 Member States, is more so than many other of the EU-10. Emissions of acidifying substances have decoupled, while waste generation remains coupled to household consumption. A priority area for future consideration is how to develop markets for renewables.



Greenhouse gas emissions

In the past decade, GDP has been decoupled significantly from greenhouse gas emissions as a result of economic recession and profound restructuring. Emissions trends and intensities are closely correlated with greenhouse gas emissions from the use of fossil energy sources (coal and hydrocarbons) and reflect the decarbonisation of the economy very well. By 2002, carbon-dioxide emissions decreased by almost one-third compared to the period between 1985 and 1987 (from 120 million tonnes in the basis period between 1985 and 1987 to 79 million tonnes in 2003).

Energy consumption

Before 1989, energy consumption per capita was several times higher than that of average western European consumption (as a consequence of energy-wasting industry). In 1997, however, energy use was only 79.5 % of the 1985 level, and it decreased by a further 15 % in 2002. Natural gas has strengthened its position among energy sources, contributing approximately 40 % in 2002. The decline of coal use continued from 29 % in 1980 to 12.5 % in 2002. Nuclear-generated electricity has provided 10–12 % of the country's energy for the last 15 years. Only one third of the total primary energy use comes from domestic production. Since 1990, import dependence of energy supply has been increasing slightly.

Renewable electricity

Over 16 % of the renewable energy source potential is used with the currently available technical solutions. The most widely used resources are water power (56 %) and biomass (19 %), while wind and solar energies are the least used (0.4 % and 1.7 % respectively). Nevertheless, the share of renewable energy sources in electricity generation is low at about 0.3 % which implies that further efforts are needed to meet EU requirements.

Emissions of acidifying substances

Total emissions of acidifying gases decreased to 60 % by the end of the 1990s, indicating a strengthening (although saturating) decoupling from GDP. These patterns are reflected in trends in emissions per capita. Emissions of acidifying substances per unit GDP show the most striking decoupling, which may be explained by the joint effects of restructuring and environmental policy measures in the 1990s. It is still not clear whether or not the brief halt in decoupling, or slight increase, is the beginning of a new trend.

Emissions of ozone precursors

CO, non-methane volatile organic compound (NMVOC), CH_4 and NO_x emissions expressed in TOFP equivalent exceeded the GDP index between 1992 and 1999, while signs of weak decoupling emerged in 2000.

Country perspective

Population: 10 120 000
Size: 93 030 km²
GDP: 46 002 million euro

Freight transport demand

The share of railways and waterways has decreased since the mid-1990s. Road freight transport grew evenly in the second half of the 1990s and it has increased to over 50 % in the last couple of years. General trends in air freight transport show slow growth, but despite slight fluctuations in the past couple of years; its share within total performance of freight transport is still insignificant (well below 0.5 %). In contrast to road freight transport, road passenger transport has not changed in the course of the last decade.

Share of organic farming

Since 1996, the share of controlled green farming areas (where farming activities are regularly supervised) has been growing dynamically, while agricultural area has decreased radically. Although the proportion of such controlled areas within all agricultural areas was below 0.2 % in 1996, by 2002 this proportion was almost 1.9 % (an almost tenfold increase). The volume of organic animal husbandry has so far remained at a low level. Only 10 % of Hungarian organic production is sold on domestic markets, while the rest is sold primarily on the markets of Switzerland and the European Union.

Municipal waste

The quantity of waste collected from the population increased by 30 % between 1992 and 2002 and exceeded the rate of GDP growth over the whole period. This trend is traceable to economic restructuring and the spread of more up-to-date and cleaner technologies. In Budapest the share of plastics in municipal waste grew drastically after 1996 and by the end of the decade was more than three times the 1990 level. The degradable organic material content of municipal waste has grown. The shares of paper, glass, metal and textile waste have decreased. Since 1993, the quantity of waste collected from the population has grown at the same (or greater) rate than the increase of average household consumption, so even any relative decoupling seen is insignificant.

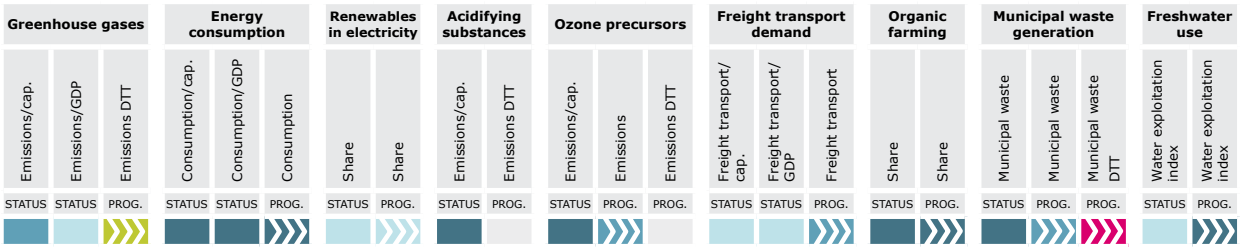
Use of freshwater resources

In the early 1990s, the total annual water abstraction fell significantly as a result of declining industrial production and restructuring, the reduction in household consumption and shrinking size of irrigated areas. With the drastic fall of actual water use (over 50 %) and despite a minimal rise in usable water resources, the intensity of water use decreased significantly in absolute terms. In 1999, it was 8.5 %, which is considered low by international standards. Agriculture uses some 18 % of water abstraction (for fishponds and to a lesser extent irrigation). In 1997, overall irrigated agricultural area fell to 82 000 ha, only 2 % of the cultivated land, which was followed by an increase to over 200 000 ha in the early 1990s. In 2001, the area of irrigated land was around 105 000 ha.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Iceland

Iceland's environmental situation and problems differ from those of other European countries. Iceland is sparsely populated, depending primarily on natural resources and their efficient use for its economy. From an Icelandic perspective, a different set of indicators for analysing its environmental performance would be more suitable, focusing on the management of fish stocks, renewable energy sources and wilderness.



Greenhouse gas emissions

Emissions of greenhouse gases were 3.5 million tonnes in 2003 — an increase of 8 % since 1990. As the Icelandic population is approximately 300 000, this means 11 600 kg per capita, which is below average. The greenhouse gas emissions profile for Iceland is in many regards unusual. Firstly, emissions from the generation of electricity and from spatial heating are essentially non-existent since they are generated from renewable non-emitting energy sources. Secondly, more than 80 % of emissions from energy use come from transportation and fishing vessels. Finally, individual sources of emissions from industrial processes have significant proportional impacts on emissions at the national level. Iceland's obligations according to the Kyoto Protocol are therefore twofold; emissions should not increase more than 10 % based on the level of emissions in 1990, and 1 600 000 tonnes of CO_2 emissions from industrial processes, falling under 'single projects', should be exempt from the 10 % target. Taking this into consideration, emissions falling under the 10 % Kyoto target have decreased by 6 % since 1990.

Energy consumption

In 2002, primary energy consumption amounted to 500 GJ per capita (11.9 toe/capita), which ranks among the highest in the world. There are a number of reasons for this, in particular the high proportion of electricity used in power intensive industry, a relatively high amount of electricity production from geothermal energy, and substantial energy consumption for fishing and transportation. In addition much energy is used for space heating using abundant geothermal hot water.

Renewable electricity

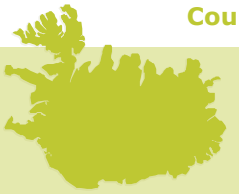
Iceland is a top performing country when it comes to use of electricity from renewable energy sources. The main part of the energy needed for spatial heating also comes from renewable energy, with geothermal energy meeting 86 % of the spatial heating requirements in Iceland. Today geothermal energy and hydropower account for more than 70 % of the country's primary energy consumption.

Emissions of acidifying substances

These emissions become a problem when they are high per area, not necessarily per capita. In Iceland there are about three inhabitants/km^2 which is by far the lowest population density in Europe. These indicators are high if calculated on a per capita basis but are low in total amounts and very low if calculated per km^2 in an area grid system. It should be noted that the data used include considerable emissions from geothermal sources, which are no longer included in the United Nations Framework Convention on Climate Change reporting. When excluding geothermal sources, the fishing fleet accounts for more than one third of the emissions. This indicator is therefore not suitable for evaluating environmental deterioration and conditions in Iceland. In fact, acidification is simply not a problem in Iceland.

Country perspective

Population: 286 000
Size: 103 000 km²
GDP: 7 088 million euro



Emission of ozone precursors

The same applies for ozone precursors as for acidifying substances; emissions of ozone precursors are not a problem in Iceland. Fishing ships are the largest contributors, releasing up to half of the TOFP.

Freight transport demand

Iceland scores highest for the amount of freight transport per unit of GDP, but comparing Iceland with other countries here is difficult. As approximately half of the population lives in Reykjavik and the communities surrounding the capital, the transport distances are limited. Moreover, marine transport is not included.

Share of organic farming

The conditions for agriculture in Iceland do not give scope for a high score for organic farming. Cultivated land in Iceland is 1 290 km² or approximately only 1.3 % of the total land area; 1.2 % is cultivated grass fields and 0.1 % horticulture, fodder and grain fields. Meadows and pastures cover 17 700 km². Most of the vegetated land, covering up to 80 000 km², is open, non-fertilised rangeland used for grazing purposes where the sheep roam free during the summer months.

Municipal waste

Waste management in Iceland in general has improved radically since the 1990s with rapidly increasing recycling and recovery figures, a ban on open pit-burning and fewer and bigger landfills that are operated in an environmentally sound way. The figures on municipal waste that Iceland have published have been revised recently taking into account that household waste and industrial waste are collected together in many of the municipalities in Iceland. This waste collection system makes it almost impossible to estimate the quantity of household waste in the total waste collected with an acceptable grade of certainty. Therefore, all collected waste is registered as 'municipal waste'. However, this has been changing, especially in the most densely populated areas, as municipal waste and idustrial waste are increasingly collected separately, making a better assessment of the different waste streams possible. Thus, it has become clear that municipal waste generated per capita is somewhere around 490 kg/year and not 1 030 kg/year as previously estimated.

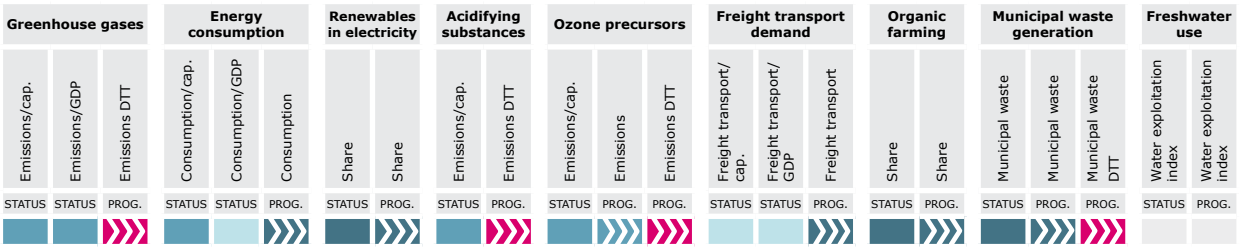
Use of freshwater resources

Iceland has the highest renewable freshwater availability per capita in Europe. Heavy rainfall (an average of 2 000 mm per year) and the fact that Iceland is the most sparsely populated country in Europe, means that there is abundant water per inhabitant and the majority of the population has access to plentiful supplies of freshwater. Most of the water, over 95 % of the public water supply, is untreated groundwater originating from springs, boreholes and wells. Water stress related to abstraction is not known and water abstraction is sustainable.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Ireland

Meeting international commitments on air emissions and waste management are priority areas. Positive signals include recent modest improvements in greenhouse gas emissions and some acidifying gases and long-term major reductions in serious pollution in rivers and urban air. Increasing awareness of the environment and willingness to act is shown by the plastic bag levy success story, increased recycling and high compliance with the new smoking-ban in bars and restaurants.



Greenhouse gas emissions

Annual emissions of greenhouse gases were down for a second consecutive year in 2003. Emissions were 25 % above the 1990 level in 2003 (Ireland's Kyoto Protocol target is to limit emissions to 13 % above the 1990 level in the period 2008–2012).

Although GHG emission levels in 2003 were 4 % lower than their peak 2001 level, the total exceeded 1990 levels by 25 %. While the downward trend from 2001 to 2003 is welcome, Ireland still faces a significant challenge meeting its Kyoto Protocol target.

Energy consumption

Ireland's energy consumption by GDP is low compared with most other EEA member countries. For per capita energy consumption, the figure is influenced by a higher dependency on energy for heating purposes than warmer countries. Total energy consumption is also influenced by the unprecedented period of economic growth in Ireland since the mid-1990s.

Historically poor building codes have been repeatedly improved, the new directive on the energy performance of buildings will help improve energy efficiency. Despite the continued heavy reliance on carbon-intensive fuels, there were some gains from energy efficiency and fuel switching as some new electricity suppliers entered the market in 2002 and 2003.

Renewable electricity

The significant increase in total primary energy requirement in the period 1998–2001 hides the large growth of renewable energy, rising by over 71 % between 1990 and 2002. More recently the rate of growth of electricity from renewable sources has increased substantially, particularly for wind. In 2004 the amount of electricity generated by wind increased by 69 % over 2002 levels. This rapid increase in electricity generated by renewables is set to continue over the coming years with wind being the biggest growth area.

Emissions of acidifying substances

Existing emission levels of acidifying gases are such that compliance with the EU national emission ceilings (NEC) directive represents a major challenge. Ammonia and volatile organic compounds (VOCs) have not previously been subject to abatement strategies, and progress on reducing total emissions of SO_2 and NO_X has been slower than in most other European countries. Reductions equal to 75 % and 100 % of those needed have been achieved for SO_2 and ammonia respectively. NO_X emission reductions have been more difficult, only showing decreases since 2000. Progress towards the NO_X ceiling of 65 kt will mainly depend on reductions in road traffic emissions and on the wide application of expensive control technologies (e.g. selective catalytic reduction) in industry and for electricity generation. The high level of ammonia emissions (mostly from agriculture) account for a major part of the per capita acidifying emissions. At 116 kt in 2003, the emissions of ammonia had decreased to the level of the 2010 ceiling.

Country perspective

Population: 3 947 000
Size: 70 270 km²
GDP: 94 404 million euro

Emissions of ozone precursors

A reduction in ozone precursor volatile organic compound (VOC) emissions of 58 % was achieved between 1990 and 2003. However, NO_x emissions only began to show a decrease in 2000, with the result that the total in 2003 remained marginally higher than the 1990 baseline value of 115 kt.

In Ireland ozone levels are influenced by transboundary sources and generally remain below the effects thresholds for human health and vegetation as set down in the 2002 ozone directive.

Freight transport demand

Ireland is an island nation of approximately 480 km in length and 240 km in width. The majority of Irish industry operates a 'just-in-time delivery' system and the products produced are generally of a low volume/high value. These factors contribute to low tonne/km transport efficiency.

Share of organic farming

Organic food represents approximately 1 % of the entire food market. A number of new instruments will have a positive effect and lead to an increase in organic farming. The rural environment protection scheme now provides additional payments to participating farmers to convert to organic farming methods. Grant assistance towards the development of the organic sector is also available. The recent decoupling of farm payments and food production gives farmers a positive incentive to diversify into organic farming.

Municipal waste

Due to lack of harmonisation of definitions and methods at EU level, Irish municipal waste statistics are over-stated because household waste in Ireland includes commercial waste and other waste which is similar to household waste.

The generation of municipal waste including household waste has increased significantly since the mid-1990s. The principal factors driving the increase are the economic boom and significant population increase. However, municipal waste recycling increased to 727 000 tonnes in 2003, representing a recycling rate of 28 %. Significant progress has been made in meeting the national target of 35 % municipal waste recycling by 2013.

Since the 1996 Waste Management Act, waste management in Ireland has been transformed. The number of landfills has decreased from over 100 unlined and unregulated dumps to 34 authorised municipal waste sites that operate to modern EU standards. Recycling has increased visibly with a 26 % reduction in the proportion of waste being sent to landfill. An ongoing challenge is the continued rise in absolute quantities of waste (up 10 % in 2003). Also, the successful clamp-down on large-scale illegal dumps has resulted in new threats including fly-tipping and backyard burning of rubbish. Considerable challenges remain, including a continuing deficit of infrastructure and the requirement to decouple waste production from economic growth.

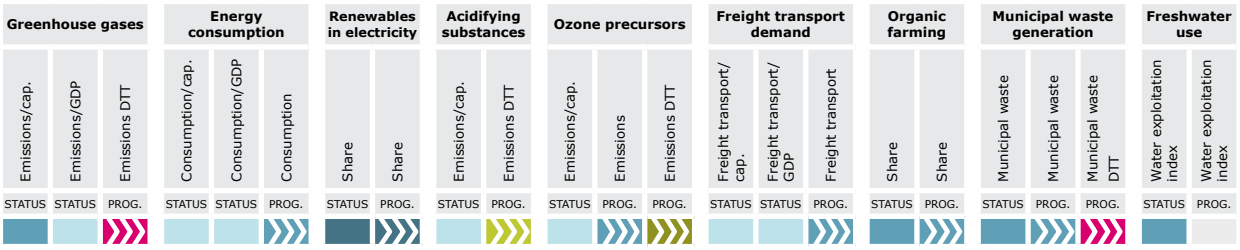
Use of freshwater resources

Due to present climatic conditions, water abstraction is not a significant environmental issue in Ireland. Ireland's water quality overall remains of a high standard. Serious pollution in rivers and streams has been reduced to just 0.6 % of river channel, its lowest level since the early 1990s. Eutrophication of rivers, lakes and tidal waters continues to be the main threat to surface waters with agricultural run-off and municipal discharges being the key contributors.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Italy

Italy shows relatively good environmental performance and average progress across the scorecard indicators. Reducing GHG emissions to be on track with Kyoto targets is posing a challenge. In common with other southern European countries, priorities for Italy include improving the efficiency of its irrigation system in order to reduce water stress from agriculture.



Greenhouse gas emissions

In the context of the convention on climate change and of the Kyoto Protocol, Italy has undertaken the commitment to reduce overall national emissions by 6.5 % with respect to the base-year by 2008–2012. However, the total emissions in 2002, in CO_2-equivalent terms, although fairly constant with respect to 2001, are 7 % higher than the base-year, and thus far from the fixed target. The emission trend is closely related to energy consumption

Energy consumption

A recent survey at European level has shown that the Italian energy system is characterised by a good performance in terms of energy intensity and the ratio of final to total energy consumption and a changing energy supply pattern, involving the increased use of natural gas, renewable energy, cogeneration and a recent increase in solid fuel consumption.

Renewable electricity

Recent data shows that production of renewable energy contributes only 5.9 % of the total energy produced, although showing an increase at national level of about 47 % in the period 1991–2003. Renewable sources primarily include hydroelectricity, biogas, wood and wind energy.

Emissions of acidifying substances

As a whole, emissions of acidifying substances are diminishing and they are nearing the European targets. Although close to the desired target, emissions of ammonia show a slight increase due to the transport sector.

Emissions of ozone precursors

After a slight increase of 6 % between 1980 and 1992, emissions of non-methane volatile organic compounds (NMVOCs) dropped by 37.6 % between 1992 and 2002, close to the European targets.

Freight transport demand

The freight transport intensity by GDP and per capita has increased in recent years, featuring an upward trend until 1995, after which it started fluctuating. Freight transport by road has continuously increased to 67.7 % of the total transport demand when distances in excess of 50 km are considered.

Share of organic farming

After a decade of continuous growth (1990–2001), organic farming indicators (utilised agricultural areas and farms) show that the sector is now consolidated

Country perspective

Population: 57 646 000
Size: 301 340 km²
GDP: 944 770 million euro

and mature. However, the sector underwent a slight drop in the last two years, mainly due to a widespread move away from organic farming in many southern regions as a consequence of a general delay in the implementation of the EC regulation.

Municipal waste

In 2003, municipal waste generation per capita was 524 kg. However, the growth rate of municipal waste generation has been decreasing since 2000. Thanks to the increase of separated collection and bio-mechanical treatments, the amount of municipal waste disposed of in landfill is decreasing, reaching 63 % in 2002.

Use of freshwater resources

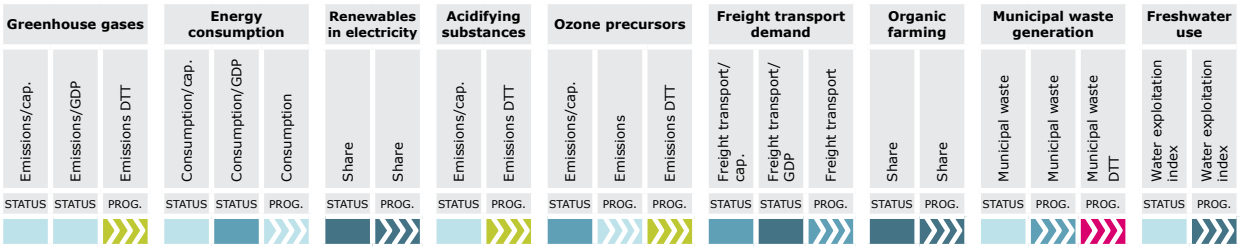
The updated assessment of freshwater abstraction remains a priority in the management of water resources in Italy. The main water consuming sector is agriculture (irrigation), and the main source of water for this purpose remains groundwater, especially in southern Italy which suffers from water scarcity.

Groundwater bodies are then affected by imbalances in the recharge regime and salt intrusion along the coastline. Lack of updated information makes any estimate of this critical issue unreliable. However, since the reduction of water stress in agriculture is a priority in the national water policy, relevant actions have been put in place: district authorities for the management and cost recovery of the integrated water cycle (abstraction-treatment-distribution-wastewater treatment and reuse) have been established covering more than 80 % of the national territory; a yearly report is submitted to a national committee (report to the Parliament) on freshwater uses, network development, water uses, tariff, wastewater treatment and water reuse. In 2004, a ministry decree was enforced for treated wastewater reuse for irrigation and industrial reuse, including financial support. A national information system on water quality and quantity (including sectoral uses) taking into account the reporting requirements of all water directives was implemented in 2003 for a regular reliable assessment on water quality and water uses. By the end of 2005, all regional authorities will implement a regional water protection plan to comply with the environmental objectives and sustainable water use as required by EU sectoral legislation, including Directive 2000/60/CE.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Latvia

Latvia scores highest in Europe in reduction of air emissions, but is performing poorly in freight transport and municipal waste. Areas for attention include improving renewable electricity production and organic farming. Like other European countries, Latvia risks increasing waste volumes, but ongoing activities are tackling this. Actions are also needed to improve urban air quality where some seasonal exceedances of PM_{10} and NO_2 are observed.



Greenhouse gas emissions

Significant decreases of GHG emissions since 1990 have put Latvia in first place in Europe. However, it is difficult to say if this is a good or a bad trend, since the decrease was the result of economic decline and re-structuring of industry. The Kyoto Protocol requires Latvia to make an 8 % reduction of GHG emissions by 2008–2012, feasible from present trends. Projections indicate that GHG emissions could even be reduced 50 % below target. However, with higher economic growth, carbon dioxide emissions would increase especially from increased mobility combined with low energy efficiency in the energy, industry and household sectors. Measures must therefore be taken to improve energy efficiency and promote the use of local renewable energy resources. The Latvian climate change mitigation programme 2005–2010 sets out principles for participation in flexible mechanisms, including GHG emissions trading.

Energy consumption

Many actions have been taken to promote energy efficiency within the state investment programme. Support is planned for heat energy production enterprises which use heavy fuel oil for heat energy production. Fuel conversion projects in enterprises to comply with Latvian and EU laws limiting sulphur content in particular types of liquid fuel, will also improve energy efficiency. A decrease in energy intensity since 1997 can mainly be explained by the growing GDP.

Renewable electricity

Under EU law, Latvia has undertaken to increase the quantity of electricity generated by renewable resources in 2010 to 49.3 % of the country's domestic electricity consumption. Assuming current electricity consumption and an average flow rate in the Daugava river, 44–45 % would be within reach. However, installed capacities for renewable electricity generation are being used fully. It is now planned to emphasise the development of co-generation. Latvia has a higher consumption of electricity by GDP than the developed European countries. This proportion is now decreasing, indicating increasing improvements in the effective use of electricity by businesses.

Emissions of acidifying substances

EMEP calculations show that less than 5 % of pollution in the country was generated in Latvia, the rest coming from other countries. The proportion of Latvian generated nitrogen (oxidized and reduced) deposition is on average 7.5 % of the total nitrogen deposits in Latvia.

Emissions of ozone precursors

Emissions of ozone precursors have been stable in recent years and relevant changes are not expected in the near future. Since 1990, emissions of nitrogen oxides decreased by 27 % and of non-methane volatile organic compounds (NMVOCs) by 29 %. These decreases have been brought about by the use of lower sulphur content

Country perspective

Population: 2 321 000
Size: 301 340 km²
GDP: 6 007 million euro

fuels, use of car catalytic converters and improvements in treatment plants. Concentrations of ozone precursors (nitrogen dioxide, benzene) and ground-level ozone concentrations in ambient air have been monitored since 1998. The highest hourly and maximum daily 8-hour mean concentrations of ozone were recorded in Riga. The target values, information and alert thresholds were not exceeded.

Freight transport demand

Since 1995 freight turnover by rail and roads has more than doubled. Rail provides 72 % of total freight turnover mainly related to transit freight traffic. However, domestic freight is mostly carried by road transport. Since 1995 transport energy use increased by 58 %. In 2002 road transport fuel consumption constituted 87 % of total transport energy use. Compared to 2001, gasoline consumption has slightly decreased, gas consumption has remained stable, while diesel fuel consumption has increased. The EU biofuels directive requires these fuels to be 2 % of the fuel market in 2005 (or 20 000 tonnes) and 5.75 % by 2010. This is planned to be reached using local raw materials. Several laws and regulations have been passed which fix fuel quality requirements. As a result, the proportions of fuel used, the quality of fuel, as well as emissions to air (especially lead and sulphur emissions) have significantly changed.

Share of organic farming

The national target is to increase organic farming to 3 % of total agricultural area by 2006 and increase the share of organic products sold in the country to 3 %. Support for the development of organic farming is foreseen in the rural development plan. Although state support (e.g. subsidies for organic farming) was available since 2001, no farmers applied for this programme under the frame of SAPARD. From 1998 to 2003 the area of organic farming increased from 0.6 % to 1 % of total agricultural area. The largest part (48 %) covers medium-sized farms (20–100 ha). The amount and assortment of organic products is insufficient and does not match demand. Processing of organic products is poorly developed so only unprocessed or primary processed products are sold. Although the share of organic farming in agriculture is very small, a rapid increase of organic area and products can be expected in coming years.

Municipal waste

Although waste management systems have improved and public awareness has increased, waste production continues to rise. Rising consumption is increasing the use of household packaging waste. More attention is being given to waste processing, reuse and recycling, and a better understanding of resource flows and waste arisings and how to influence them. Used packaging that contains economically worthwhile and reusable materials contributes to 20–30 % of non-hazardous waste. Adopted changes in the calculation of the natural resource tax encourage the management of packaging waste. Recovery of materials from waste, including the export of materials extracted from waste outside Latvia, is still limited by a poorly developed market.

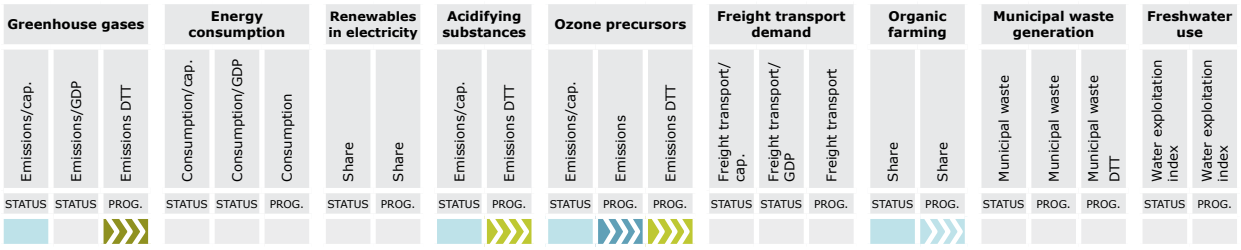
Use of freshwater resources

The total amount of water abstraction is decreasing. This trend is explained by the stabilisation of industrial activity and the installation of water meters, which motivate water savings. Metered water constituted 69 % of the total amount of withdrawn water in 2003. Losses constitute approximately 9–13 % of total water taken and can include water which a consumer has received but not paid for. A decrease of losses has been encouraged by modernisation and reconstruction of water management in small towns supported by the state investment programme.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Liechtenstein

A small and centrally located country, Lichtenstein is subject to pressures from increasing non-domestic freight transport, especially in the Rhine valley. There are plans to increase domestic energy from renewable sources up to 10 % of total energy requirements. The population has grown rapidly, and although waste generation is increasing in parallel, GHG emissions and other air pollutants are decreasing.



Greenhouse gas emissions

Despite an increase in population of over 20 % in the past 13 years, emissions of greenhouse gases have decreased substantially due to the implementation of technical measures in combustion plants, motor vehicles and in industry. Liechtenstein aims to reduce emissions of greenhouse gases by 8 % by 2008–2012, compared to the base-year 1990, and will therefore go beyond its commitments under the Kyoto Protocol.

Energy consumption

Total energy consumption increased by around 20 % during the past 10 years to approximately 1.2 million MWh/per year. This more or less corresponds to the population growth during this period. Half of total energy consumption is taken up by the heating requirements and management of buildings and plants, transport uses 30 % and 20 % is used in commercial and industrial production.

Renewable electricity

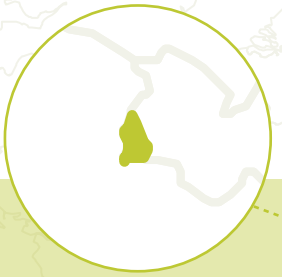
Liechtenstein imports most of the energy for its requirements. Energy produced in Liechtenstein makes up 7 % of total energy consumption and consists entirely of renewable energy (25 % wood, 75 % hydropower). The priorities for the coming years are: increasing the share of renewable energy to 10 % of total energy consumption by using more domestic biomass; increasing the use of solar energy through thermal solar plants; increasing the amount of electricity gained through solar energy by using photovoltaic technology; investing in combined heat and power plants in major projects and increasing the use of wood as an energy source.

Emissions of acidifying substances

Liechtenstein has radically reduced NO_x emissions by 40 % over the last 10 years. This was mainly due to technical measures such as the introduction of catalytic converters for motor vehicles and the implementation of technologies with low NO_x emissions for heating. Since the end of the 1980s, SO_2 emissions have also radically decreased due to the use of natural gas and of products with low SO_2 emissions in combustion.

Emissions of ozone precursors

Liechtenstein is ranked in the top third for ozone precursors. However, exceedances of the long-term objective for the protection of human health still occur frequently during the summer months. Measures undertaken up to now in the transport, combustion, industry and commercial sectors have not been sufficient to reduce the harmful ozone concentrations on a long-term basis. In addition, Liechtenstein is heavily affected by increasing transit traffic in the Rhine valley (north-south axis).



Country perspective

Population: 33 000
Size: 160 km^2

Freight transport demand

The number of transport vehicles has increased in the last five years by 5 %. In Liechtenstein, 32 % of freight transport is domestic, 63 % is transport with destination and origin in Switzerland and Austria and about 5 % is other transit transport.

Share of organic farming

Liechtenstein has the highest percentage of organic farms in Europe. The organically farmed area is continuously growing.

Municipal waste

Due to the introduction of waste charges according to the polluter-pays-principle in 1994, the amount of waste generated has only developed in parallel with population growth. At the same time, the amount of waste recycled has increased.

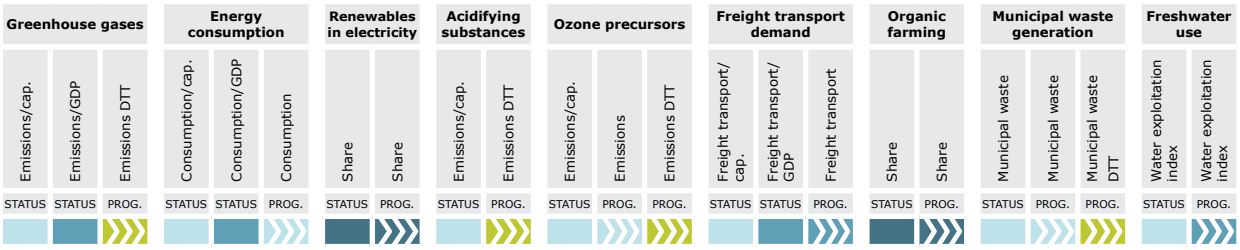
Use of freshwater resources

In 2004, 8.99 million m^3 freshwater was used (54 % groundwater, 46 % spring water). This corresponds to a per capita water consumption of 860 litres per day. 37 % freshwater consumption is caused by industry. 1.9 million m^3 freshwater is used every year for the production of thermal energy.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Lithuania

Lithuania is performing well across most of the selected indicators. Emissions to air have decreased drastically over the last decade in line with all international obligations. Current efforts to reduce relatively high energy intensity should improve the situation and keep emissions at relatively low levels. Efforts to increase the production of electricity from renewables are still necessary. Share of organic farming is rapidly increasing indicating positive response to environmental actions.



Greenhouse gas emissions

An almost threefold decrease of GHG emissions since 1990 was mainly driven by economic decline. The re-structuring of industry and more efficient use of energy resources allowed a high increase of GDP per capita without significant increase of GHG emissions. It is expected that closing the Ignalina nuclear power plant will affect GHG emissions, but that Lithuania will comply with its commitment to the Kyoto Protocol.

Energy consumption

Energy intensity in Lithuania is comparatively high. Sectoral analysis showed that households generate the highest share of total energy consumption. Therefore, it is expected that the new building renovation programme will increase energy efficiency significantly. The country manages to maintain a low GDP per capita compared with the other European countries and high annual GDP increase, by linking intensification of energy consumption with increased efficient energy use.

Renewable electricity

Much effort has been made to increase the share of renewable energy resources. Although renewables contribute nearly 10 % of total energy generation, Lithuania is still below EU targets. Intensification of hydro-energy generation is limited due to relatively low potential capacities of Lithuania's lowland rivers. However, Lithuania is committed to reach 7 % share of renewable electricity by 2010.

Emissions of acidifying substances

Emissions of acidifying substances have decreased significantly since 1990. The most significant decrease has been observed for SO_2 emissions. This was driven by re-structuring of big economic entities, introduction of more stringent requirements for SO_2 content in fuel and a shift to more environment-friendly fuels. Current emissions of acidifying substances are a few times below national limits.

Emissions of ozone precursors

Emissions of ozone precursors reduced drastically during the last decade. This was mainly due to changing fuel types and introduction of new techniques in the transport sector and fuel distribution systems. A decrease of livestock reduced CH_4 emissions from the agricultural sector. Since the measurement of tropospheric ozone in urban areas only began in 2003 it is not possible to evaluate changes of concentrations over the years. Observations in recent years showed that the eight hour maximum concentration limit might be exceeded occasionally in some of the measurement stations, although concentrations are below the risk threshold.

Country perspective

Population: 3 454 000
Size: 65 200 km²
GDP: 7 473 million euro

Freight transport demand

Freight transport is continuously increasing. Road freight transport is increasing most rapidly, followed by rail transport. Marine freight remains stable or is even decreasing. Rail freight is mainly determined by transit transport, while domestic freight is mostly transported by road.

Share of organic farming

The area of organic farming is continuously increasing in Lithuania. During 2004 the area of certified agricultural farming land increased by 20 000 ha and covered the total area of more than 40 000 ha — approximately 1.5 % of all farming land of the country. The number of organic farms increased rapidly in 2003–2004, growing by 60 % every year. In 2004 more than one thousand entities producing organic produce had been certified in Lithuania.

Municipal waste

Waste management is under reorganisation in Lithuania. The accounting system has also changed so that it is difficult to compare waste generation before and after the introduction of new waste accounting principles. It is estimated that volumes of collected municipal waste have been increasing continuously over the past ten years. Accounts over the last few years show that yearly amounts of collected waste are becoming more stable. The amount of total collected waste has increased following the improvement of the waste collection system. However, the broader introducing of waste recycling processes should to some extent compensate this increase. Comparison with other countries with significantly higher GDP per capita leads to the conclusion that municipal waste will increase in future.

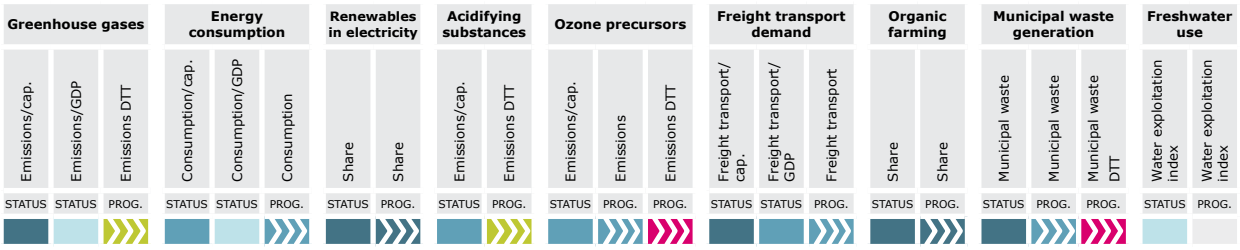
Use of freshwater resources

Close to 4.5 thousand million m³ of water was abstracted from freshwater sources in 2004; 10 % less than in 2003. Use of freshwater resources in Lithuania is mostly dependent on energy production (95.8 % of the total water consumption in 2004). The total amount of water abstraction decreased in 2004. This could be generally explained by the lower activity of the Ignalina nuclear power plant and the Kruonis pumped storage plant. Higher water prices and the installation of water meters, encourage water savings. Metered water made up 69 % of total amount of withdrawn water in 2003. Losses constitute approximately 9–13 % of total water taken and can include water which a consumer has received but not paid for. A decrease of losses has been encouraged by modernization and reconstruction of the water supply systems and improving freshwater resources management in small towns supported by EU funds.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Luxembourg

Luxembourg performs less well than other countries on a per capita basis because it is a small country with high economic activity attracting people, especially workers, from abroad, thus increasing its population by a quarter. Although some decoupling has occurred, the characteristics of the country (size, commuters from abroad, rapidly increasing population) require specific policies for transport, land use and households.



Greenhouse gas emissions

Luxembourg has the most ambitious reduction target among EU countries (– 28 % by 2008–2012 relative to 1990). Due to important decreases in industrial emissions (steel industry moving from blast furnaces to electrical steelworks), this objective was already reached by 1995, but since 1999, total GHG emissions have been rising. From 2002, they were above the agreed reduction target due to rising transport emissions and the starting up of the country's first gas-heat cogeneration power plant (generating around 10 % of Luxembourg's greenhouse gases). However, despite an increasing population, domestic emissions remain stable. This is the result of a policy promoting renewable energy use by agriculture and the private and household sectors (through subsidies and fiscal reductions). Nevertheless, Luxembourg still has the highest emissions of GHG per capita in Europe. One significant reason is 'fuel tourism' which represents almost 40 % of the country's GHG emissions.

Energy consumption

Energy consumption changed dramatically since the early 1990s with coal tending towards zero and other fuels rising by more than 50 %. Between 1990 and 2002 industrial energy consumption decreased from 55 to 26 %, and transport consumption increased from 29 to 55 %. However total energy consumption is now only slightly above what it was in the early 1970s, hence a clear decrease in energy intensity (relative decoupling). Domestic final energy consumption only increased by 30 % since 1990 (whereas for transport the increase is 110 %), an encouraging figure compared with Luxembourg's population growth (+ 17 % since 1990). Consequently, as for GHG emissions, transport, and particularly 'fuel tourism', is the key sector penalising Luxembourg on a per capita basis.

Renewable electricity

Luxembourg imports most of its electricity needs from Germany and Belgium. To gain more control of the production and delivery of energy, it has been decided to develop national production of electricity. Renewable energies and new forms of energy production (cogeneration, such as the gas-heat cogeneration power plant) will be encouraged. Luxembourg aims at 5.7 % of final electricity production to be covered by nationally produced renewable sources. However, since the potential for water and wind renewable energies is almost exhausted, the 5.7 % objective will only be reached by reducing electricity consumption and promoting other renewable sources, such as biomass.

Emissions of acidifying substances

Emissions of the three main gases have all decreased since the early 90s: NO_X and NH_3 moderately; SO_2 significantly. In 2002, SO_2 emissions were only a sixth of 1990 levels. As for GHG emissions, the reasons are a decrease in industrial emissions (move from blast furnaces to electrical steelworks) and a strict policy for new industrial establishments. Luxembourg is well on track to meet its commitments for both SO_2 and NH_3. This is not the case for NO_X emissions which have risen

Country perspective

Population: 448 000
Size: 2 597 km²
GDP: 20 823 million euro

with the increasing population and national road traffic with a high share of diesel vehicles and 'fuel tourism'.

Emissions of ozone precursors

Luxembourg is not on track to meet targets for ozone precursors: in 2002, non-methane volatile organic compound (NMVOC) and NO_x levels were still around 30 points above the objectives set for 2010. However, absolute emissions of these two gases decreased since 1990. CO has had the most dramatic reductions: 2002 emissions are around 27 % of 1990 levels due to reductions in emissions from the steel industry.

Freight transport demand

Both passenger and freight road transport are key environmental problems for Luxembourg. Collaboration with neighbouring countries aims to tackle heavy road traffic from the foreign daily workforce. High investments are already foreseen to reinforce public transport. Government has set itself an ambitious objective of a 25–75 % modal split for passenger transport in Luxembourg by 2020. Reducing the gap in fuel prices between Luxembourg and border countries is also a goal for tackling 'fuel tourism'. Freight transport can only be addressed within an EU framework since Luxembourg is a land-locked country and located on one of the major north-south roads.

Share of organic farming

The share of organic farming in the total utilised agricultural area is clearly increasing: from 0.8 % in 2000 to 2.6 % in 2004. Organic farming concentrates mainly on dairy products, eggs, some cereals and meat (beef, poultry).

Municipal waste

Two factors explain the high per capita municipal waste generation figures. First, Luxembourg has a comprehensive waste collection system with 100 % of the population covered. Secondly, the 110 000 plus daily workforce from abroad generates waste which is counted against residents when per capita values are calculated. Nevertheless, Luxembourg residents generate too much waste. Fortunately, the share of municipal waste to be eliminated decreased between 1995 and 2002: – 20 % for landfill and – 15 % for incineration. At the same time, the recovery rate doubled to reach about 50 % of generated municipal waste. This encouraging rate is the result of a policy promoting voluntary waste separation and recovery.

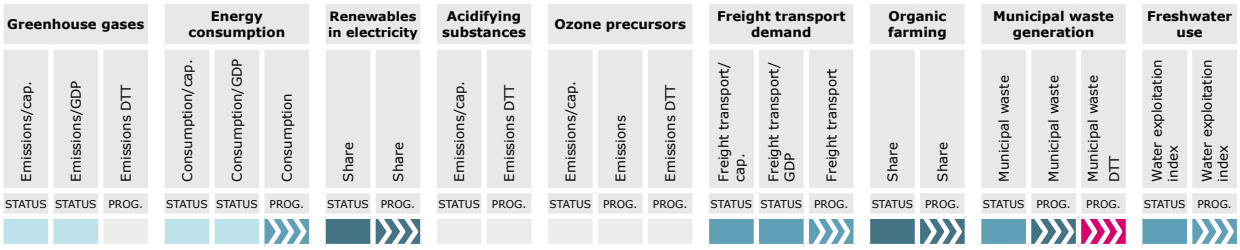
Use of freshwater resources

Water abstraction per capita in Luxembourg is relatively moderate and remains stable. Since abstraction quantities are not a problem compared to the available surface and groundwater resources, water policy in Luxembourg focuses more on water quality and treatment of waste water.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Malta

Priorities for Malta include encouraging and developing markets for organic farming and renewables, as well as improving its data reporting in key areas such as waste, transport and air quality. Key challenges relate to improving the environmental performance of the transport and energy sectors and reducing waste generation.



Greenhouse gas emissions

Malta's greenhouse gas emissions are relatively low when compared to EU averages, however they rose 44 % between 1990 and 2003.

Energy consumption

Although energy consumption may be relatively low at the European level, it is rising. Between 1990 and 2002 Malta's gross energy consumption rose by 61 %. A sharp rise in consumption in 2003 is likely to be due to increased use of air conditioning following the 2003 heat wave. The islands' energy intensity rose during the early 2000s after falling in the late 1990s.

Renewable electricity

The share of energy from renewable sources remains negligible in Malta's context. However a national renewable energy strategy is soon to be published for public consultation, providing indicative national targets in an EU context and outlining a way forward for Malta to increase the share of renewable energy sources in energy generation.

Emissions of acidifying substances and ozone precursors

While national data on quantities of acidifying emissions and ozone are not available, data on concentrations in 2004 indicate that the main issues of concern are particulates and sulphur dioxide, and nitrogen oxides in certain urban areas. Transboundary importation of ozone and sulphur dioxide is also of concern. There were significant decreases in sulphur dioxide and benzene concentrations during 2004 due to use of a cleaner fuel mix.

Freight transport demand

While national figures for freight transport km are not available, the number of vehicles on the road continues to rise, doubling between 1986 and 2004. The number of vehicles per capita was 0.7 in 2004. High rates of freight transport calculated on a European scale may be related to the small size and peripheral location of the island. The country imports many of its goods, which often need to travel long distances from continental centres of production.

Country perspective

Population: 399 000
Size: 320 km²
GDP: 3 095 million euro

Share of organic farming

Malta's share of land under organic farming remains relatively low, but there has been improvement over the last few years and 0.09 % of land is now under organic cultivation, with 80 % of this certified.

Municipal waste

The amount of municipal waste generated per capita in Malta is relatively high and rising. The quantity of municipal waste generated increased 53 % between 1996 and 2004. However, management systems are being put in place to encourage waste reduction, reuse and recycling.

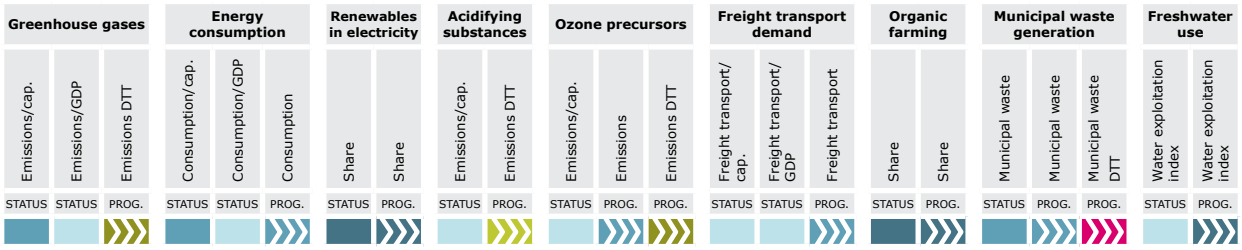
Use of freshwater resources

Since it is based on abstraction of water, the performance regarding water in Malta appears favourable. However this is due to the fact that groundwater abstraction only accounts for 56 % of production — the remainder comes from desalination. This indicator does not reveal the fact that most of Malta's aquifers are currently over-exploited and at risk.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

The Netherlands

European policies are leading to considerable emission reductions in the Netherlands but this is not always enough to meet EU environmental quality standards. Compared to other EU Member States, emissions per square kilometre are higher because the Netherlands is more densely built up and populated. The Netherlands is showing good progress in meeting its renewable energy target and more recently in the reduction of municipal waste.



Greenhouse gas emissions

Emissions of greenhouse gases were 1 % lower in 2003 than in the base-year (1990/1995). Emissions of CO_2 increased considerably, but this was compensated by the reduction of non-CO_2 greenhouse gases. Compared to other EU Member States, the Netherlands has been quick to purchase emission reductions in other countries via the Kyoto mechanisms. By purchasing these foreign emission reductions, the Netherlands has a 50 % chance of achieving the 2008–2012 Kyoto commitment if domestic emissions remain roughly stable.

Energy consumption

Because it is energy intensive, the Dutch economy uses more energy than the European average. The yearly rate of energy saving amounts to 1 % (10-yearly average). In the period 1999–-2002 the energy efficiency of industry improved by 0.7 %.

Renewable electricity

The share of nationally produced renewable energy was 1.8 % in 2004. The target for the share of renewable energy in the energy supply (5 % in 2010) will not be met. The target for renewable electricity will be met.

Emissions of acidifying substances

Although acidifying emissions are falling, the Netherlands will probably not comply with the EU national emission ceilings (NEC) directive for SO_2 and NO_X. Nevertheless, Dutch eco-efficiencies for SO_2 and NO_X are among the best in Europe. For NH_3 the Netherlands has a 50 % chance of achieving the national emission ceiling.

Emissions of ozone precursors

As in many parts of Europe, concentrations of particulate matter exceed European air quality standards to a considerable extent across wide areas of the Netherlands. Regional concentrations of particulate matter in the Netherlands as well as in Belgium, the German Ruhr region and Italy are relatively high. The air quality limits for particulate matter will still be exceeded on a large scale in 2010.

Country perspective

Population: 16 215 000
Size: 41 530 km²
GDP: 385 436 million euro

Freight transport demand

Due to EU emission requirements for cars, transport-related NO_x-emissions are decreasing, despite the increase in traffic volume and the fuel shift from petrol to diesel. However, the 2010 emission target for NO_x for the transport sector will be exceeded. Improved environmental performance of trucks will have a major effect on future NO_x emissions. The Dutch air quality decree represents a strict implementation of the European air quality directive, particularly because of its integration with the spatial planning legislation. The standards for particulate matter and ozone are a major step in the protection of public health but are no guarantee. Long standing exposure to high particulate matter concentrations possibly has serious health effects.

Share of organic farming

Nowadays about 2 % of the Dutch agriculture consist of organic farming. If the future growth rate of organic farming remains the same as the current rate, the target (10 % in 2010) will not be met. High consumer prices interfere with a further development of Dutch organic farming.

Municipal waste

In the period 1990–2002 the amount of household waste increased by over 40 %. The amount of landfilled waste is strongly decreasing while recycling and incineration is increasing. Since 2000 the total amount of waste has been decreasing.

Use of freshwater resources

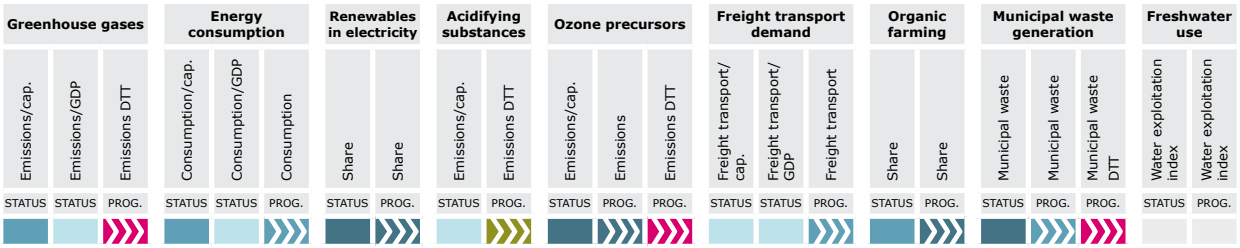
In the past 30 years the abstraction and use of freshwater in the Netherlands has been more or less stable. However, the use of groundwater has decreased significantly, while the use of surface water has increased. Surface water is the main resource for industry and the energy sector, while water companies use mainly groundwater.

The use of drinking water by households has been decreasing since the mid 1990s due to technological changes and changes in consumer behaviour.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Norway

Stretching far into the Arctic, Norway is sparsely populated with extensive wilderness. Due mainly to offshore petroleum extraction, shipping and some industries (metals and chemicals), Norway has some challenges meeting international air emissions commitments. Scoring relatively well by GDP (eco-efficient economy), its performance on municipal waste is average and below average for growth in the use of renewable electricity, organic farming and reducing ozone precursor emissions.



Greenhouse gas emissions

Norway has slightly higher GHG emissions per capita than the European average. Emissions are relatively low when measured in relation to GDP. While Norway is allowed to increase its emissions by 1 % by 2008–2012 relative to the base-year 1990, emissions were 5 % above the 1990 levels in 2002 (9 % in 2003). The achievement of Norway's Kyoto commitments will depend on contributions to emission reductions abroad (by making use of the mechanisms for joint implementation, clean development and emissions trading) in addition to preventing further growth in emissions at home.

Energy consumption

Norwegians have an energy consumption per capita well above the European average. This is explained by different factors: the country's large renewable energy resources, the cold climate, the wide geographical distribution of the population and the substantial factor of an energy-intensive industry. Measured against GDP, consumption is relatively low. Norway's growth in total energy consumption is close to the European average

Renewable electricity

Renewable energy produced by hydroelectric powerplants already accounts for as much as 99.5 % of total Norwegian electricity production. The share of renewable energy sources excluding large hydroelectric powerplants is very close to the average of the countries for which data are available. The growth in the share of such renewables in Norwegian electricity production has been lower than the average for EU-25.

Emissions of acidifying substances

Norwegian emissions of acidifying substances are somewhat lower in per capita terms than the European average. Norway is expected to meet its targets for 2010 under the Gothenburg protocol of the Convention on Long-range Transboundary Air Pollution for all components except for NO_x for which the gap against the target is still large. Shipping and stationary combustion in the oil and gas industry makes up the major part of Norwegian NO_x emissions.

Emissions of ozone precursors

Norway ranks as the second largest polluter in Europe when it comes to emissions of ozone precursors per capita. A major source is volatile organic compound (VOC) emissions during loading and storing of crude oil offshore. These emissions have decreased substantially in the last two to three years due to new technology. However, NO_x emissions still remain a considerable problem.

Country perspective

Population: 4 560 000
Size: 323 880 km²
GDP: 141 203 million euro

Freight transport demand

Considering the geographical distribution of its population, Norway's freight transport volume as measured per capita and in relation to GDP is relatively low. The growth in freight transport volume is close to the European average.

Share of organic farming

The share of organic farming in Norwegian agriculture is just about the European average. The growth in the share of such farming is also very close to the European average.

Municipal waste

The amount of municipal waste collected per capita in Norway is substantially higher than the EU-25 average. On the other hand the recycling rate is very high. The growth in the generation of municipal waste is slightly lower than EU-25 average.

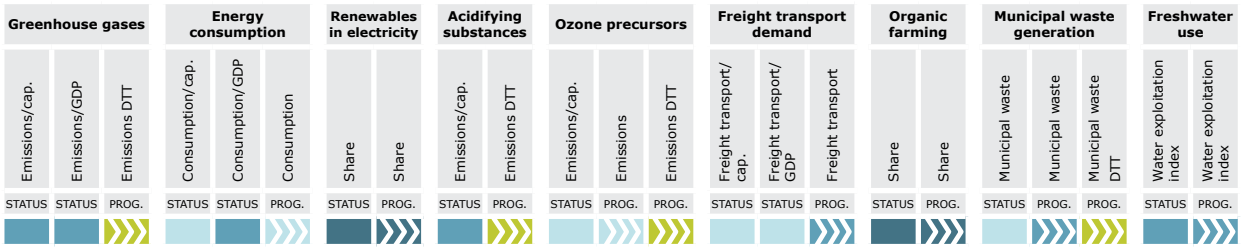
Use of freshwater resources

Only 0.7 % of the water resources available each year in Norway is utilised before draining to the coast (97 %) or via rivers to neighbouring countries (3 %).

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Poland

With the exception of organic farming, Poland is performing well across the scorecard and compared to the EU-25 average. In common with many of the EU-10 Member States eco-efficiency improvements in energy, greenhouse gas emissions and transport are priorities. Market development for organic farming and renewables is also needed. In the short term, Poland is not at risk of run-away trends worsening environmental conditions.



Greenhouse gas emissions

After 1990, total GHG emissions declined substantially, mainly due to restructuring or closure of heavily polluting and energy intensive industries. Under the Kyoto Protocol Poland has a reduction target of 6 % from the base-year and is 29 % below its linear target path. Emission trends until 2001 and projections for 2010 show that Poland is on track to meet its Kyoto target.

Energy consumption

Energy use has decoupled from economic growth in Poland, which means that the modernization of existing power generation facilities and the implementation of eco-efficient technologies, driven by, among other things, legal and economic instruments, is resulting in a successful decrease in energy consumption. Together with low per capita use this places Poland among the best performing countries in terms of energy consumption per capita.

Renewable electricity

The share of renewable energy accounts for about 2 % of total electricity consumption in Poland. Renewable energy sources mostly include biomass with a small but constantly increasing number of hydro and wind power plants.

Emissions of acidifying substances

Emissions of acidifying gases have been substantially reduced since 1990. Poland has already reached its reduction targets for NO_2 set for 2010 in the Gothenburg protocol under CLRTAP, is well below the reduction target set for NH_3 and is very close to reaching its SO_2 reduction target for 2010.

Emissions of ozone precursors

Compared to most of the EU countries, emissions of ozone precursors are low in Poland with a continual decrease of CH_4 and CO since 1990. For non-methane volatile organic compounds (NMVOCs), Poland is currently well below its emission reduction target set for 2010 in the Gothenburg protocol.

Freight transport demand

Transport volume, although increasing, is still decoupled from economic growth. However, since emissions from transport contribute significantly to air pollution and noise, more effort needs to be put into additional abatement measures to make the transport sector more environment-friendly.

Country perspective

Population: 38 195 000
Size: 312 690 km²
GDP: 141 807 million euro

Share of organic farming

Compared with most of the EU countries the area of organic farming in Poland is low but is still increasing systematically. It should be emphasised that in the period 1990–2002 the area of organic farming has expanded over two hundred times. In 2002 it covered about 0.3 % of total utilised agricultural area. It is projected that the interest in organic farming will increase in the next years. This will result from a major demand for natural food among Polish consumers and expected higher subsidies from EU funds.

Municipal waste

Household waste production in Poland is on the decrease. The figures show that Poland belongs to the group of countries which are leading Europe by producing less than 300 kg municipal waste per person. At the same time it must be stressed that further efforts towards the intensification of reuse, recovery and recycling are needed.

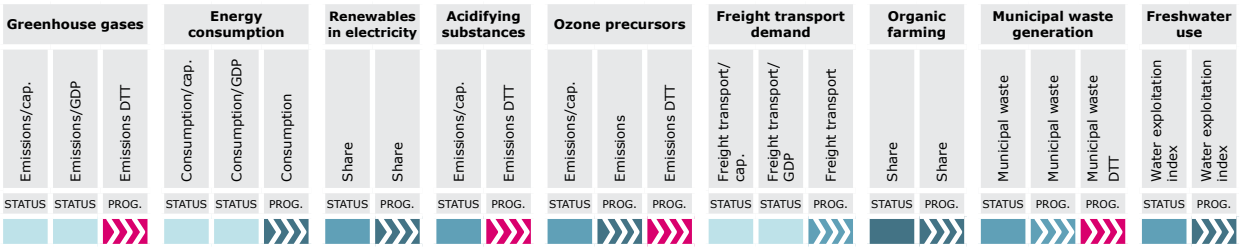
Use of freshwater resources

In Poland the level of water abstraction is on the decrease, with industry still remaining the main user. Traditionally, Poland represents a low level of water abstraction for agriculture in comparison with the EU average.

For more information please contact the relevant national focal point. Contact details can be found on:
http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Portugal

Portugal is performing relatively well in many of the status indicators but is showing some poor developments in progress which may need to be reversed or slowed to avoid a worsening of the environmental situation. Areas for attention include air emissions and especially emissions of ozone precursors which risk causing substantial impacts on human health and ecosystems as a result of its southern location.



Greenhouse gas emissions

Portugal was the EU country after Lithuania which had the biggest GHG emissions reduction between 2002 and 2003 (6 %). This was mainly due to increased electricity production from hydroplants in 2003. This indicator strongly depends on the annual variations and availabilities affecting hydro-power. In 2003, GHG emissions were 37 % above 1990 levels, exceeding the Kyoto Protocol target by 10 % (taking into account only the main gasses responsible — CO_2, CH_4, N_2O — excluding land-use change and forestry, and including fires which were very severe in 2003).

Energy consumption

Energy intensity in Portugal has remained more or less steady as the energy efficiency of the economy has been maintained. The gradual and general introduction of natural gas (which, in 2003, made up 10.3 % of total primary energy consumption) and renewable energies, the improvement of the fossil fuels quality (such as the gradual reduction of sulphur levels in gasoline and fuel for diesel engines) and the promotion of energy and technological efficiency of some industrial processes, are the main drivers shaping the future environmental profile of this sector.

Renewable electricity

Portugal has a strong potential for renewable energies, especially solar, wind, hydro and biomass. Although an effort had been made over the last 15 years to introduce renewable energies, there is still potential for further growth. The absolute growth rate, however, shows an active uptake of renewable energies: between 1990 and 2003 the contribution of renewable energies to the energy balance increased from 3.5 to 4.2 Mtoe. The percentage of renewable energies in electricity consumption was 36 % in 2003, coming close to the target established by the EU for Portugal of 39 % in 2010. The annual contribution of renewable energies to the energy balance reflects the importance of hydro-power and its changeable character.

Emissions of acidifying substances

Portugal has been making significant efforts to reduce emissions and meet commitments, making significant progress in 2003. The emissions of acidifying substances decreased by 16 % between 1990 and 2003, mainly due to the reduction of SO_2 emissions by 37 %. This can be explained by changes in the energy production sector and significant improvements during this period in the quality of the fuel used. Also, 2003 was a year with high production from hydro-electric power plants.

Emissions of ozone precursors

The overall analysis of ozone precursor emissions must be made in connection with a local analysis of air quality, and especially the exceedances of targets established for each objective and time period. The complex morphology of the landscape means that under certain meteorological conditions, atmospheric

Country perspective

Population: 10 191 000
Size: 91 980 km²
GDP: 100 758 million euro

pollutants tend to remain in the lower atmosphere, become recycled, resulting in the formation of secondary pollutants, such as ozone. Taking all these factors into account, even if agreed emission reductions are achieved, ozone episodes will occur in certain locations, requiring active information to the public.

Freight transport demand

Road transport is the largest consumer of energy in Portugal, as well as the main source of pollutant emissions among economic activities. Road transport accounts for 90 % (by volume) of overland freight transport. With current policies, a reverse in this trend is not expected in the coming years. Recent investments in some structural projects for passenger transportation should have positive impacts on the overall efficiency of this sector.

Share of organic farming

Portugal has good conditions for organic farming and the traditional agricultural practices are very close to organic production. However, the proportion of area occupied with organic farming is relatively small compared with the total agricultural area and with the EU average. There is a growing interest from consumers about these types of products. At the same time national production is not sufficient and producers have some difficulty putting their products on the market. Most organic products consumed in the country are imported. Over the past years the area and number of farms devoted to organic farming has grown progressively, but there still remains a huge potential.

Municipal waste

The generation of municipal waste in Portugal has remained steady over the last years, compatible with the 2005 national goal of 4.5 million tonnes/year. The generation of municipal waste per capita in Portugal is one of the lowest in the EU. In 2004, the final disposal of this type of waste is divided as follows: 66 % landfill, 20 % incineration, 7 % composting and 7 % recycling. Despite progress, these numbers are still far from of the established goals of 26 % composting and 26 % recycling in 2005.

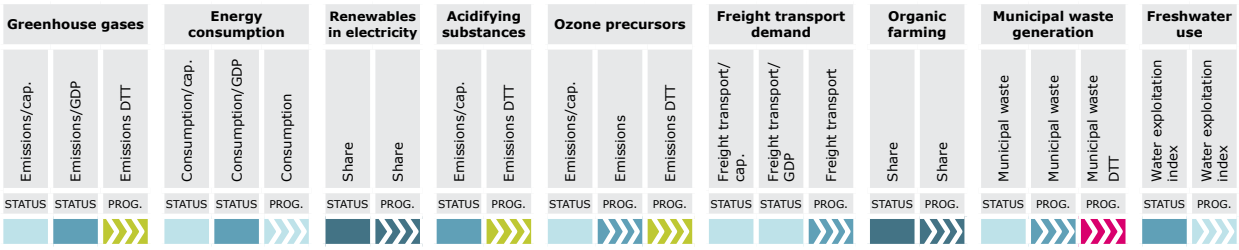
Use of freshwater resources

Agriculture is the main water consumer in Portugal and the economic sector that exerts the greatest pressures on water resources. It is also the sector that uses water most inefficiently, with overall losses in the order of 30 %. The national program for the efficient use of water will allow the negative impacts on freshwater resources from agricultural, industrial and urban uses to be reduced.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Romania

Integration of environmental policy in the further development and implementation of sectoral and regional policies represents one of the main priorities of the Romanian government for 2005–2008. The national development plan for 2007–2013, the reference document for accession, is currently being prepared and this document will also serve as a basis for application to future cohesion and structural funding.



Greenhouse gas emissions

The trend in GHG emissions between 1989 and 2001 shows a decrease of 47 %. In 2001, GHG emissions represented 53 % (139 171 Gg CO_2-equavalents) of the 1989 base-year total, (261 355 Gg CO_2-equivalents). The decrease in GHG emissions over this period mainly resulted from a strong economic decline, associated with the transition to a market economy. To this came the added effect of the start-up and operation of the first reactor at the Cernavoda nuclear power plant in 1996. An unusual increase in the total annual emissions was recorded in 1995, when both the consumption in the energy sector and the production in various industrial branches increased significantly.

Based on these observations, it is very clear that Romania will meet its commitments to reduce GHG emissions in the Kyoto Protocol's first commitment period 2008–2012. Important changes regarding the GHG emissions are not expected to occur in the first commitment period, but an increase is likely. Some model assessments suggest that Romania's net GHG emissions in the 2008–2012 period could be between 175 000–200 000 Gg CO_2-equivalents., if the pace of economic growth increases.

In 1989, 83 % of GHG emissions came from the energy sector. Although this decreased to 79 % in 2001, the energy sector is still the main polluting sector in the Romanian economy. In the industrial sector, the largest CO_2 emissions came from mineral products. The industrial sector as a whole suffers from some data gaps and limited access to information.

Energy consumption

In 2005, a law was approved by governmental decision setting up the 'Emissions reducing national programme for large combustion plant pollutants'. The integrated pollution control licences contain details of the pollutant emissions monitoring.

Renewable electricity

In 2004, the Romanian government adopted a law (Governmental Decision no. 1429/2004) on certifying the origin of produced electrical energy from renewable sources, and another law (Governmental Decision no. 1892/2004) establishing a system to promote electrical energy from renewable energy resources.

Emissions of acidifying substances

The evaluation of acidifying substances emissions is a useful instrument for decision-makers to appreciate Romania's situation concerning compliance with its obligations towards its accession to the European Union. In 1999 Romania signed the Convention on Long-range Transboundary Atmospheric Pollution. This convention has been ratified by the Romanian Parliament through Governmental Decision 271/2003 and aims firstly to reduce acidification, eutrophication and tropospheric ozone pollution. Romania has pledged to comply with the levels of emission as established under the Gothenburg Protocol by 2010.

Country perspective

Population: 22 200 000
Size: 238 390 km^2
GDP: 29 598 million euro

Emissions of ozone precursors

Tropospheric ozone monitoring is carried out in the Timişoara and Reşiţa stations that are part of the EuroAirnet network. The analysis of the data obtained from these two stations show that during 2003 the highest values were recorded between May and August and coincided with the atmospheric temperature increases and the diurnal period. At the Timişoara station, the daily maximum values (8-hour means) calculated from hourly data representing the long-term goal for human health protection, were within 6.37 µg/m^3–90.78 µg/m^3 and at Reşiţa station within 0.874 µg/m^3–158.41 µg/m^3. At the Reşiţa station 12 exceedances of the long-term goal for human health protection were recorded during the month of August. The maximum value was recorded on 13.08.2003 i.e. 158.41 µg/m^3. At the Timişoara station no exceedances have been recorded (a long-term objective for human health protection).

Freight transport demand

Between 2000 and 2003 the amount of goods transported by road increased from 263 million tonnes to 276 million tonnes.

Share of organic farming

Between 2000 and 2003, the amount of chemical fertilisers used in agriculture was smaller than the amount of natural fertilizers. In 2000, the amount of chemical fertilisers used was 0.34 million tonnes and in 2003 the amount was 0.36 million tonnes. Use of natural fertilisers was 15.8 million tonnes in 2000 and 17.3 million tonnes in 2003.

Municipal waste

The quantity collected in 2003 was 0.292 t/capita and production of household waste is stable. Almost all of the collected municipal waste is landfilled. There are only a few pilot projects for separate collection and recovery of municipal waste. The national waste management plan establishes development of an integrated management system for municipal waste, comprising separate collection, treatment, recovery and disposal to licensed landfill sites.

Use of freshwater resources

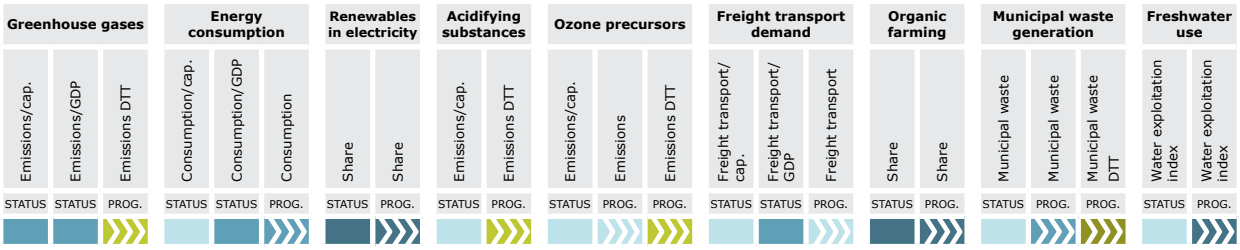
Romanian water resources consist of surface (rivers and lakes) and underground waters. In 2004 the total water abstraction was 5 850 million m^3 out of which: 12 % was for agriculture, 21 % was for human needs and 67 % was for industry.

The water abstraction decreased more than three times during the period 1990–2004 due to a combination of economic slow-down, reduction of the water used for technological processes, reduction of water losses, and implementation of the economic instruments and mechanisms in water management.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Slovak Republic

The Slovak Republic showed good environmental performance for the status indictors in 2002 but more average progress over the past 10 years. While these trends over time are not a cause for concern at present, the Slovak Republic needs to be vigilant that such trends do not worsen in the coming years which could give rise to unfavourable consequences for the environment.



Greenhouse gas emissions

In accordance with the generally expected results, the aggregated emissions of GHGs in 2002 in the Slovak Republic significantly decreased against the base-year (1990) by approximately 21 Tg, equivalent to a decrease of about 29 %. This means that the 2008–2012 Kyoto target of 8 % reduction compared to 1990 levels will be successfully met. However, the longer-term global emissions of GHGs will need to be reduced by approximately 70 % compared to 1990 levels for which additional policy measures will be necessary.

Energy consumption

Although the final national energy consumption per capita in the Slovak Republic is rather low compared with other EU countries, it is expected to increase along with a growth in GDP and increased standards of living. The number of home appliances used by Slovak households is currently only about 50 % of the average in the EU Member States. The number of electrical appliances used in the Slovak service sector is only about 30 % of the EU average. Given the predicted increase in the number of appliances and the related increase in energy consumption it is essential for the country to become more active in the field of energy efficiency. Moreover, one of the main characteristics of the Slovak energy sector is the high level of energy intensity in comparison with the rest of the EU and some of its neighbouring countries. This is mainly due to a high level of energy demand from heavy industry (metallurgy, steel and machine works, chemicals). The objective to enhance energy efficiency has been declared in the energy policy of the Slovak Republic. The study also includes an action plan on energy efficiency for 2002–2012.

Renewable electricity

Utilisation of renewable energy sources will have a positive impact on the Slovak economy. Biomass has the largest potential for utilisation in the Slovak Republic (44 % of all renewable energy sources), followed by large water power stations (17.5 %), geothermal energy (16.6 %), solar energy (13.7 %), waste management (9.3 %), bio-fuels (6.6 %), small hydropower stations (2.7 %) and wind energy (1.6 %).

Results of the process are expected as follows: enhanced utilisation of domestic energy sources, reduced dependency on imported energy, enhanced foreign trade balance, enhanced safety and reliability of energy supplies, reduced greenhouse gas emissions and enhanced economic activities with respect to new production programmes and new jobs. The right location of renewable energy sources can become the key element of regional development and can contribute to better social and economic cohesion in the country. The conception of renewable energy sources utilisation in the Slovak Republic approved by the Slovak government in February 2002 is the key strategic document.

Country perspective

Population: 5 381 000
Size: 49 010 km²
GDP: 20 066 million euro

Emissions of acidifying substances and ozone precursors

Emissions of SO_2, NO_X, NH_3 and non-methane volatile organic compound (NMVOC) have declined compared with 1990 and the Slovak Republic is well on track to fulfil specified targets by 2010 in accordance with Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants and in accordance with the Gothenburg Protocol. According to the scorecard on ozone precursors, the Slovak Republic is one of the countries with the best progress.

Freight transport demand

There has been significant progress in freight transport demand in the Slovak Republic compared to 1995. Volume by rail has decreased and there is now no real alternative to freight transport by road. Nevertheless, the Slovak Republic is one of the best performing countries in terms of progress (1995–2003).

Share of organic farming

The share of organic farming area is 2.18 % of the total agricultural land area. A new action plan for organic farming in the Slovak Republic up to 2010 has been adopted, with the target to reach 5 % of organic farming area of the total agricultural area by 2010.

Municipal waste

The production of municipal waste is stable at the level of approximately 300 kg per person per year (1.6 million tonnes/year for Slovakia). The main part of this amount is disposed in landfills (78.2 % in 2002) and a small part (4.3 % in 2002) is incinerated. The amount of separately collected waste from households is increasing because the municipalities utilise the financial support of the Recycling Fund. The recycling infrastructure is growing fast. According to the development in municipal waste management during the monitored period and the latest data from 2004, the targets set in the waste management plan until 2005 (35 % material recovery, 15 % energy recovery and 50 % disposal in landfills) can in all probability be achieved.

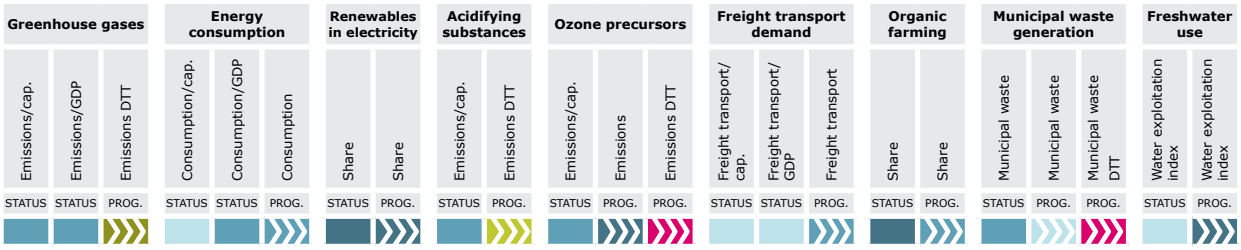
Use of freshwater resources

Since 1990, the total water abstraction has decreased in the Slovak Republic. Surface water abstraction represents 60 % of all abstractions. The biggest consumer of surface water is the industry sector with 78 %. Surface water abstraction for water supplies represents approximately 10% of all abstractions; surface water abstraction for irrigation represents approximately 10.5 %. Groundwater abstraction represents 40 % of all abstractions in the Slovak Republic. The major part (approximately 75 %) is represented by public water supplies.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Slovenia

Slovenia is showing steady average performance and progress, with positive progress in per capita waste collected and in current water use per capita. Priorities for Slovenia include developing its eco-efficiency as shown in particular in the low rankings achieved for air emissions and energy intensity.



Greenhouse gas emissions

Although total GHG emissions have not changed significantly compared with the base-year, their distribution by sector changed considerably. Traffic emissions almost doubled, indicating the need to develop an integrated action programme. Emissions from fuel consumption in residential and commercial sectors, as well as emissions from waste, increased. With the loss of the Yugoslav markets, abandonment of non-profitable production and increase in productivity, emissions from manufacturing industries decreased. For the purposes of maintaining competitiveness, emissions trading and compliance with the Integrated Pollution Prevention and Control (IPPC) directive, the industrial sector is being encouraged to make use of existing best available technologies. The agricultural sector is also showing lower emissions, mostly as a result of a reduction in the number of livestock. Projections indicate that the number of cattle will rise again due to quotas determined for Slovenia. On the other hand, agricultural policy is expected to reduce agricultural emissions by introducing good agricultural practice in fertilising and establishing biogas installations for electricity and heating production. Forests cover more than half of Slovenia's land surface and constitute an important sink of greenhouse gases.

Energy consumption

Primary energy consumption in Slovenia has been growing since 1992 by 2.7 % per year (1992–2002). More than two-thirds comes from fossil fuels, with a growing share of natural gas. Slovenian energy intensity dropped considerably between 1995 and 1999, although at a lower rate in recent years. Slovenia's relatively high energy intensity is due to the current economic structure, where manufacturing industries contribute 27 % to the total value added. Of this, a large part is taken up by energy intensive industries (metal, paper and chemical).

Renewable electricity

Slovenia is one of those countries with a relatively large share (11 %) of renewable energy sources in its total primary energy consumption. In accordance with its natural characteristics, the major renewable sources are biomass (61 %) and hydropower (38 %). The exploitation of renewable energy sources in Slovenia is promoted through investment subsidies, CO_2 emission tax and the priority dispatching of electricity produced by qualified producers (mainly small hydro-electric power plants), including price incentives. There is still considerable potential to develop traditional renewable sources. There are plans to increase the exploitation of technically exploitable hydro potential from the current 43 % to 52 % by 2013 by building a chain of hydro-electric power plants along the Sava river. As annual increment well exceeds the level of tree-felling in Slovenia's forests, growing emphasis has recently been placed on the exploitation of wood biomass.

Country perspective

Population: 1 964 000
Size: 20 250 km²
GDP: 20 548 million euro

Emissions of acidifying substances

With the decrease, since 1990, of traditional livestock-oriented agriculture, by 2002 ammonia emissions had fallen by 20 %, close to the EU national emission ceilings (NEC) directive target. Volatile organic compound (VOC) emissions, on the other hand, show an upward trend, caused by growing road traffic and use of biomass for energy production. Due to a natural prevalence of carbonate rocks, Slovenia has never faced major acidification problems.

Emissions of ozone precursors

Ground-level ozone concentrations in summer occasionally exceed limit values, especially in the cities and western parts of Slovenia. The major part of this pollution comes from other countries. The apparent increase in VOC emissions is the result of changes, since 2000, in the method by which emissions are calculated rather than by a real increase. However, without additional measures, such as a reduction of the content of organic solvents in products, improvements to combustion plants and, most importantly, a renewed car fleet and limited road traffic growth, the NEC targets will not be easily met.

Freight transport demand

Compared to other countries, Slovenia has had a relatively low share of road freight transport (about two-thirds). The remaining third is shipped by rail, a fact that can be explained by the relatively well developed railway system, partly a legacy of the Austro-Hungarian Empire. As is typical for a small inland state, freight transport in Slovenia consists predominantly of international transport; with major improvements of the national motorway network and EU accession, transit across Slovenia has increased significantly, causing adverse environmental and other side-effects.

Share of organic farming

Small farms, the high nature value of agricultural land and low agricultural intensity, stimulate the development of organic farming in Slovenia. Measures under the agri-environmental programme, adopted in 1998, and activities of non-governmental associations encourage farmers to report and seek certifications for their organic products.

Municipal waste

Although, the apparent decrease in the amount of municipal waste collected over the past years can be the result of changes in methodology behind the statistics, a small but real decrease in the amount of waste collected has been noted over recent years. Measures taken to implement EU waste management directives, including management of packaging waste and the establishment of 'sort-by-source' systems, are expected to reduce generated waste further. Improvements are needed in waste management since a large proportion of generated waste currently goes to landfill.

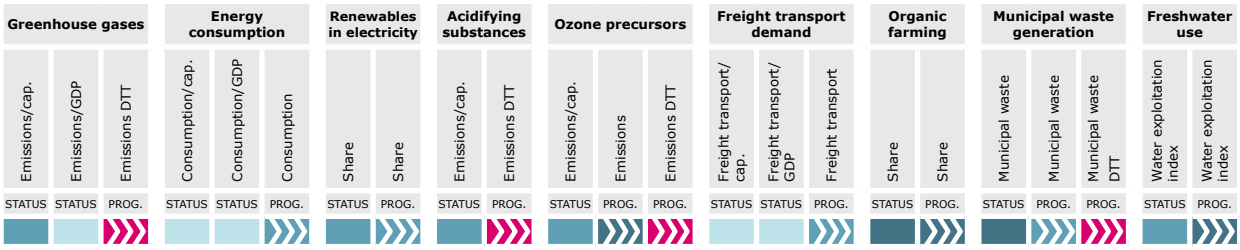
Use of freshwater resources

The water use index in Slovenia is low (about 2.5 %) since, compared with consumption, available water is plentiful. The largest consumer of water is the energy sector with 70.9 %. Industry and public water supply sectors consumed 28.4 % of the total amount of water used, while the smallest share, 0.7 %, was consumed by agriculture.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Spain

Fast economic development has come with increasing urbanisation and intensive use of resources. At the same time environmental management has been strengthened, leading to improvements in protection of natural areas, waste management, water treatment and use of renewable energy. Spain also faces specific problems linked to its climatic and geographic characteristics: fires, droughts, erosion and flooding.



Greenhouse gas emissions

During 1990–2003, total greenhouse gas emissions increased by almost 40.6 %. This is 25.6 % above the Kyoto Protocol agreements for Spain, which allows for a 15 % increase above 1990 levels by 2008–2012. In 2003, total greenhouse gas emissions reached 402 million tonnes of CO_2-equivalent. Greenhouse gas emissions in Spain are similar to other large European countries. CO_2 emissions per capita (8 tonnes/inhabitant) are below the EU average.

Energy consumption

Per capita energy consumption in Spain is similar to other southern European countries. Spain ranks seventh in the intensity of final energy consumption. The 2004 figure of 171.5 toe/million euro, represented an increase of 3 % compared to the previous year. Final energy consumption in Spain reached 97.2 million toe in 2003, a 60 % increase since 1990.

Renewable electricity

The share of renewable electricity in Spain was above the EU average in 2004 (19.8 %) and very close to the EU-15 2010 target of 22.1 % (specific target of 24.9 % in 2010 for Spain), which puts Spain in fourth place among 30 European countries. The share of renewable energy in primary energy consumption was 6.3 % in 2004, compared to the EU-15 2010 target of 12 %. This share has not increased further because of the strong surge in primary energy consumption in the last years. Excluding large hydropower, the shares of renewables in electricity consumption in 2004 were 5.5 % for wind, 0.8 % for biomass and 0.72 % for other sources of energy (including solar photovoltaic). Spain is the world's second largest producer of electricity from wind. A reward system exists to increase energy production from renewable sources with a regulatory framework and a new plan for renewable energy 2005–2010 approved in August 2005.

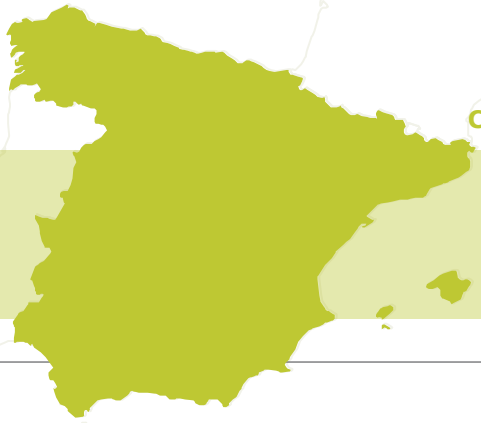
Emissions of acidifying substances

Spain has relatively high emissions of acidifying substances per capita. In relation to its distance to target Spain ranks bottom: based on current trends it only appears feasible to meet the 2010 objective for SO_2. Total SO_2 emissions fell by over 38 % between 1990 and 2003. The combustion and transformation of energy is responsible for 72.5 % of these emissions. Total NO_X emissions increased 21 % during this period. The transport sector is responsible for 52.8 % of these emissions (35 % accounted for by road transport alone). Total NH_3 emissions increased by 21.1 %. Just over 87 % of total NH_3 emissions are accounted for by the agricultural sector.

Emissions of ozone precursors

Regarding emissions of tropospheric ozone precursors, Spain is in a very unfavourable position. Only significant reductions in CO emissions (– 32 % between 1990 and 2003) were made. Total NO_X emissions increased by almost 21 % in the same period. The

Country perspective



Population: 41 101 000
Size: 505 990 km²
GDP: 582 408 million euro

EU national emission ceilings (NEC) directive set for 2010 the target of not exceeding 847 ktonnes. In 2003, NO_x emissions were 1 411 ktonnes–574 ktonnes above the target value. Total non-methane Volatile organic compounds (NMVOC) emissions remained stable. In 2003 emissions were, for the first time, 1 % above 1990 levels. The NEC directive set for 2010 the target of not exceeding 662 ktonnes. In 2003, NMVOC emissions were 1 100 ktonnes, 438 ktonnes above the target value. Total methane emissions grew by 29 %. 63 % of the emissions are accounted for by agriculture and 27 % by waste treatment and elimination.

Freight transport demand

The Spanish economy is transport intensive. Both freight and passenger transport has grown above the EU average. Between 1990–2003 passenger transport demand increased by almost 84 % and freight demand by almost 100 %. Large infrastructure investments, particularly in high-capacity roads, the urbanisation of rural areas and the growth in the vehicle fleet have led to an increase in emissions (transport represents 24.4 % of total CO_2 emissions in Spain). During the last years, large investments have been made to improve urban and metropolitan transport. The government investment to public transport alone was EUR 650 million per year. The modernisation of the vehicle fleet and fuel improvements have slowed down the increase in transport emissions, but have not managed to reduce them. There is a clear decoupling between higher numbers of vehicles and the number of accidental deaths. The strategic plan on infrastructure and transport 2005–2020 envisages changes to the existing transport network, with more weight being given to public transport, an increase of rail and maritime transport and higher intermodality.

Share of organic farming

In 2004 organic farming covered 322 000 ha cultivated land and 412 000 ha used for the breeding of organic stock. The organic area represents 2.9 % of the total agricultural area, close to the EU-15 average. Between 1994 and 2004 organic farming increased about 61 000 ha per year, and between 2002 and 2004 it increased 10.7 %. Domestic demand for organic products is low and the vast majority of Spanish products are exported.

Municipal waste

Urban waste generation has been increasing throughout the last decade similar to other neighbouring European countries. In 2003, 500 kg per inhabitant per year was exceeded (501.88). Reaching the old 300 kg per capita benchmark seems quite difficult, particularly if one takes into consideration the large number of tourists visiting Spain, as well as current consumption levels and economic growth. However, the management of urban waste is improving with more composting and recycling. In recent years there has been a very important increase in recycling of packaging waste and in paper and cardboard collecting rates.

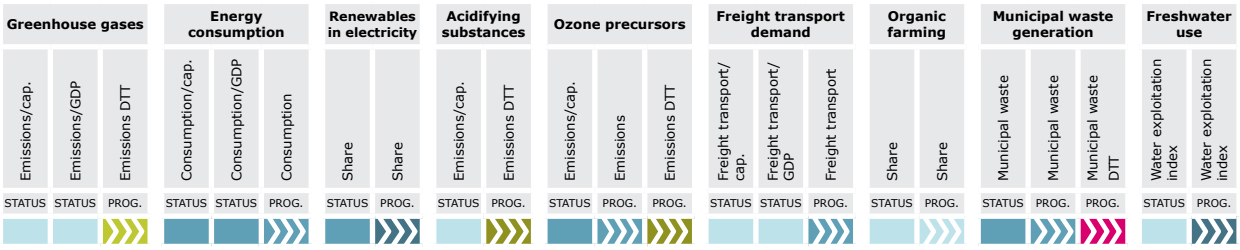
Use of freshwater resources

Total water abstraction in Spain is very high given available resources, with a growth of 3.4 % between 1997 and 2002. Economic development and urban expansion, together with the use of water for agricultural purposes (about 76 % of total water abstraction) relating to the Mediterranean climate of a large part of the country, exert strong pressures on water resources. Spain is seeking to abandon current management practices based on supply measures (such as transferring water resources between hydrological basins), towards demand management particularly by the construction of seawater desalination plants in tourist areas.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Sweden

Sweden shows very good progress and performance towards maintaining and improving its environment. Its 15 environmental quality objectives continue to help improve and strengthen cooperation between different sectors and stakeholders in society and to promote environmental integration in agriculture, forestry, energy and transport. However, additional effort is required to meet the ambitious environmental objectives and goals that have been set.



Greenhouse gas emissions

In Sweden emissions fell by 2.3 %, or approximately 1.7 million tonnes, between 1990 and 2003. Before the so called 'special checkpoint' in 2004 a forecast was made and according to that scenario, Sweden is expected to meet its Kyoto commitment by some margin. After 2010 however, a slight increase in carbon dioxide emissions is expected.

Energy consumption

Energy intensity decreased from the mid-1990s until 2003. There are government programmes which aim at increased energy efficiency and in recent years voluntary agreements with industrial companies have also been introduced.

Renewable electricity

A large share of Sweden's electricity is produced from hydropower. Production of renewable energy in Sweden increased during the 1990s, especially in district heating, but production from wind energy and combined heat and power (CHP) based on bioenergy are also increasing. The main policy instruments are energy and carbon taxes and the electricity certificate scheme

Emissions of acidifying substances

Swedish emissions of sulphur dioxide and ammonia are already below the national ceilings within the EU national emission ceilings (NEC) directive . However, further actions need to be taken to reduce the emissions of nitrogen oxides, mainly from heavy vehicles and mobile machinery. Sulphur emissions from international shipping have doubled since 1990 and today are greater in volume than total national emissions.

Emissions of ozone precursors

Swedish emissions of non-methane volatile organic compounds (NMVOC) decreased by 40 % between 1990 and 2003. However, during the past five years the decrease has slowed mainly because of an increase in household stationary combustion. Emissions of methane follow the same pattern as NMVOC. NO_X emissions decreased by about 35 % between 1990 and 2003 and continue to decrease.

Freight transport demand

The actual freight transport volume has increased by 5 % since 1997. But compared with a higher growth in GDP there is some progress towards decoupling

Country perspective

Population: 8 956 000
Size: 449 960 km²
GDP: 232 716 million euro

growth from pressure on the environment within the transport sector. Technical advances are resulting in more fuel-efficient engines, but heavier and faster vehicles and growth in traffic volume are offsetting this positive trend.

Share of organic farming

Sweden has one the highest shares of organic farming at 13 % (3.8 million ha) among European countries. The share of arable soils under organic farming has doubled since 1998 and is approaching the government target of 20 %. So far the increase has been most extensive in the dairy sector, and less in cereal production. The distribution of organic farming within the country is uneven with a higher share in the more extensive central and northern provinces.

Municipal waste

Generation of household waste has increased by about 27 % during the last ten years. However, recycling as well as incineration for energy generation has increased even faster, resulting in a low amount of disposal to landfill (9 % of total amount of household waste in 2004). Three instruments have contributed to this reduced use of landfill: one is a 2002 ban on sending separated combustible waste to landfill, extended to apply to all organic waste since January 2005; another has been successful packaging and waste paper recovery; a third has been a tax on disposal to landfill which has been in force since 2000.

Use of freshwater resources

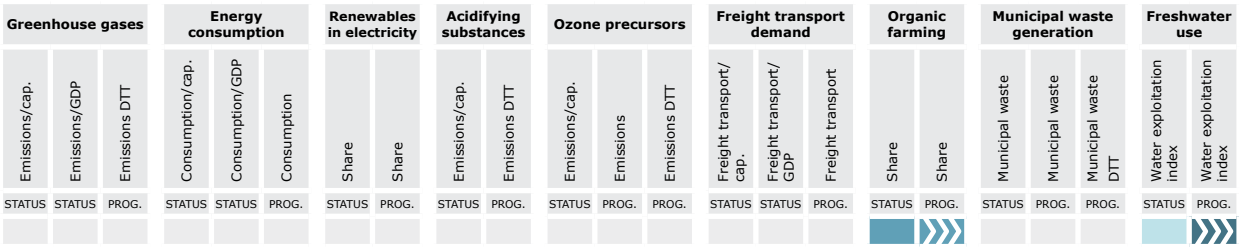
The availability of water resources in Sweden is good and the rate of abstraction of water is not considered a problem. However, warm and dry summers may result in temporary shortages of water in the southern parts of Sweden. The total freshwater use in Sweden amounted to 2 695 million m³ in 2000, a slight decrease compared to 1995. Industrial use accounted for 60 % of the total withdrawal, households for 23 % and agricultural irrigation for 3.5 %.

One of the interim targets within the national environmental objective 'flourishing lakes and streams' is to adopt water protection plans, including water protection areas and protection regulations, for all public and large private surface water sources. If the objective is to be attained, regional work on water supply plans and the adoption by local authorities of protection areas for water sources must be stepped up.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Switzerland

Switzerland has remarkable natural scenery and wilderness. Despite high investment in environmental protection and some successes (e.g. stabilisation of forest area, improvement of river and lake water quality, reduction of air pollutants), much remains to be done to counteract pressures from economic activities, an increase in built-up areas, high population density and developed tourism industry, e.g. meeting air targets, abating noise, and protecting nature, landscapes and biodiversity.



Greenhouse gas emissions

Approximately 34 % of carbon dioxide (CO_2) emissions in Switzerland come from transport (excl. international air traffic). Swiss implementation of the Kyoto Protocol is based on the Swiss federal law on CO_2 emissions, which requires CO_2 emissions to be reduced by 10 % in total by 2010, using 1990 levels of emissions as a benchmark, with combustible fuels to be reduced by 15 % and moter fuels by 8 %. By 2003 there has been a 0.2 % increase, a 4.6 % reduction and an 8.1 % increase respectively.

Energy consumption

Yearly final energy consumption per capita has been fluctuating between 31 000 and 33 500 kilowatt hours (kWh) since 1990. In 2003 final energy consumption per capita stood at 32 750 kWh, a third of which was used for transport. At the same time, both the population and final energy consumption continue to increase in absolute terms. This is despite improvements made to installations and processes and resulting efficiency gains.

Renewable electricity

Consumption of renewable electricity has decreased from a high in 2001. The share of electricity in total consumption of renewable energy was 73 % in 2003. The biggest sources of renewables are hydro-electric power, biomass and waste incineration.

Emissions of acidifying substances and ozone precursors

Emissions of most air pollutants have decreased over the past few years. Nevertheless, high concentrations of low-lying ozone, particulate matter (PM_{10}) and nitrogen dioxide are still reported on a regular basis. Measures are still needed to improve air quality. It is still necessary to reduce emissions of ozone precursors (in particular NO_X and volatile organic compounds (VOCs) from transport and industry) in order to meet national legislation and international obligations.

Freight transport demand

There has been an increase in the volume of all types of transport in Switzerland, but the number of heavy goods vehicles has declined following a high in 1990–1991 and has almost returned to 1990 levels. However, there has been a dramatic doubling in the number of light goods vehicles (less than 3.5 tonnes) levels since 1990.

Share of organic farming

Organic farms are becoming more prevalent in Switzerland with over 6 100 organic farms in 2003. Environmental concerns in agriculture are addressed through certification of environmental management systems (EMS), which are intended to protect natural biodiversity, reduce nitrate pollution in soils and spring water, reduce phosphorous pollution in surface water, and ensure that farmers treat animals as humanely as

Country perspective

Population: 7 344 000
Size: 41 290 km²
GDP: 275 660 million euro

possible. In order to receive farm subsidies, farmers must obtain EMS certification by demonstrating that they: make a balanced use of fertilisers; use at least 7 % of their farmland as ecological compensation areas; regularly rotate crops; adopt appropriate measures to protect animals and soil; and make limited and targeted use of pesticides.

Municipal waste

There has been a rise in municipal waste generation, but the total amount of municipal waste going to landfill or incineration has declined since 1988, with a corresponding increase in recycling.

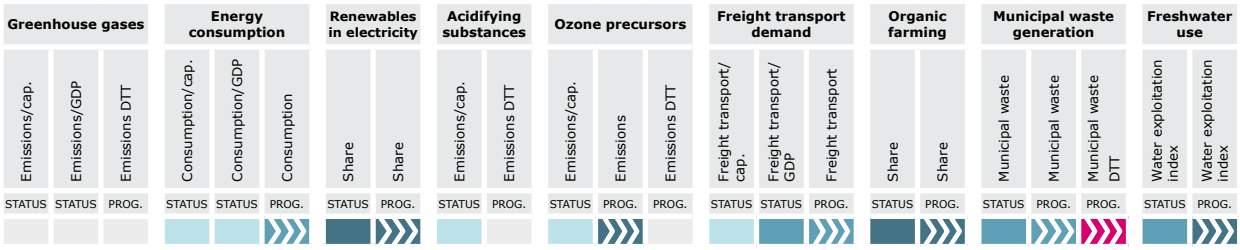
Use of freshwater resources

Water is Switzerland's major resource. 4 000–5 000 km of watercourses (roughly 10 % of the entire Swiss water distribution network) have been diverted to generate hydroelectric power. In addition, settlement areas, agriculture, businesses and industry all tap into the natural water cycle (mainly for drinking water consumption), placing addtional pressure on this valuable resource in the process. 80 % of all drinking water comes from groundwater sources. These sources are polluted by nitrates, pesticide residues and hydrocarbons. Nutrients and pesticides in water generally result from intensive farming (mainly from manure, tilling of the ground and pest management) as well as from settlement and urban areas (use of pesticides). Hydrocarbons in water mainly come from transport, businesses and industry.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Turkey

Although Turkey still has a great amount of preserved natural habitats and ecosystems, migration from countryside towards big cities, a high level of economic growth and high rates of population growth produce environmental pressures on these areas. Turkey has a large potential in terms of organic farming and renewable energy, particularly in wind, biomass and solar systems. Turkey has ratified the UN Framework Convention on Climate Change but not the Kyoto Protocol.



Greenhouse gas emissions

The shares of direct greenhouse gases (CO_2, CH_4 and N_2O) from fuel consumption in total man-made emissions were 90.4 %, 11.5 % and 14.5 % respectively in 1995 and 92.6 %, 7.7 % and 18.5 % in 2000. The shares of sectors in fuel consumption have also changed: while in 1995 28 % of CO_2 emissions were generated by electricity production, 29 % by manufacturing industry, and 21 % by other (residential, agriculture, etc.), in 2000 34 % were generated by electricity production, 32 % by manufacturing industries, 17 % by transportation and 16 % by other sectors.

Energy consumption

While total energy production is increasing, there are increases and decreases in energy consumption depending on the demand. Total energy consumption increased by almost 12.4 % between 1998 and 2003. Based on 2003 figures, 57.4 % of electricity is consumed in the industry sector, 22.5 % in households, and 11.5 % in trading establishments.

Renewable electricity

Turkey is located in a relatively advantageous geographical position as far as the use of solar energy in energy production is considered. The wind data measurements in Turkey show that some locations have high wind energy potential. These results have encouraged private firms to attempt installing wind power plants. Turkey also has a high potential to generate biogas by using organic waste from extensive stockbreeding and farming activities within the country.

Emissions of acidifying substances

Emissions of acidifying substances arise from fuel combustion, industrial processes, traffic and burning of agricultural residues. The power sector contributes 58 % of total SO_2 emissions, industrial fuel combustion 27 %, and industrial processes 2.5 %. Because of the high sulphur content of diesel fuel, household heating contributes to 10 % of total SO_2 emissions and mobile sources 2.5 %. For nitrogen oxides, mobile sources contribute to 32.5 % of total emissions, while the shares from other sources are: 20.1 % from household heating; 22.1 % from the power sector; 21.7 % from industrial fuel combustion; 2.4 % from industrial processes and 1.2 % from agricultural sources

Emissions of ozone precursors

Turkey is subject to relatively high solar radiation input, leading to ozone formation according to the abundance of the precursors. Non-methane volatile organic compound (NMVOC) emissions are distributed among sectors as follows: 30.4 % from mobile sources, 22.5 % from total fuel combustion and 47.1 % from industrial processes

Population: 70 712 000
Size: 774 820 km^2
GDP: 166 092 million euro

Freight transport demand

Based on the total freight transport figures between 1997–2003, it can be concluded that there is an increasing trend in total transport. From 1997 to 2003 total freight transport increased by 25.1 %, but for the last five years the increase was 3.4 %. Taking the high increase rates in production, import and export volumes from year 2004 into consideration, it is expected that freight transport demand will increase in the coming years.

Share of organic farming

Organic agriculture has started to develop recently in Turkey. There has been a 60 % increase in total production quantities between 2000 and 2003.

Municipal waste

As a result of improvements in waste management systems, municipal waste collected by or on behalf of the municipalities has increased significantly. The amount of municipal solid waste collected increased 47.09 % between 1994 and 2003. The amount of municipal waste composted, incinerated or disposed on controlled landfill sites was 5.6 % in 1994 but increased to 29.7 % in 2003. In 1994, 71 % of the total population received solid waste collection services. This increased to 77 % in 2003. Municipal waste per capita increased from 1.10 to 1.38 between 1994 and 2003 in Turkey.

Use of freshwater resources

Considering the net total water potential, the fact that it is not evenly distributed, and the population increase, which have all led to a decrease in the annually allocated available amount of water per person, would indicate that Turkey is water-stressed. The use of surface water resources is much higher in comparison to the share of groundwater abstractions in total. Total freshwater (surface and groundwater) abstraction increased by 32.9 % between 1995 and 2001. Around 84 % of total freshwater abstraction comes from surface water resources. When surface water and groundwater abstractions are considered separately; total abstraction of surface water increased by 35.0 % whereas groundwater abstraction increased by only 22.6 % in the same period. The share of surface water in total freshwater abstraction increased from 83.1 % to 84.4 % between 1995 and 2001. However, the share of groundwater abstraction in total decreased from 16.9 % to 15.5 % in the same period.

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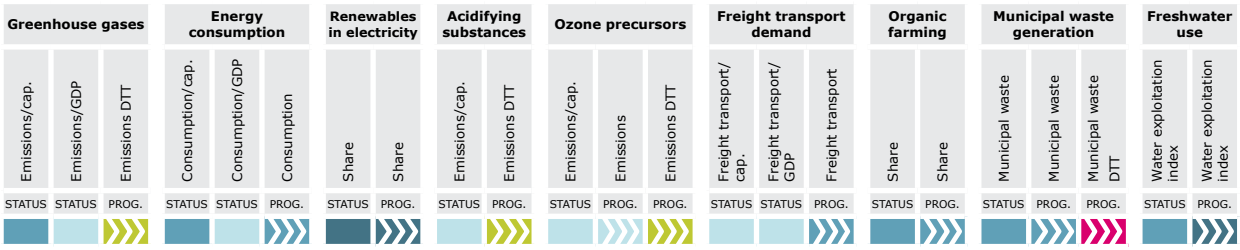
United Kingdom

The United Kingdom is fortunate to have implemented a series of structural economic changes in the recent past that have brought environmental improvements. The country shows relatively good environmental progress and status, and relatively high levels of eco-efficiency. However it has a more intermediate performance per capita. The United Kingdom is on track to meet its formal targets, except for the generation of municipal waste which is steadily increasing.



Greenhouse gas emissions

Estimates for 2003 show decreases between 1990 and 2003 of about 7 % for CO_2 and about 14 % for the basket of greenhouse gases. The estimates for 2003 show an increase since 2002, largely because of greater use of coal in electricity generation.

Energy consumption

Between 1980 and 2003 energy use for transport increased by 58 %, mainly as a result of an 80 % increase in road traffic over the same period and a levelling-off of domestic consumption.

Renewable electricity

One of the United Kingdom's renewable targets is that 10 % of electricity generated should be from renewable sources by 2010. Between 1990 and 2004 the percentage of electricity generated from renewable sources increased from 1.8 % to 3.6 %. The largest increase in electricity generated over the last six years was from landfill gas, from 1 185 GWh in 1998 to 4 004 GWh in 2004. Generation from wind power more than doubled.

Emissions of acidifying substances

In England 62 % of rivers were of good quality in 2004 compared with 43 % in 1990. In Northern Ireland quality fell in the mid-1990s and then recovered. In all years since 1993 over 90 % of rivers in Wales have been of good chemical quality. In Scotland, 87 % of rivers were of good quality in 2004, the same as in 2000, based on a combined chemical, biological and aesthetic assessment.

Emissions of ozone precursors

There is evidence that background levels of near ground level ozone have doubled over the past 100 years. Production of ozone is affected by the weather and by air pollutants blown over from mainland Europe. Ozone concentrations tend to be lower in urban areas where it is converted to NO_2 through chemical reaction with NO_X. The average number of days with exceedences per site varies greatly from one year to the next and there is no clear trend.

Freight transport demand

There was no significant change in the UK level of car traffic in 2003 but light van freight traffic increased by 5 %. Overall, motor vehicle traffic levels within the United Kingdom rose by almost 20 % between 1990 and 2003; car and taxi traffic was up by 17 % whilst other vehicle traffic rose by 30 %.

Share of organic farming

The UK area of land that was organically managed peaked at 741 000 ha in March 2003. Significant factors

Country perspective

Population: 59 280 000
Size: 242 910 km²
GDP: 1 078 600 million euro

in this increase were: farmers seeking alternatives to conventional farming in response to falling income; the scope of organic farming being extended by the EU in July 1999 to include livestock production; and payment rates under organic farming support schemes being substantially increased.

Municipal waste

In England, the amount of household waste increased by around 15 % in total, and by 12 % per person, between 1996–1997 and 2002–2003. During 2002–2003 almost 26 million tonnes was collected by local authorities. Around 14.5 % of this waste was recycled or composted in 2002–2003. This compares with a UK target to recycle/compost 25 % of household waste by 2005–2006.

Use of freshwater resources

In England and Wales water is abstracted under licences, granted on the basis of the reasonable needs of the public, industry and agriculture, and availability of supplies. The amount abstracted has been generally rising since the mid-1990s. In 2002, 83 % of water abstracted was for the public water supply and electricity supply industry.

For more information please contact the relevant national focal point. Contact details can be found on: http://org.eea.eu.int/organisation/nfp-Eionet_group.html

Methodology and main decision points

Since this is the first time that a scorecard assessment has been presented by the EEA some consideration of methodology is required. The methodology has been developed in conjunction with EEA countries and experts through a multi-year consultation process. This methodology section is designed for the lay reader, giving sufficient overview of some of the key decision points and their implications for the subsequent assessment and interpretation of the scorecard. A box at the end of this section describes some frequently asked questions, which includes technical explanations.

The scorecard is intended to provide a quick overview of country performance against multiple variables. It is primarily a communication tool which will be at its most powerful in electronic format where the user will be able to navigate easily between indicators, data graphs and scale (e.g. EU, country to regional) at the click of a button. On paper the scorecard is slightly more cumbersome but still an effective communication tool, allowing a quick overview of the performance of countries across the different indicators.

A number of key methodological and conceptual choices were made when creating the scorecard assessment presented in this report. Some of these choices are related to:

- the underpinning rationale;
- the issue of what is measured (e.g. how the indicators are selected and where the data come from);
- the process by which the methodology was developed and tested;
- the communicability of the assessment (e.g. matching different design options with the target audiences); and
- testing of the accuracy, adequacy and relevance of the results against existing knowledge for the different users.

Each of these points is briefly discussed in turn below. More detailed methodological information, which can be used for example by practitioners who wish to undertake their own scorecard assessment, will be published in a separate technical document.

Underpinning rationale

The scorecard allows policy-makers to understand country contributions to European environmental performance and distance-to-target results. A breakdown at country level enables decisions-makers at national level to assess how their country performs in a specific environmental area compared with Europe and with other countries, something that many countries already do in their own national reports. By examining performance differences the expectation is to learn lessons and, by sharing experiences, begin to improve overall European environmental performance.

The management of the environment benefits from an increased understanding of the interactions and links between the different parts. Assessment tools such as the scorecard, which gather together diverse information on different countries and environmental issues, allow the reader to begin to identify and tease out such linkages.

It is becoming increasingly difficult to interpret the large amount of information that is now available on the environment. The EEA's core set of indicators (CSI) aims to simplify and focus attention on key information, helping to assimilate and improve the quality of existing information. Joining together this information and using it, such as in the form of a scorecard, helps to develop new insights into the data from which new discoveries can be made.

While there is a need and desire to combine information and indicators, even to the extent of creating a single composite indicator or index, there are obvious pitfalls in doing this, which include oversimplification and lack of credibility or legitimacy with the countries. The scorecard is therefore a cautious step in the direction of a more integrated approach which allows comparative

environmental performance of countries to be assessed while maintaining transparency by not combining the separate indicators into a single composite indicator.

However, there are limits to the usefulness of such quantitative information alone since it is unable to capture the richness of information and knowledge about environmental management and performance. Adding qualitative information at country level to the set of scorecard indicators thus allows a more complete understanding to emerge than through a purely quantitative indicator based assessment. From this broader information base, lessons can be learned that lead to improved European environmental policy-making and performance.

Also by involving all EEA member countries in the process contributing their different country views and understandings about the meaning of the data, an EU and a wider pan-European perspective on environmental performance emerges.

What variables to measure

Over the past ten years the EEA has developed and published over 450 different environmental indicators for its environmental assessments. In 2004 a small core set consisting of 37 of these indicators was published.

The scorecard methodology is applied to a sub-set of nine indicators in the core set. It is expected that at some future stage more of the 37 core set indicators may be used in the scorecard. The nine indicators are listed in Table 2.

Since the scorecard is intended to give insights into progress with environmental performance the indicators in the scorecard need to relate to policy levers, i.e. points that policy can affect and on which policy is targeted ([1]) . Therefore, suitable scorecard indicators measure pressures, drivers or responses which represent policy leverage points rather than 'state' or 'impact' indicators. Although some 'state' and

Table 2 Summary table of the composition of the EEA scorecard

EEA core set of indicators code	Indicator name	Environmental issue	Position in DPSIR (main effect)
CSI 10	Greenhouse gas emissions and removals	Climate change	Pressure
CSI 28	Total energy consumption (energy intensity)	Energy	Response
CSI 31	Renewable electricity	Energy	Response
CSI 01	Emissions of acidifying substances	Air pollution	Pressure
CSI 02	Emissions of ozone precursors	Air pollution	Pressure
CSI 36	Freight transport demand	Transport	Driver
CSI 26	Area under (and share of) organic farming	Agriculture	Response
CSI 16	Municipal waste generation	Waste	Pressure
CSI 18	Use of freshwater resources (water exploitation index)	Water	Pressure

([1]) In this section 'targets' are used generically to refer to all legal and policy aims, objectives and goals which range from soft qualitative objectives to hard quantitative targets.

'impact' indicators are highly politically relevant they do not represent areas that can readily be affected by policy action and their importance is often related to raising awareness of an issue and monitoring longer-term trends. The selection of indicator for the scorecard is primarily a case of ensuring that indicators are policy levers, i.e. that they represent and measure environmental pressures, policy responses or driving forces.

In addition the scorecard indicators should ideally cover hard quantifiable or time-bound policy targets since this reflects the agreements made by the EU and the countries on how to manage the environment and measure progress. If the targets are softer the data need to be highly comparable and suitable for country benchmarking.

With these considerations, Table 3 summarises the entire EEA CSI, focusing on their suitability for the EEA scorecard. In particular, emphasis is given to the type of targets for which the indicator is relevant and also to the country coverage.

As has been well-documented in existing management literature on performance metrics: 'what is measured is managed'. Thus, most indicators also tend to show trends of improvement over time. The presence of **hard targets** ([2]) however puts such improvements into perspective and illustrates the need for timely action in dealing with environmental problems in order to stabilise trends before they are amplified through runaway or rebound effects. It is this time perspective that is lost from **softer targets** where it would be easy to be lulled into a false sense of security based on the direction of change but which would not take into account the rate (or the ultimate size) of the change that would be needed.

Through the scorecard development process countries expressed a preference, wherever possible, for selecting scorecard indicators for which hard political targets exist. However, in the scorecard several indicators are included where the targets are old or soft. Some specific cases that need mentioning are:

- Municipal waste generation (CSI 16): This had a hard target under the fifth environment action programme (5th EAP) but this target was not included in the sixth environment action programme (6th EAP). However, in its analyses the EEA has often referred to this older target and its inclusion enables municipal waste rather than the more specific packaging waste to be included. Municipal waste has the advantage of directly covering the household sector. As such it is an indicator of sustainable consumption that is directly visible to the citizens of Europe, and as a consequence highly politically relevant. There are some definitional issues surrounding this and other waste indicators, but the data are the best available and normalised as far as possible by Eurostat. The indicator, Generation and recycling of packaging waste (CSI 17) suffers from similar definition problems and is a less visible issue for the general public. However this indicator could be included in future versions of the scorecard if so desired.

- Area under organic farming (CSI 26) is a very politically visible indicator for agriculture, with robust data and one that allows the issue of sustainable consumption to be further addressed. Although organic farming has an extremely soft policy target, the alternative indicator, Gross nutrient balance (CSI 25) has no policy target and data availability is currently only EU-25 or less.

([2]) Hard targets refer to those for which a specific quantitative value has been agreed through a process of political negotiation, and are contrasted with soft targets where qualitative objectives or aims have been agreed through a process of political negotiation. An example of a soft target would be to decouple freight transport demand from economic growth, or to increase the share of organic farming; while hard targets would be e.g. from Kyoto Protocol or NEC directive.

- Use of freshwater resources (CSI 18): No targets exist for the use of freshwater resources but the water exploitation index is a robust and well established indicator measure that allows country benchmarking to be undertaken on the basis of an ecological stress factor. The indicator is included in the scorecard in order to capture the important environmental issue of water.

Another consideration when building the scorecard was to present a balanced set of issues. As discussed above, this was one of the key reasons for including indicators on water and organic farming to allow some coverage of water resources and the agricultural sector, even though there are no hard targets in these areas. However, the indicator and issue selection for the scorecard was however ultimately bound by the coverage of environmental issues in the CSI which covers six environmental themes (air pollution and ozone depletion, climate change, waste, water, biodiversity and terrestrial environment) and four sectors (agriculture, energy, transport and fisheries).

Some key environmental issues are not covered in the scorecard for a combination of reasons to do with data quality and target availability. Some of these issues are outlined below:

- Only one biodiversity indicator with policy leverage is included in the CSI. This indicator, Designated areas (CSI 08), has a soft qualitative target but only allows regional comparisons or comparisons between a subset of countries and is therefore not suitable for country benchmarking.

- For the fisheries sector the two policy leverage indicators, Aquaculture production (CSI 33) and Fishing fleet capacity (CSI 34), have no targets and soft qualitative targets respectively and neither is suitable for country benchmarking.

- The one terrestrial indicator that is a policy leverage point, Progress in management of contaminated sites (CSI 15), has a soft target but is not suitable for country benchmarking.

In conclusion the EEA scorecard is composed of nine indicators, all of which represent points of policy leverage, have robust data with comparable country coverage and mostly well defined policy targets.

What process to use to develop and test the scorecard

The process by which an assessment is developed is at least equally important to the final results, and it is through the process that the assessment is given legitimacy and credibility with the intended users. The EEA therefore developed the scorecard through process of extensive consultation with its member countries and in particular with the experts on environmental reporting within those countries.

The idea for the country scorecard initially grew out of a demand from the countries themselves. In particular they wanted to know how to interpret European level results, including distance to targets, and felt that a breakdown to country level would be more meaningful and would allow decision-makers at national level to assess how their particular country was performing in a specific environmental area. If benchmarks of some sort were additionally provided, a country could also begin to benchmark its own performance against that of other European countries.

In response to this request from the countries, work was begun to create a summary scorecard for the member countries of the EEA which in 1998/99 numbered 18 (the EU-15 plus Norway, Liechtenstein and Iceland). This process of development took five years, during which the number of EEA member countries grew to 31, and in 2005 the prototype scorecard was fully coupled to the CSI.

How to communicate it

Once the legitimacy and credibility of the scorecard is ensured through a transparent and participatory process, the key factor determining the scorecard's fitness for purpose is its communicability.

The scorecard is predominantly a visual communication tool which is also ideally suited for web-based publishing. The scorecard has visual elements in the form of the full scorecard but also the graphs that systematically present the lower layers of information.

Additionally, the text-based assessments allow space for the information to be enriched by country-specific and thematic information, some of which is qualitative.

Some of the key decision points in the scorecard development related to:

- the choice of visually distinct symbols for the progress and status indicators;
- the colour scheme that differentiates between the hard quantitative distance-to-target assessments (red/green) and the softer assessments that measure relative progress (shades of blue) — overall the lighter the colour or tone the better the performance;
- the presentation and design of the underlying information graphs;
- the visual communication of issues relating to uncertainty and differential quality of the data and indicators; and
- the language to use in the assessments.

5. Testing: does it work?

The adequacy of a small number of indicators such as those included in the scorecard needs to be constantly monitored by testing against the result from using more indicators. A scorecard can never provide a definitive assessment of environmental performance, but is rather a tool for allowing patterns in relative environmental performance to emerge between countries and between groups of countries. As discussed above the development of the scorecard included decision points on issues such as balance between themes and between the number of indicators in each theme. Testing is continuously required to understand the effect that adding another theme or sector (or of adding another indicator for e.g. transport or waste) would have on the pattern of results. Linked to this issue is the need to understand any possible cross linkages or co-dependencies within any set of scorecard indicators.

The results of the scorecard also need to be compared against other global measures of environmental performance to look for wider patterns and trends. The EEA plans to investigate the results from the scorecard against other indicator initiatives that have included EEA member countries. These include some of the composite environmental indicators that have been published (e.g. the environmental sustainability index) and this exercise will allow the further development of some key questions that have emerged: in particular the extent of overlap between models of environmental sustainability at national and at European level.

The fitness of the scorecard for the purpose of underpinning policy-making will also be continuously tested, especially with regard to the need for early warning, while avoiding bias in the form of false negative or false positive results. This is linked to a deeper understanding both of the responsiveness of the indicator to policy action and to the certainty of the wider cause-and-effect science framework in which the indicator sits.

Frequently asked questions concerning the scorecard methodology

I. What is the scorecard?

The scorecard refers to a communication tool used to facilitate the presentation of environmental country performance which allows the user to 'drill down' to different levels of aggregation in environmental information and to make relevant and informative comparisons against performance benchmarks.

The scorecard is made up of the overall scorecard summary table comprising: the individual scorecards for each of the thematic indicators, supported by graphs showing the country rankings for progress and status; and the country scorecards supported by graphs showing country ranks across the range of scorecard indicators.

In developing the scorecard a level of statistical analysis is used to underpin the assessment.

II. What is the difference between status, progress and distance-to-target?

A. STATUS indicators compare environmental performance in the year for which we have latest available data (usually 2002). These are absolute data normalised by population in a country unless otherwise stated.

Status indicators are shown on the scorecard in three shades of blue, where the lightest refers to countries performing in the top 25 % of the range of values (best performers); mid-blue in the intermediate 50 % of values; and dark blue in the lowest 25 % of the range of values.

B. PROGRESS indicators are a measure of change over time (ten years, usually 1992–2002 depending on time series availability) compared to average EU-25 ten-year change.

Progress indicators are marked on the scorecard in three shades of blue with the lightest blue identifying the best performing countries that are in the top 25 % of the range of values (i.e. the difference between change over ten years in a country and the average change in the EU-25). The darkest blue identifies those countries in the lowest performing 25 % of the range of values and mid-blue refers to the intermediate 50 % of the range of values.

C. DISTANCE TO TARGET (DTT) indicators cover those indicators for which there are hard policy targets and compare the absolute values in the latest year available against the linear target path. They are identified by their red-green colouring on the scorecard.

Countries that are not on track to meet the target are shown on the scorecard as red; those on track are shown in two shades of green: countries close to the target line (+ or – 5 percentage points) are marked in dark green. Given the uncertainties and the closeness they are to the target line some caution should be exercised and for this reason such countries are differentiated from the best performers which are marked in light green showing that they are firmly on track, even taking into account the uncertainties.

III. How do I interpret the colour scoring for Status indicators?

The status indicators rank countries in terms of normalised absolute performance (latest available data) and simply labels the countries as those falling into the range of values in the top 25 %, the lowest 25 % and the middle 50 % of the range. So, although the ranking is based on absolute environmental performance, the countries' final score in terms of their colour in the scorecard, is relative to the performance of all other countries.

Year by year, this methodology means that countries must continue to change along with their peers in order to maintain their position in the ranking, as it is the distance between a country's performance and that of the top and lowest performers in the set that determine their colour on the scorecard.

IV. How do I interpret the colour scoring for DTT indicators?

Is it possible, for example, that all the countries are close to target but those further away (although still very close) come up red? The answer is no, since the colour scheme is calculated on an absolute basis — thus, if all countries were similarly on or off track to meeting the target they would all be the same colour.

V. How do I interpret performance and progress when they are very different?

A country that has already made good progress may have difficulty going further or may begin to focus attention elsewhere. Consequently such a country may show little further progress or may even decline a little. It would, however, be unfair to show them as only having poor progress, ignoring their current high status. Alternatively, countries that have traditionally shown very poor environmental performance, due for example to their particular geographic or climatic predispositions, or to an inherited socio-economic or environmental legacy, can be encouraged by showing how much they have progressed, even if the performance to date has brought them to a status which is still relatively poor compared to other countries.

VI. How do we interpret the different performance values for populations and GDP?

Comparing performance against GDP is a measure of eco-efficiency, while it also contains a subtle implicit assumption that richer countries (with high GDP) are allowed to pollute more. Similarly, comparing performance only against population size might give rise to the tacit implication that countries with large populations do not have to bother about eco-efficiency.

The ten new EU Member States have lower GDPs than the 15 older members and in general favour comparison by population (per capita) — in fact they strongly object to GDP being used for comparisons. Some of the older EU Member States who are performing well in terms of eco-efficiency, are consuming and polluting more than their per capita equitable share of global resources, and thus prefer comparison by GDP.

The choice made in the scorecard is to show the per capita indicator or the indicator as a share (for example of total utilised agricultural area or total electricity consumption). In addition the indicator is shown per GDP when this is relevant to the target (for freight transport for example where the target relates to decoupling demand from economic growth) or where this presentation is the one used in the structural indicators or other indicator initiatives.

VII. Why do we not make an overall ranking of countries?

A selection of environmental indicators is used to create this scorecard, but there might be others that would need to be included to get a balanced composite indicator; and it is likely that some differential weighting between them would be desirable. Because the scorecard is not a composite indicator no overall country ranking is presented.

However, key pointers for interpretation include being aware of the following general categories of country performance: (i) countries that are performing well but progressing poorly and are therefore likely to be heading towards environmental deterioration unless action is taken to remedy the situation; (ii) countries that are performing poorly and progressing poorly and which are therefore heading towards very rapid worsening of already poor environmental conditions; and (iii) countries that are performing poorly but progressing well which suggests that action has been taken to address some of the issues and that environmental condition is likely to improve in the future; as well as (iv) countries that are performing well and progressing well and are therefore well on the way to preserving their good environmental condition for the future.

VIII. How sensitive are the results to the uncertainties in the data?

The scorecard methodology addresses some of the issues concerning uncertainty but is to some extent dependent on the accuracy and reliability of the data submitted by the countries. The indicators and data used are generally of very good quality. For more details on the uncertainty related to individual indicators please refer to the EEA CSI and the indicator specifications (see www.eea.eu.int/coreset and http://themes.eea.eu.int/IMS/About/EEACSITopicsAndQuality2004.pdf).

Specific to the scorecard, however, is the detailed 'drilling down' into indicator data to country level or lower and the comparison of changes over time. Errors for a single indicator may differ between countries, with some countries providing less robust data in general for several indicators due for example to: differences in national or regional monitoring systems; federal state organisation compared to national state organisation; or the institutional organisation and environmental governance in a country. Errors can also differ between years in a time-series (as the number of monitoring stations

increases over ten years for example), and such changes would be especially relevant in the progress and distance-to-target assessments where a base-year is used. Together such systematic patterns of errors could potentially have direct effects on the reliability and accuracy of the scorecard and DTT results, but all efforts are taken to minimise and foresee such problems in advance, for example by using an alternative base year or verifying a data point against external sources.

Distance-to-target assessments are based on an assumption of linear distance to target, which is a weak but standard methodology. The way countries move towards their targets is usually non-linear, and often targets are met only at the last moment. However the linear methodology is currently standard for determining distance to target.

Outliers can affect the categories that the countries fall into. Any big outliers are therefore removed before the categorisation is made. This is the case in particular for area under organic farming, municipal waste generation and ozone precursor emissions.

IX. Is the scorecard approach too brutal?

Clearly countries remain sensitive to the outcomes of the scorecard, particularly if the results are not favourable. Given the use of a limited number of indicators and the way in which relative performance is highlighted, the presentation of the scorecard can be considered to be relatively hard and frank.

The EEA response to this critique has been: to ensure that the scorecard has legitimacy with its member countries by using a consultative approach to develop the methodology; to use only Core set indicators with the highest quality, validated, data; and to use a clear and transparent colouring scheme in the scorecard which leaves the reader in no doubt when an indicator is assessed on the basis of an agreed target (red/green) and when it is assessed against some other benchmark such as an EU-25 average (blue).

The countries are additionally invited to contribute their own voice to the overall assessment and interpretation of the scorecard results as part of the country analysis section. This section provides an opportunity for countries to raise issues specific to their situation and to bring in relevant information that serve to balance the scorecard results.

X. How do we expect readers such as policy-makers to react to the scorecard?

It is expected that these results will stimulate discussion among both policy-makers and citizens in the EEA member countries, and lead to an examination of the factors that lie behind the occasionally large differences in environmental performance and progress seen in Europe.

XI. Is the scorecard a valid measure of European environmental performance?

Since the scorecard covers a number of essential environmental issues, uses high quality data and indicators and has legitimacy from country participation and involvement in the assessment and the methodology; the EEA scorecard is a valid tool to further the understanding of the underlying factors behind European environmental performance.

Table 3 Mapping the EEA core set of indicators in terms of suitability for the EEA scorecard

The table below summarises the entire EEA core set of indicators (CSI), focusing on their suitability for the EEA scorecard. In particular emphasis is given to the type of targets that the indicator is relevant for and also to the country coverage. For indicators to be suitable for the scorecard, they need to represent points of policy leverage, i.e. measure pressures, drivers or response. In addition, they ideally need to cover hard quantifiable or time-bound policy targets. If the targets are softer, the data need to be highly comparable and suitable for country benchmarking.

No policy leverage points
Not suitable for country comparisons
No suitable targets
Potential indicator for the scorecard
Included in scorecard

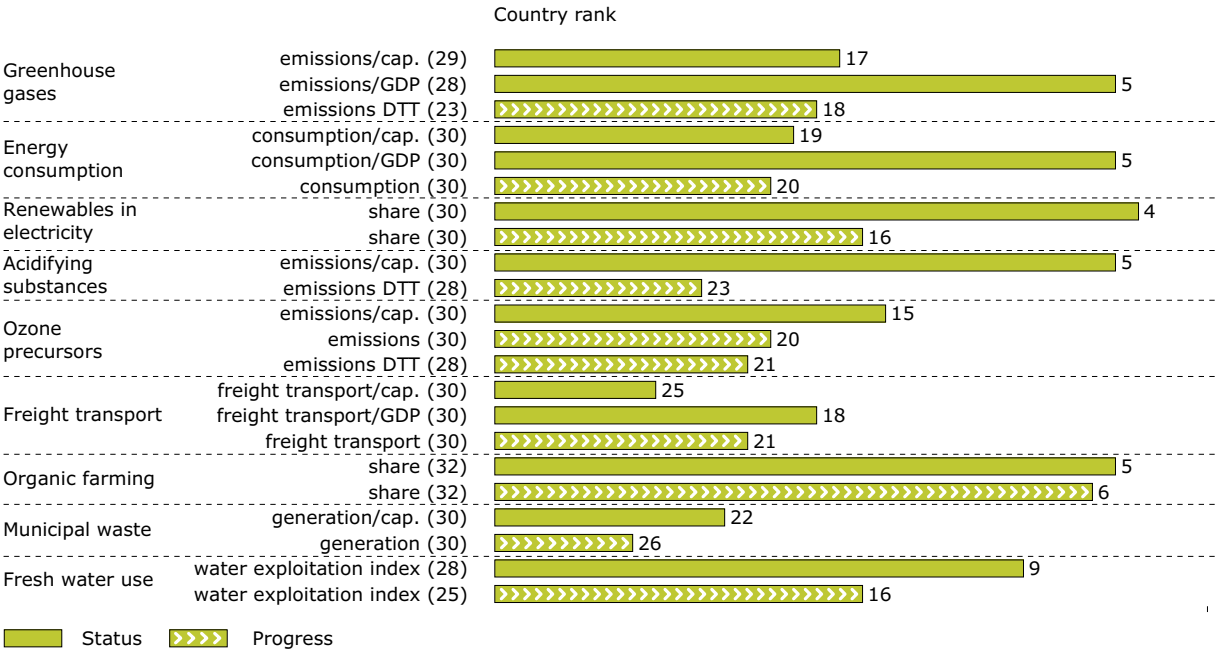
Scorecard indicator	CSI	Indicator name	Environmental issue	DPSIR (main part)	Targets ([3])	Comparability between countries ([4])
Yes	CSI 01	Emission of acidifying substances	Air pollution	P	4	4
Yes	CSI 02	Emission of ozone precursors	Air pollution	P	4	4
No (not suitable for country benchmarking, no suitable target)	CSI 03	Emission of primary particles and secondary particulate precursors	Air pollution	P	1	2
No (no policy leverage)	CSI 04	Exceedance of air quality limit values in urban areas	Air pollution	I	2	0
No (no policy leverage)	CSI 05	Exposure of ecosystems to acidification, eutrophication and ozone	Air pollution	I	4	2
No (not possible for country benchmarking)	CSI 06	Production and consumption of ozone depleting substances	Air pollution	P	4	0
No (no policy leverage)	CSI 07	Threatened and protected species	Biodiversity	I	2	1
No (no targets and not suitable for country benchmarking)	CSI 08	Designated areas	Biodiversity	R	2	2
No (no policy leverage)	CSI 09	Species diversity (bears, wolves, farmland birds woodland, park and garden birds, butterflies)	Biodiversity	S	2	2

([3]) Does the indicator monitor progress toward the quantified targets?
0 = No targets
1 = Targets but the indicator do not fully reflect these
2 = Qualitative targets (generic)
3 = Qualitative targets (specific) or Quantified targets not time bound
4 = Quantified targets time bound (Ref: Topic descriptions and quality evaluations for indicators in the EEA core set, EEA, 2004.)

([4]) Space and temporal coverage and representativeness for countries (country comparison):
0 = Country comparison relevant but not possible for the moment
1 = Country comparison not relevant (e.g. temperature)
2 = Regional comparison or between subset of countries
3 = Absent from scoring (blank)
4 = Possible to use indicator for country benchmarking (Ibid.).

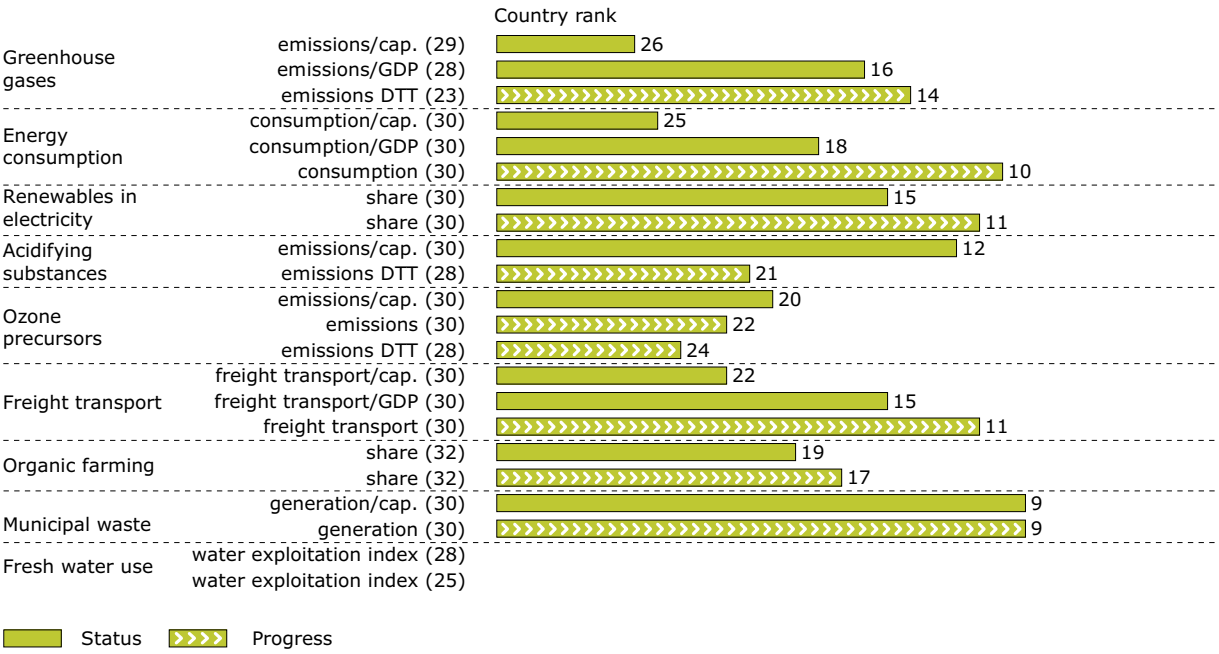
Scorecard indicator	CSI	Indicator name	Environmental issue	DPSIR (main part)	Targets ([4])	Comparability between countries ([5])
Yes	CSI 10	Greenhouse gas emissions and removals	Climate change	P	4	4
No (CSI 10 chosen instead)	CSI 11	Projections of GHG emissions, removals	Climate change	P	4	4
No (state indicator — no policy leverage)	CSI 12	Global and European temperature	Climate change	S	4	1
No (state indicator — no policy leverage)	CSI 13	Atmospheric greenhouse gas concentrations	Climate change	S	3	1
No (state indicator — no policy leverage)	CSI 14	Land take	Terrestrial	S	2	2
No (not suitable for national benchmarking; no suitable target)	CSI 15	Progress in management of contaminated sites	Terrestrial	R	2	2
Yes (5th EAP target used)	CSI 16	Municipal waste generation	Waste	P	1	4
Under consideration but very small and specific waste stream only	CSI 17	Generation and recycling of packaging waste	Waste	P/R	4	4
Yes (although there are no targets water coverage is desirable in the scorecard and the indicator is suitable for benchmarking)	CSI 18	Use of freshwater resources (water exploitation index)	Water	P	2	4
No (state indicator — no policy leverage)	CSI 19	Oxygen consuming substances in rivers	Water	S	1	4
No (state indicator — no policy leverage)	CSI 20	Nutrients in freshwater	Water	S	2	4
No (state indicator — no policy leverage)	CSI 21	Nutrients in transitional, coastal and marine waters	Water	S	2	2
No (state indicator — no policy leverage)	CSI 22	Bathing water quality	Water	S	3	4
No (state indicator — no policy leverage)	CSI 23	Chlorophyll in transitional, coastal and marine waters	Water	S	1	2
No (no suitable target and not suitable for country benchmarking)	CSI 24	Urban wastewater treatment	Water	R	1	2
No (insufficient country coverage — and no target)	CSI 25	Gross nutrient balance	Agriculture	P	0	4
Yes (no target but good benchmarking data)	CSI 26	Area under organic farming	Agriculture	R	1	4
No (total energy consumption used instead as more environmentally sound than just focusing on the sectors)	CSI 27	Final energy consumption by sector	Energy	D	2	4
Yes	CSI 28	Total energy intensity	Energy	R	1	4
Yes (used in indicator above)	CSI 29	Total energy consumption by fuel	Energy	D	2	4
No (renewables in electricity chosen instead)	CSI 30	Renewable energy consumption	Energy	D	4	4
Yes	CSI 31	Renewable electricity	Energy	R	4	4
No (state indicator — no policy leverage)	CSI 32	Status of marine fish stocks	Fisheries	S	2	2
No (data quality and comparability issues)	CSI 33	Aquaculture production	Fisheries	D	0	2
No (only soft targets and not suitable for country benchmarking)	CSI 34	Fishing fleet capacity	Fisheries	D	2	2
No (Temporarily removed pending methodological revisions — will then be included to balance freight transport demand)	CSI 35	Passenger transport demand	Transport	D	3	4
Yes	CSI 36	Freight transport demand	Transport	D	3	4
No (insufficient countries covered as yet)	CSI 37	Use of cleaner and alternative fuels	Transport	R	4	4

Austria



Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Belgium



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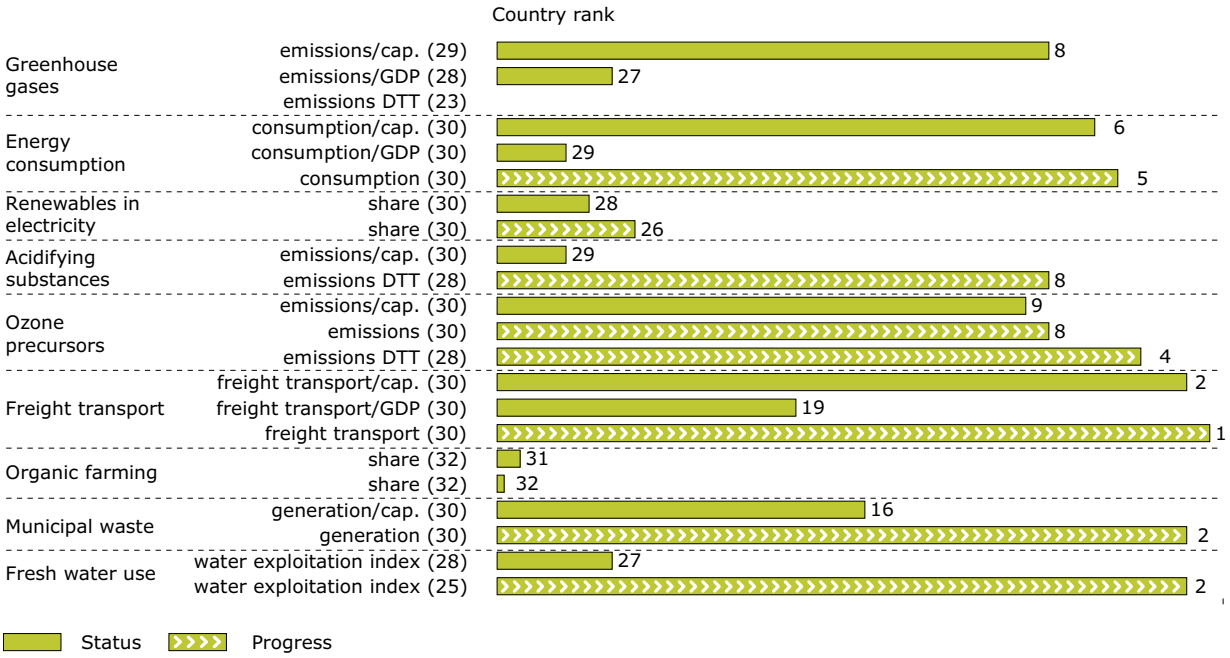
Bulgaria



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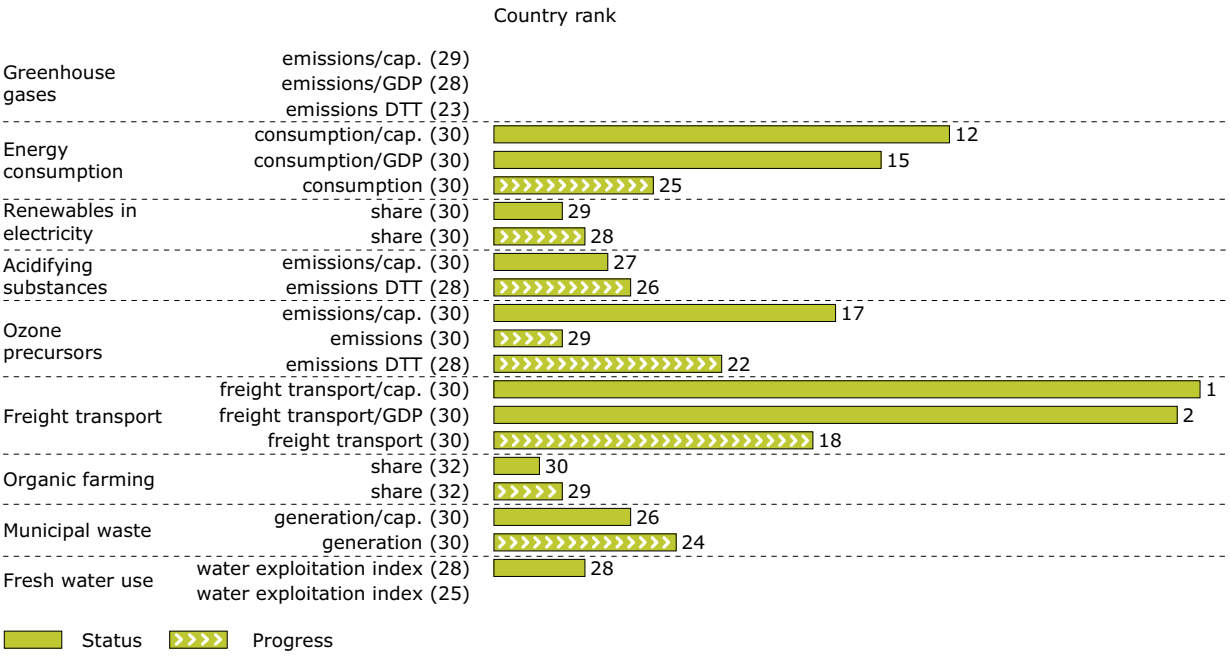
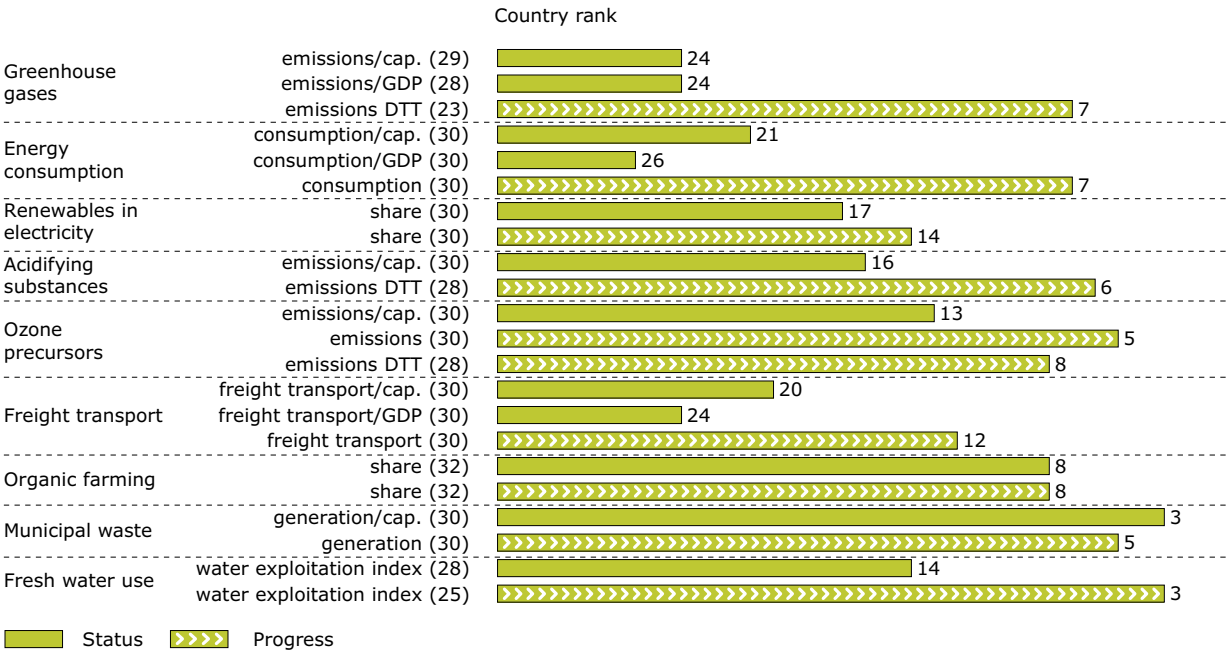
Cyprus



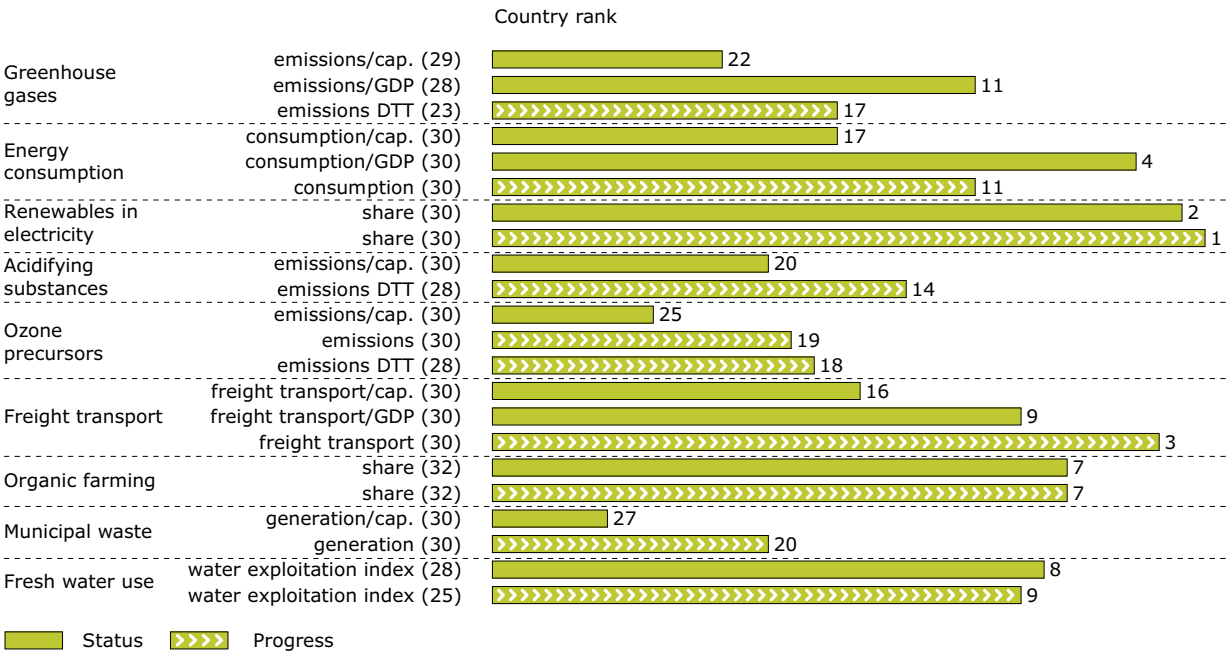
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Czech Republic



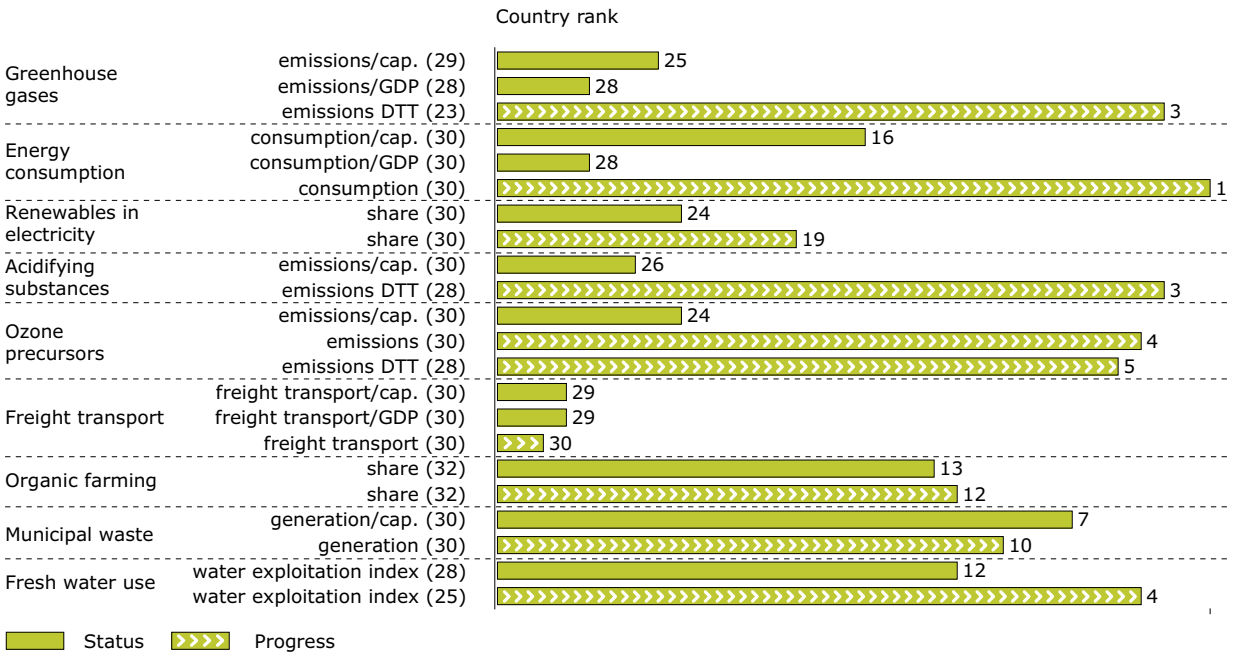
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Denmark



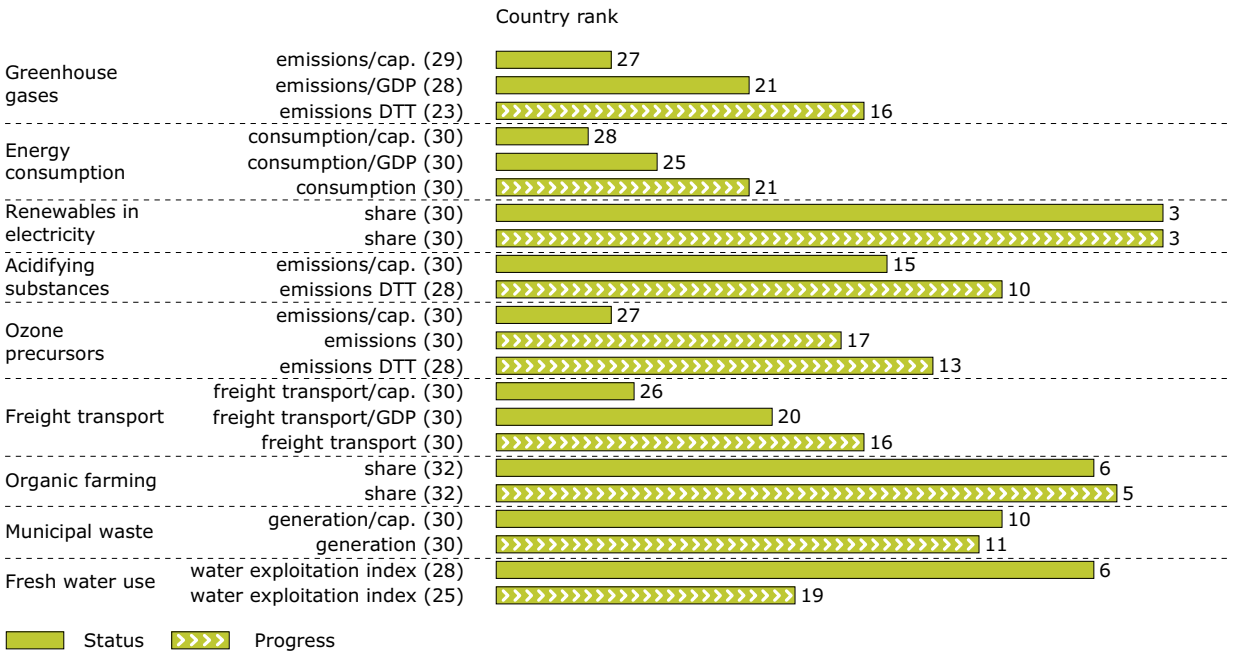
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Estonia



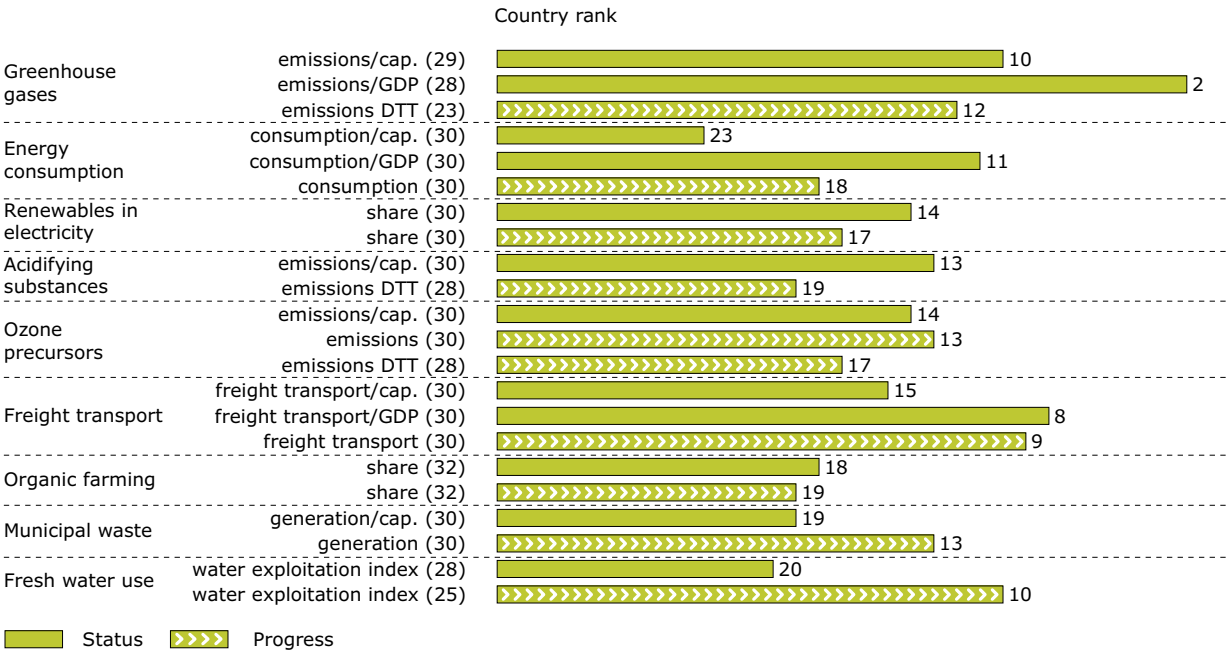
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Finland



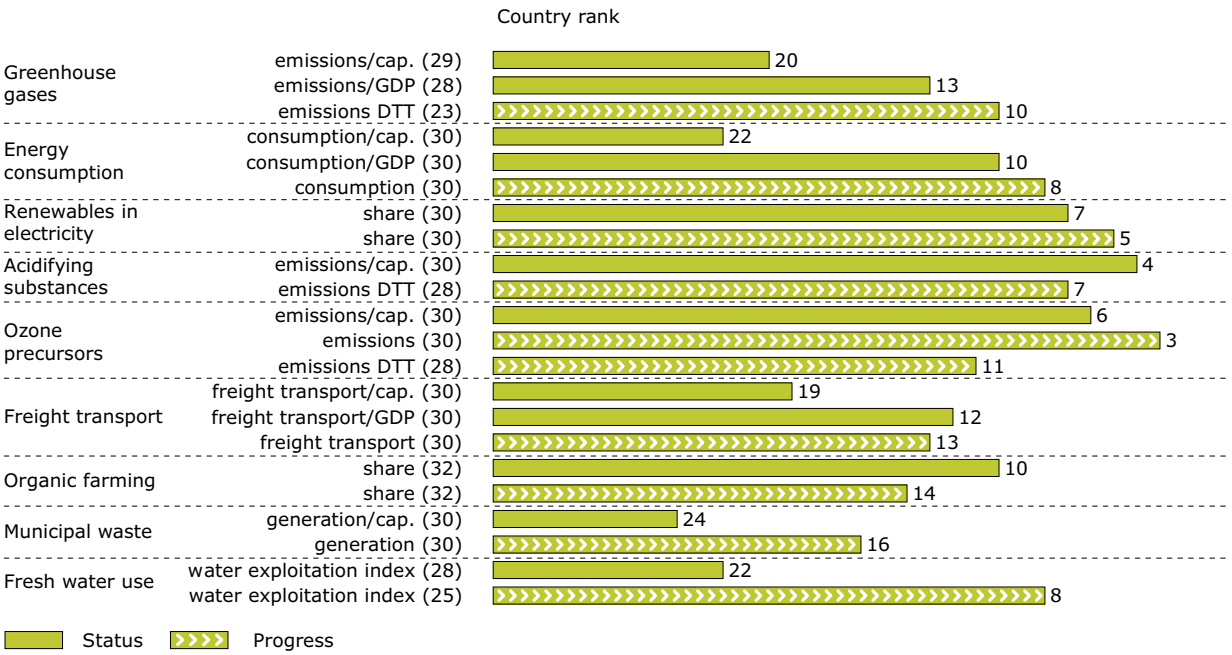
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

France



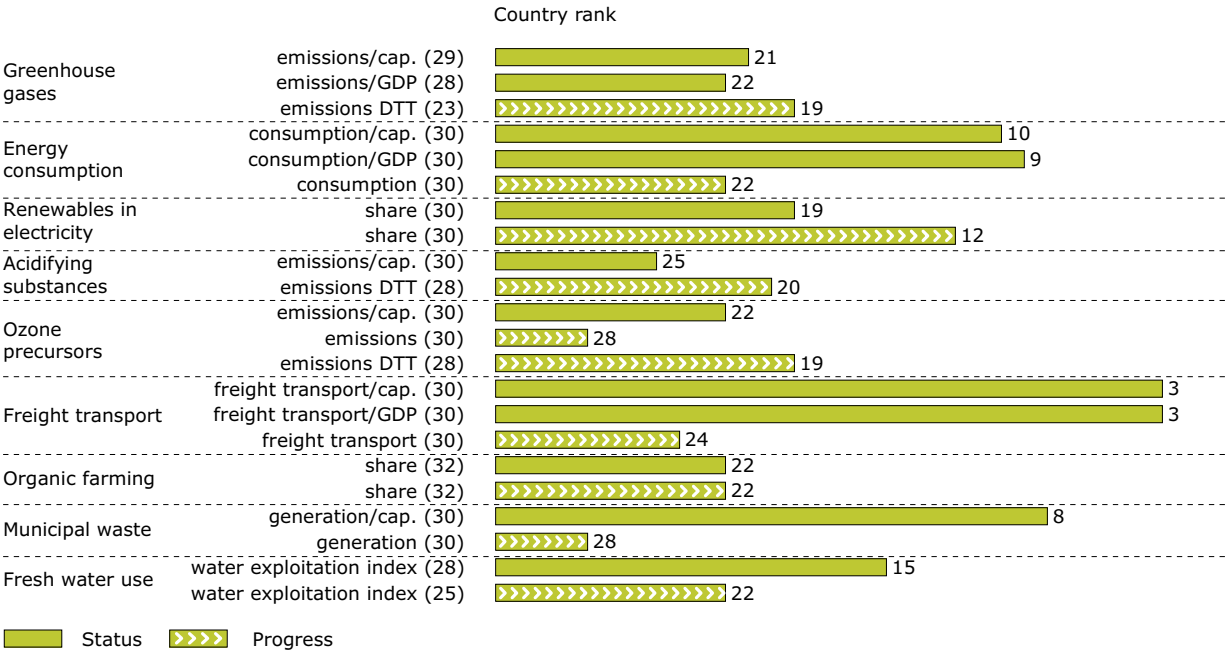
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Germany



Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Greece



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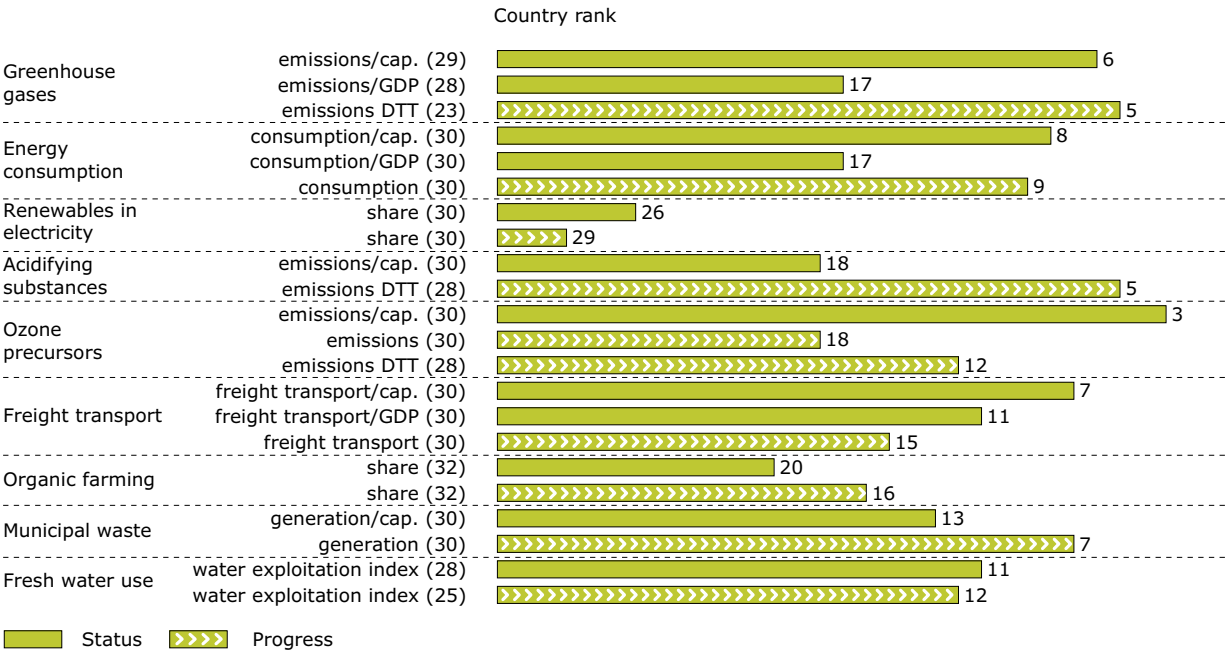
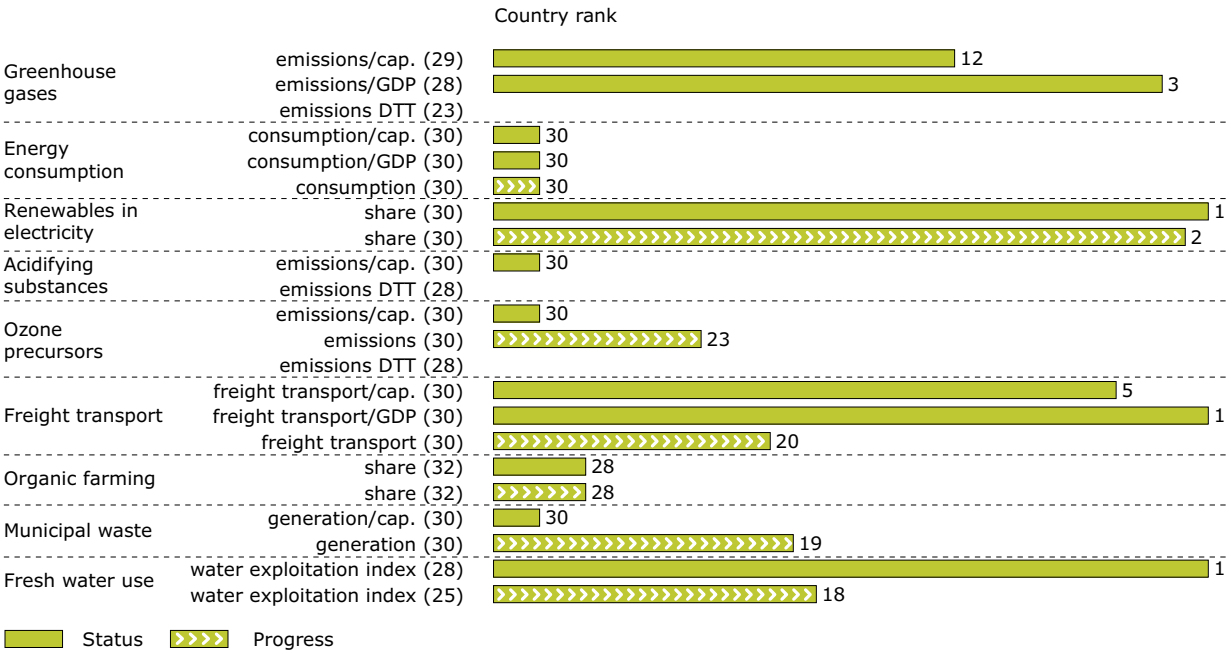
Hungary



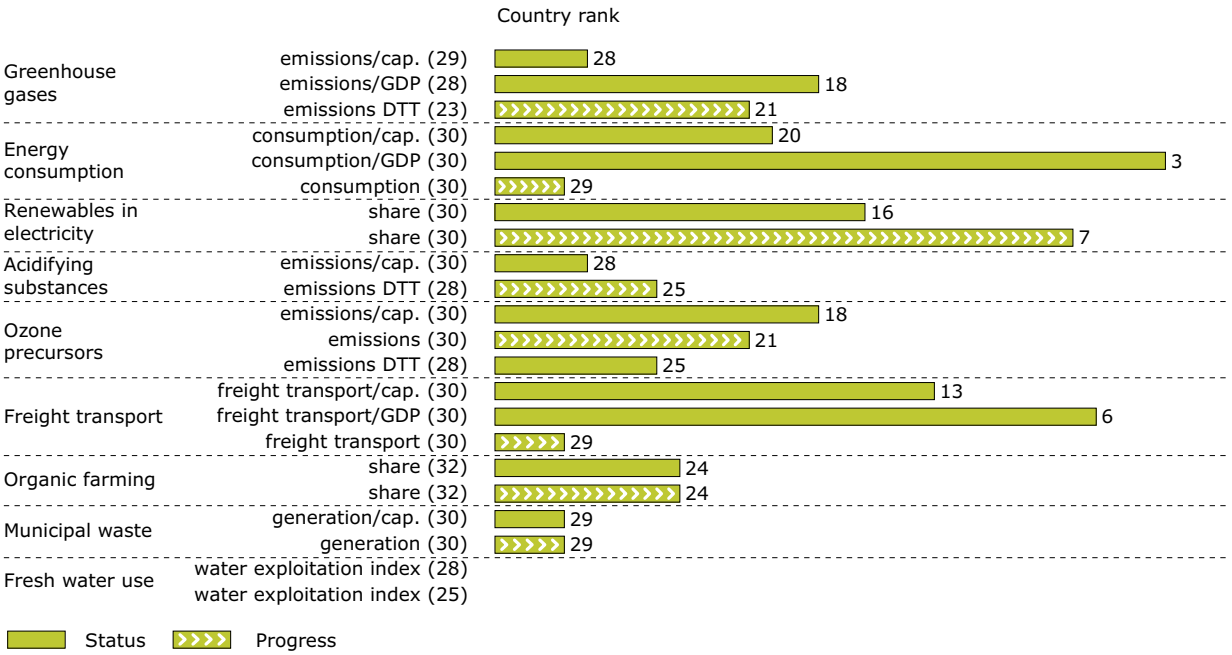
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Iceland



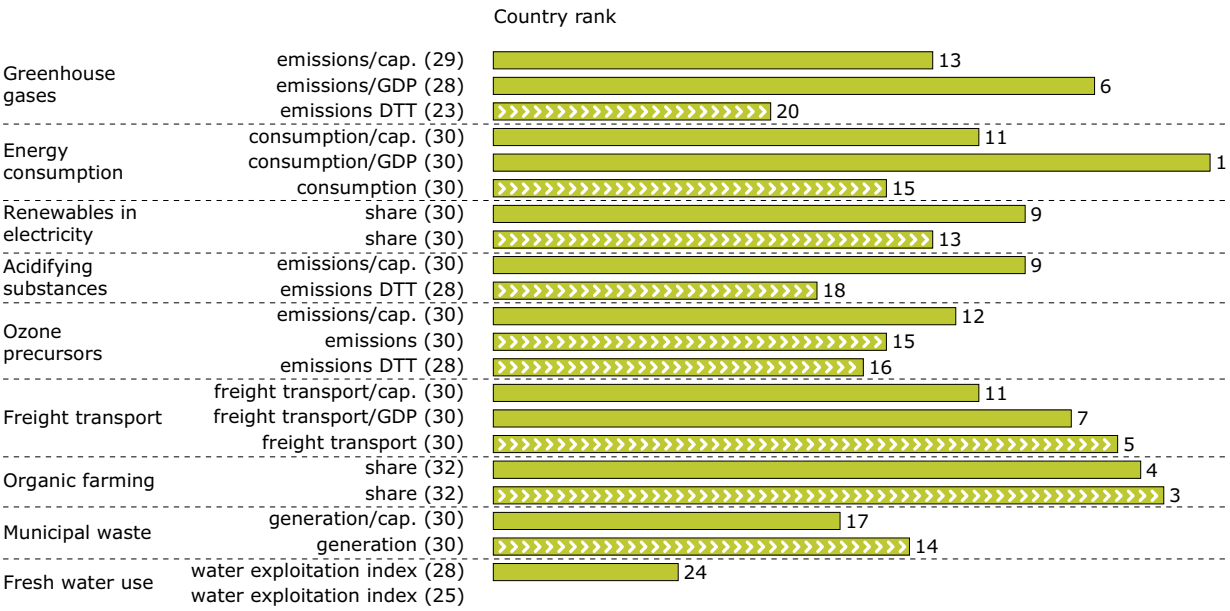
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Ireland



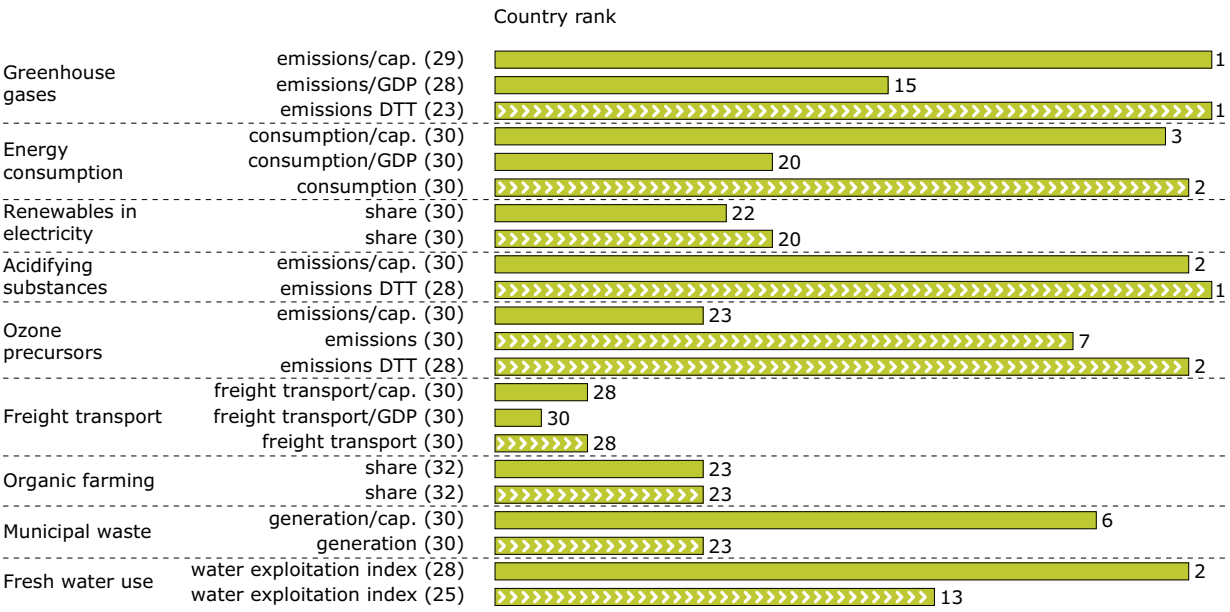
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Italy



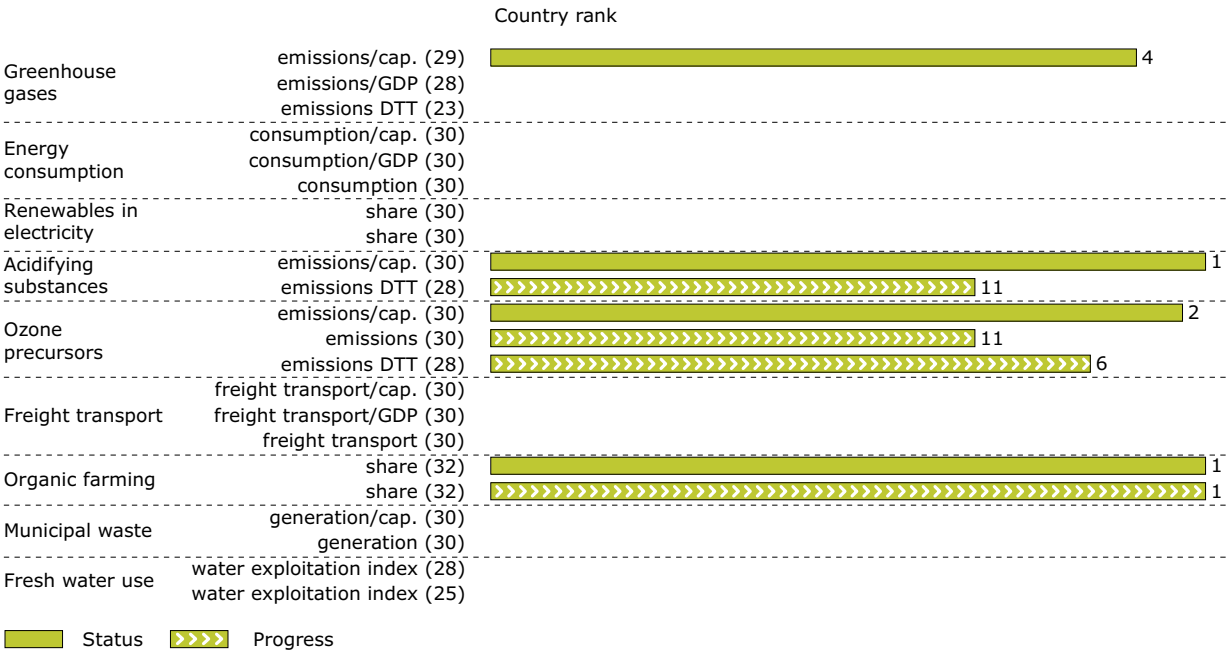
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Latvia



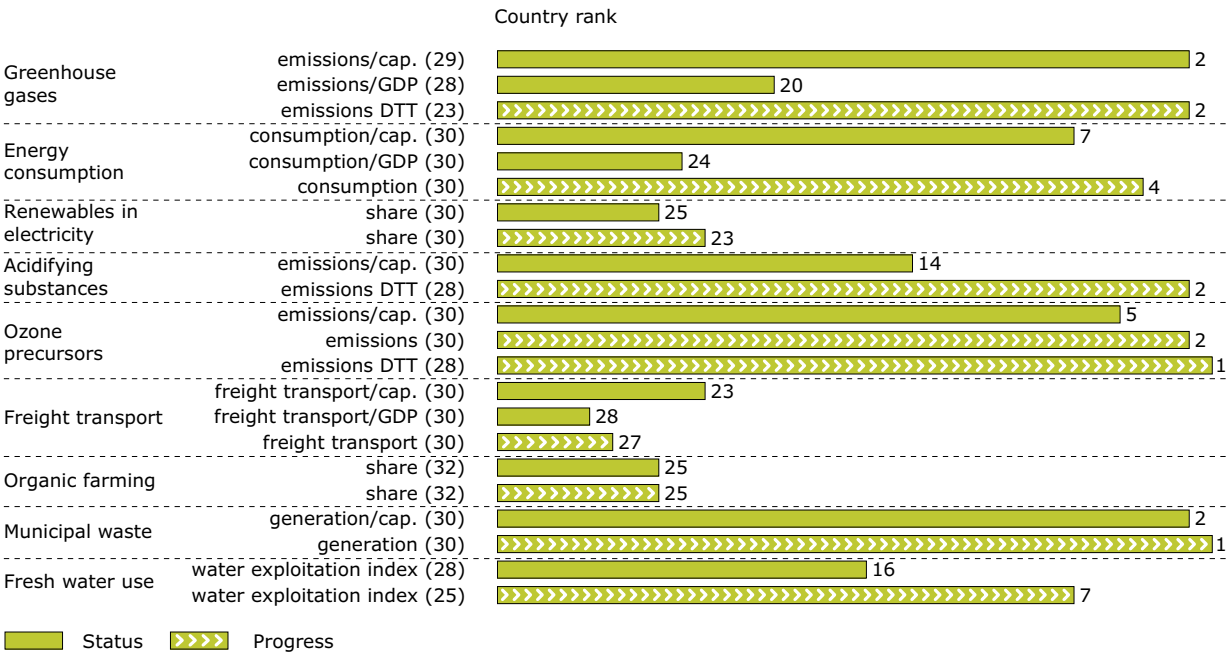
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Liechtenstein



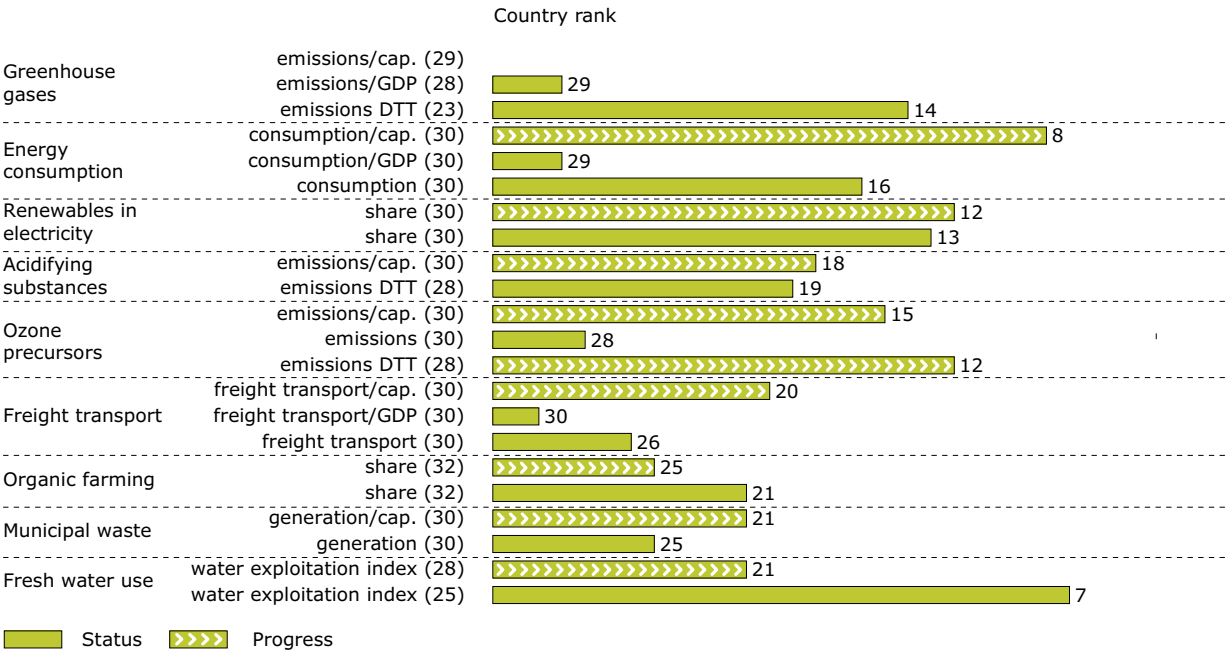
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Lithuania



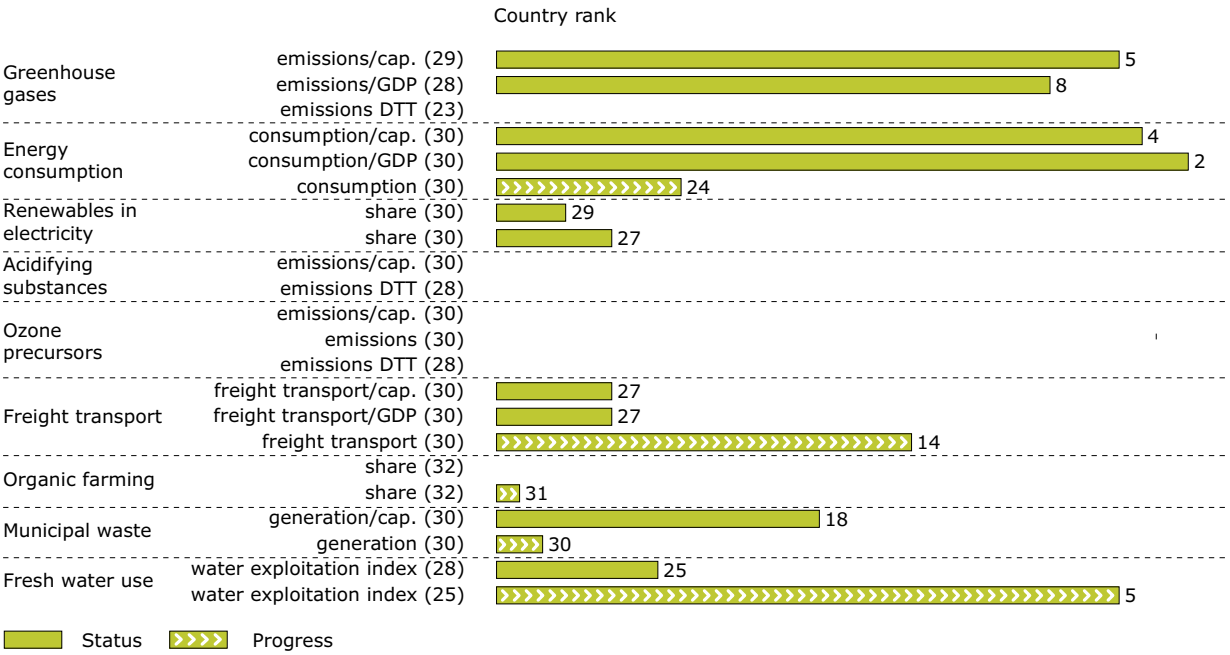
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Luxembourg



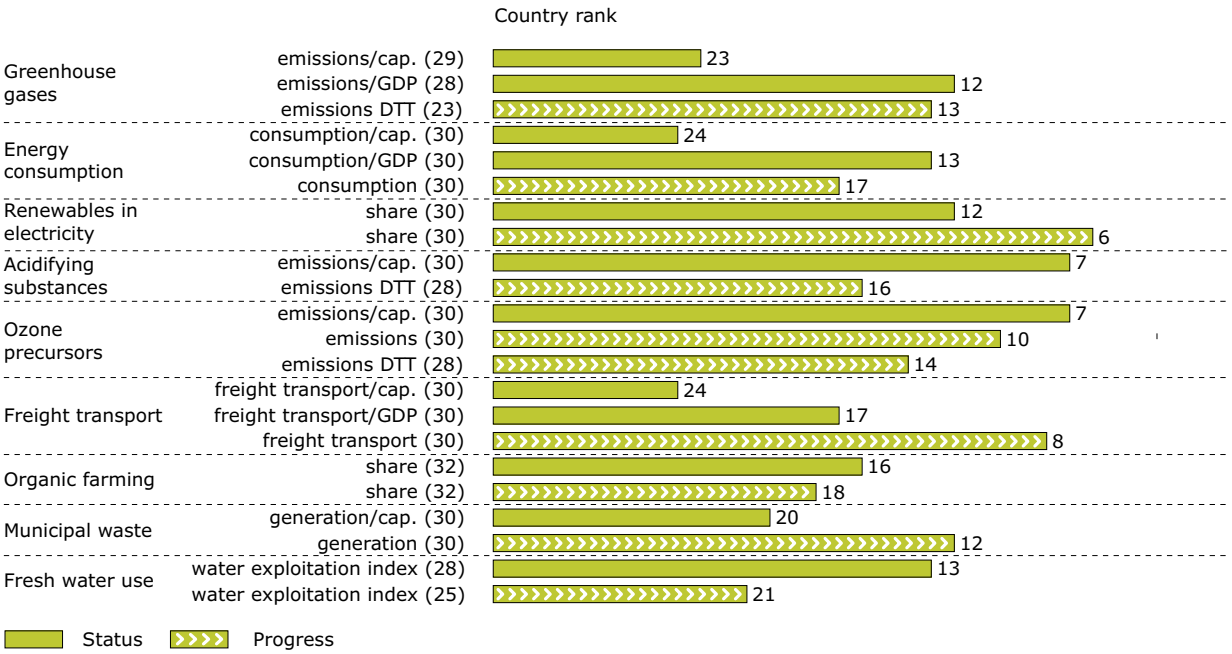
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Malta



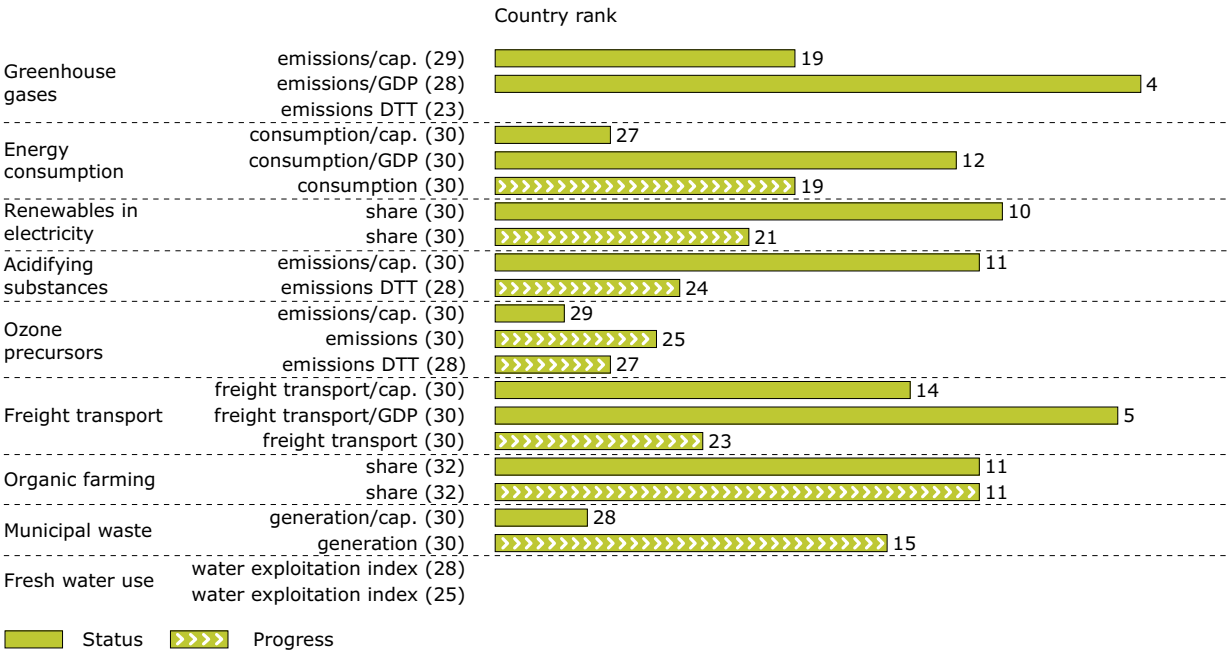
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

The Netherlands



Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Norway



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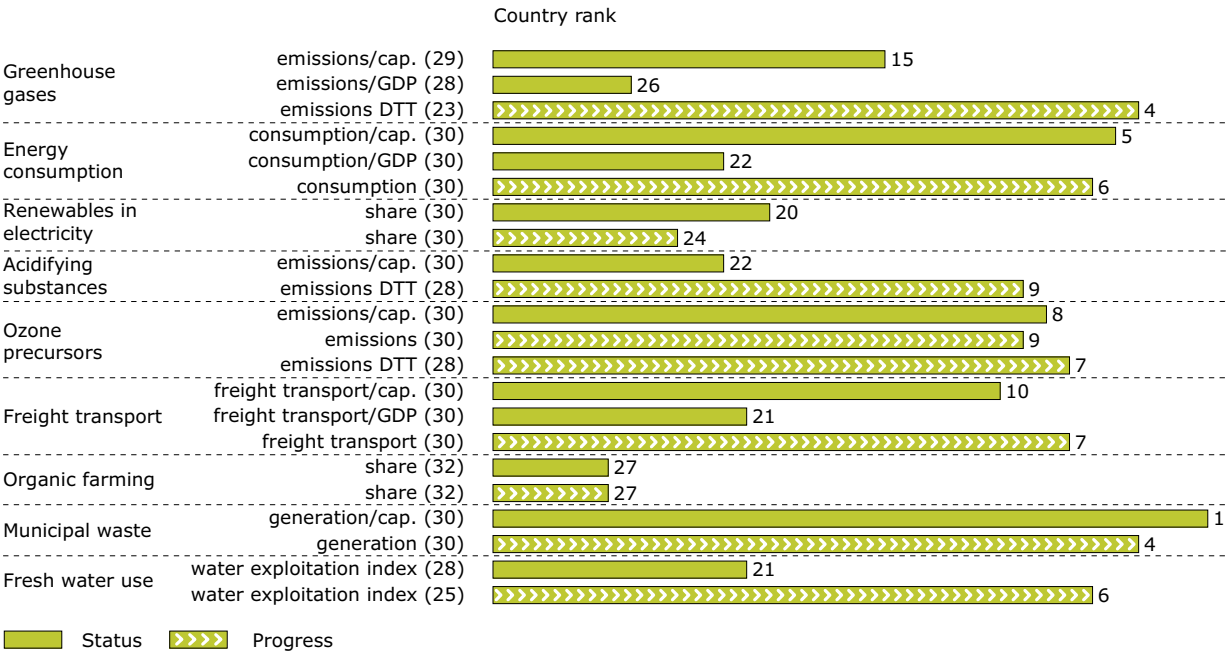
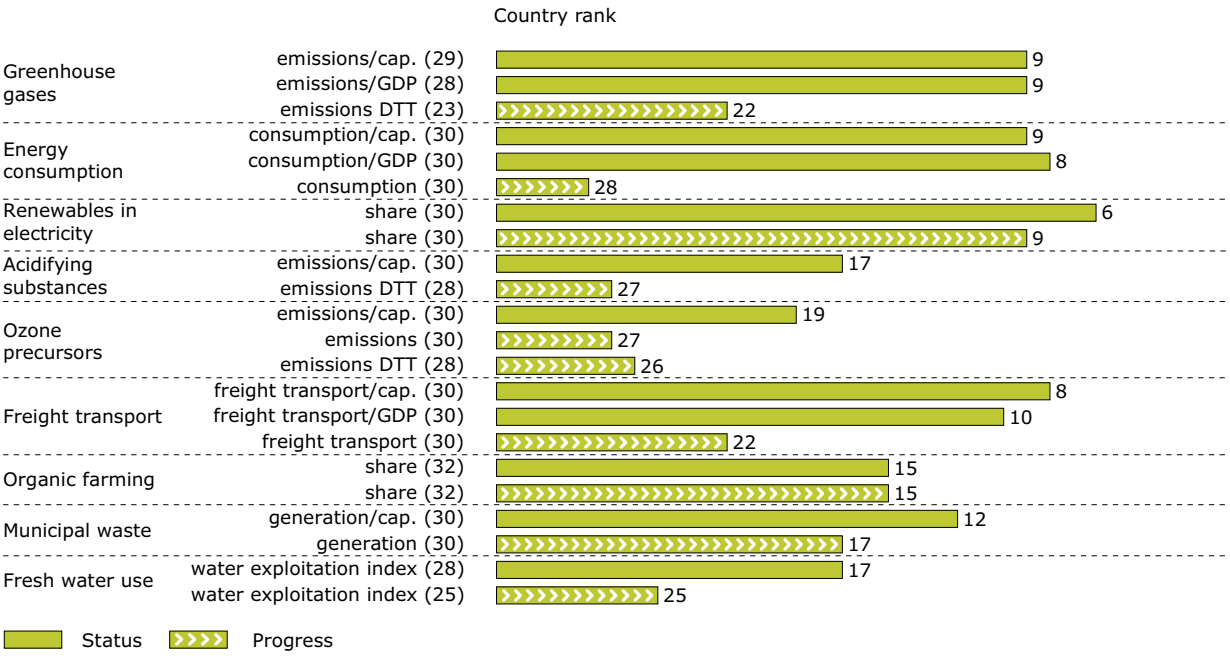
Poland



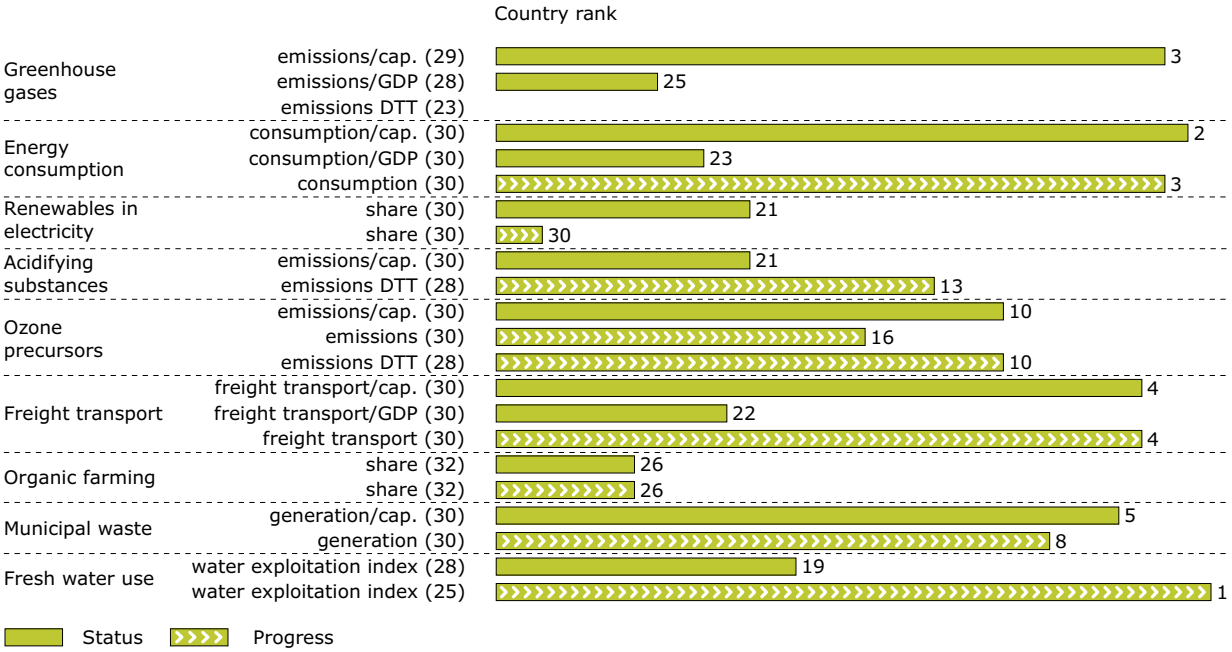
Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Portugal



Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Romania



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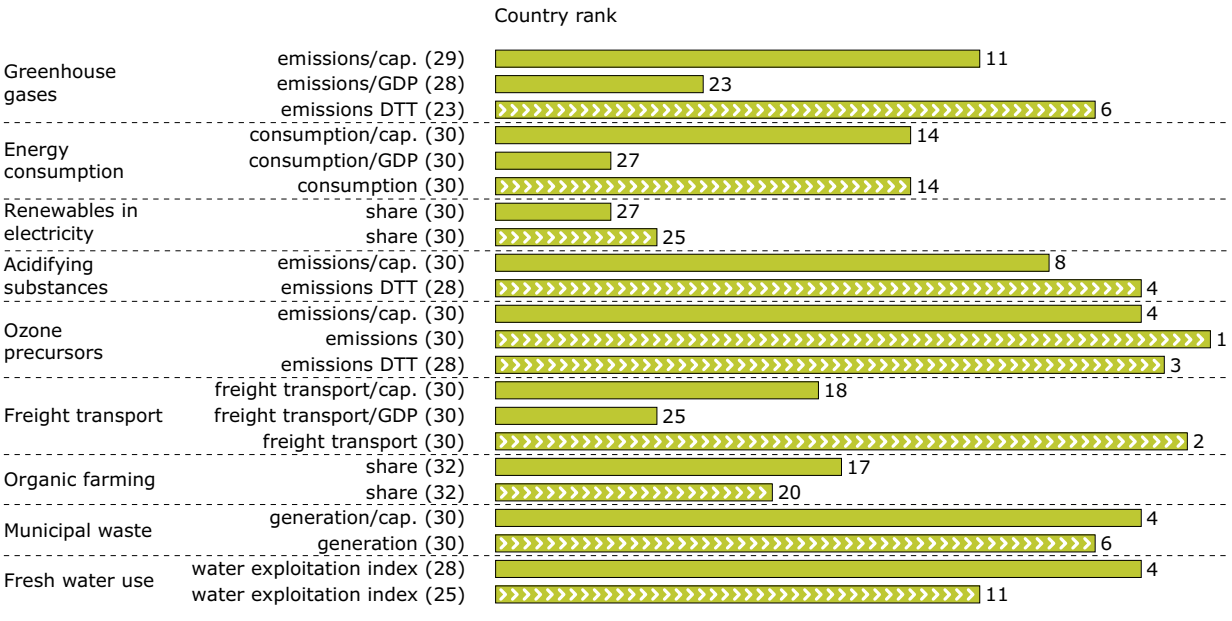
Slovak Republic



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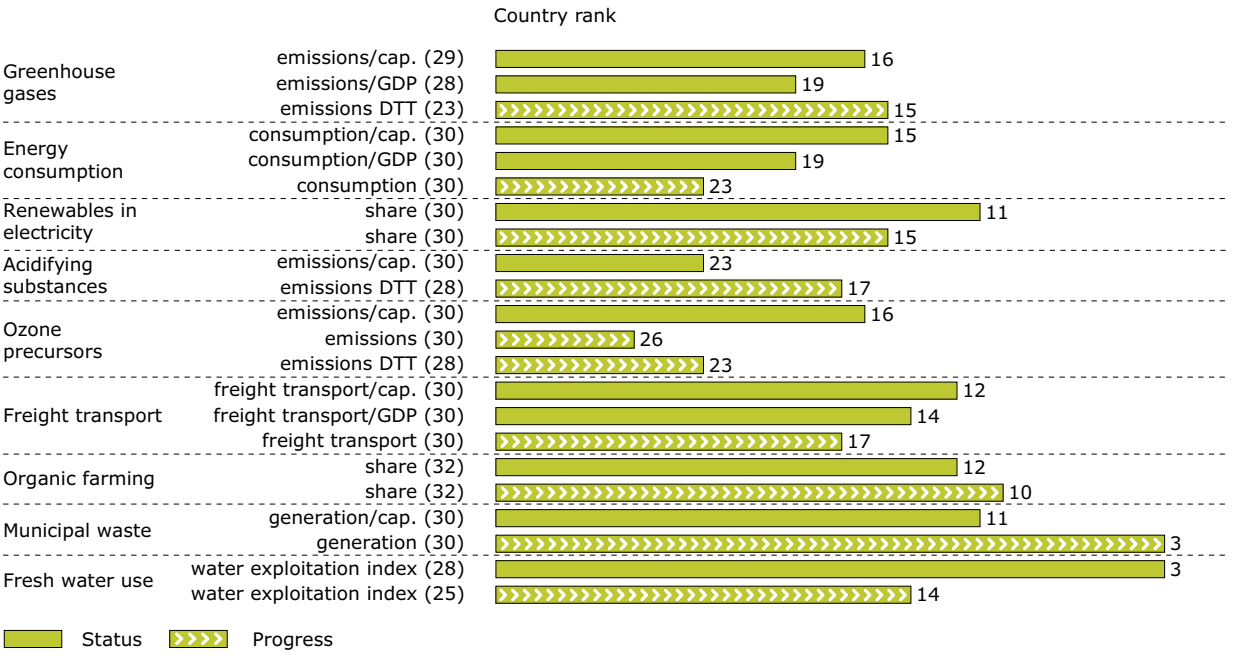
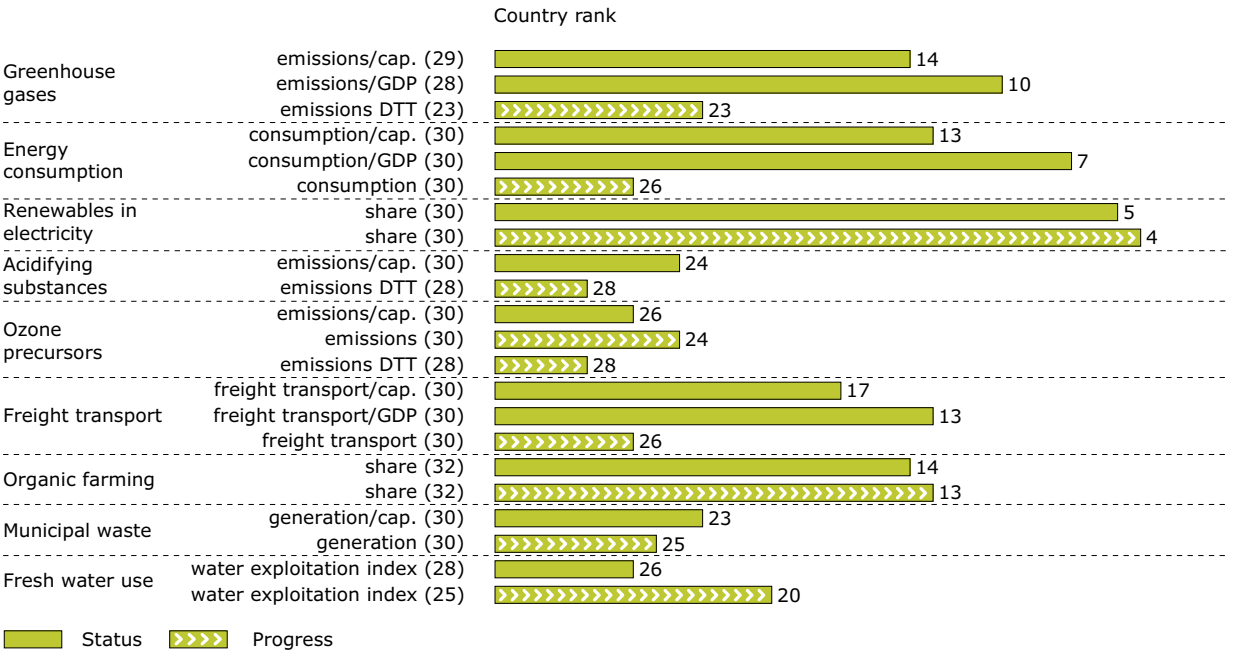
Slovenia



Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Spain



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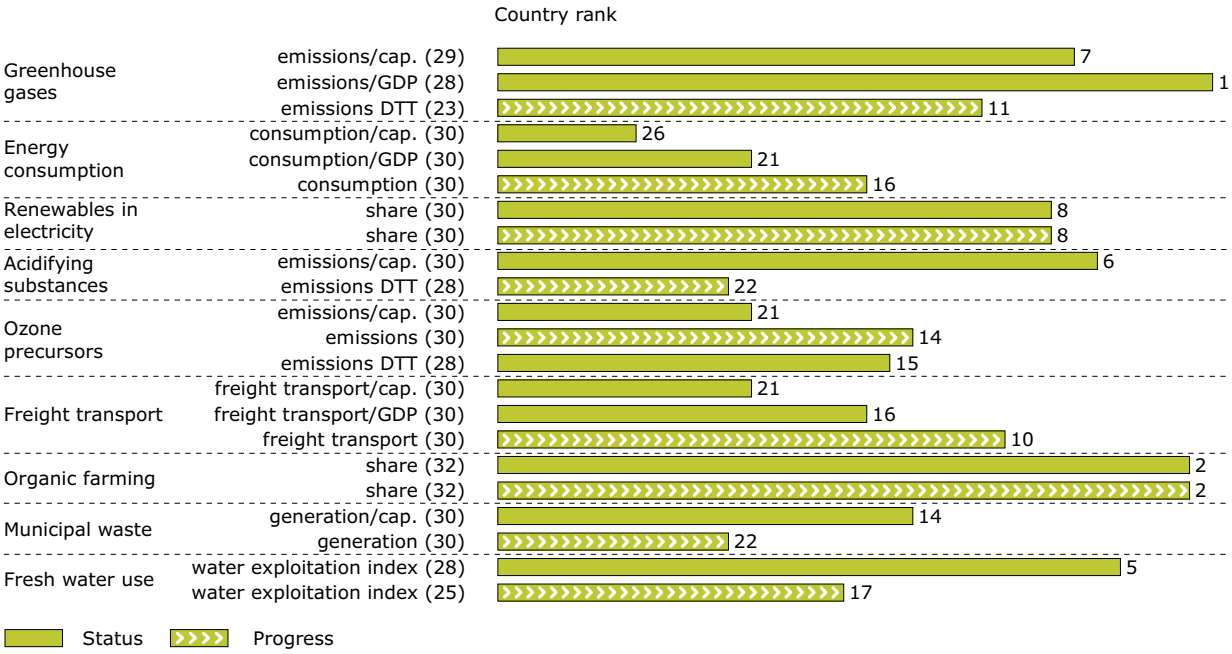
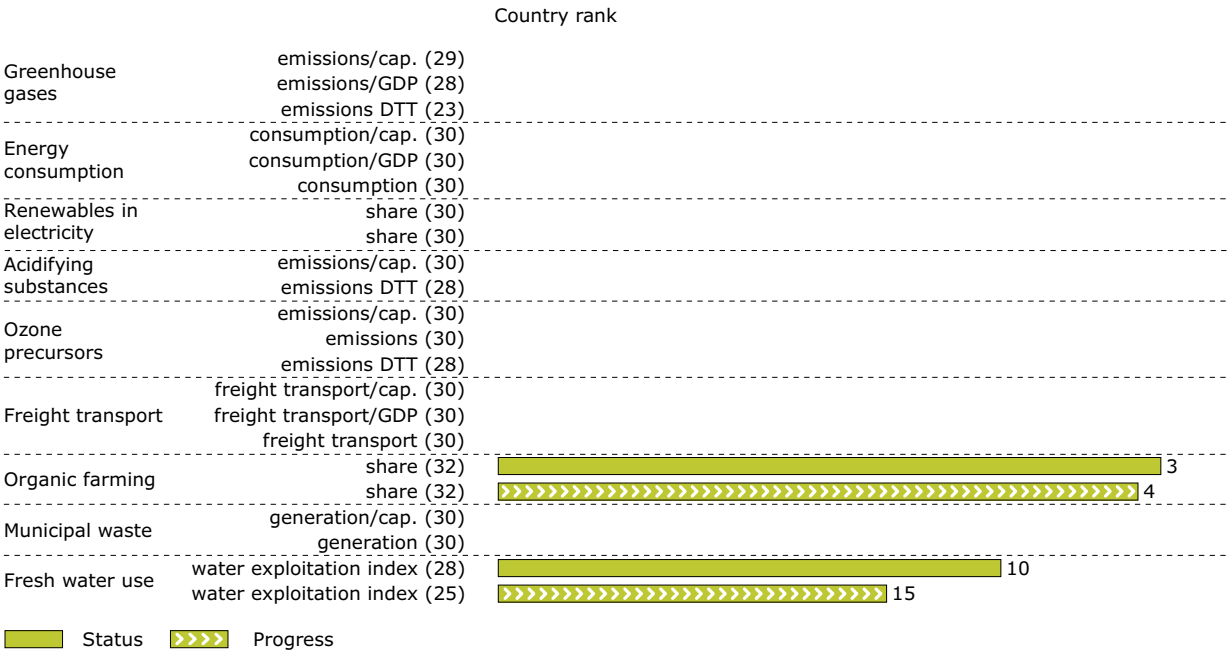
Sweden



Note: Ranks: low rank indicates good performance (number in brackets indicates total number of countries ranked). DTT indicates a distance-to-target analysis.

Switzerland



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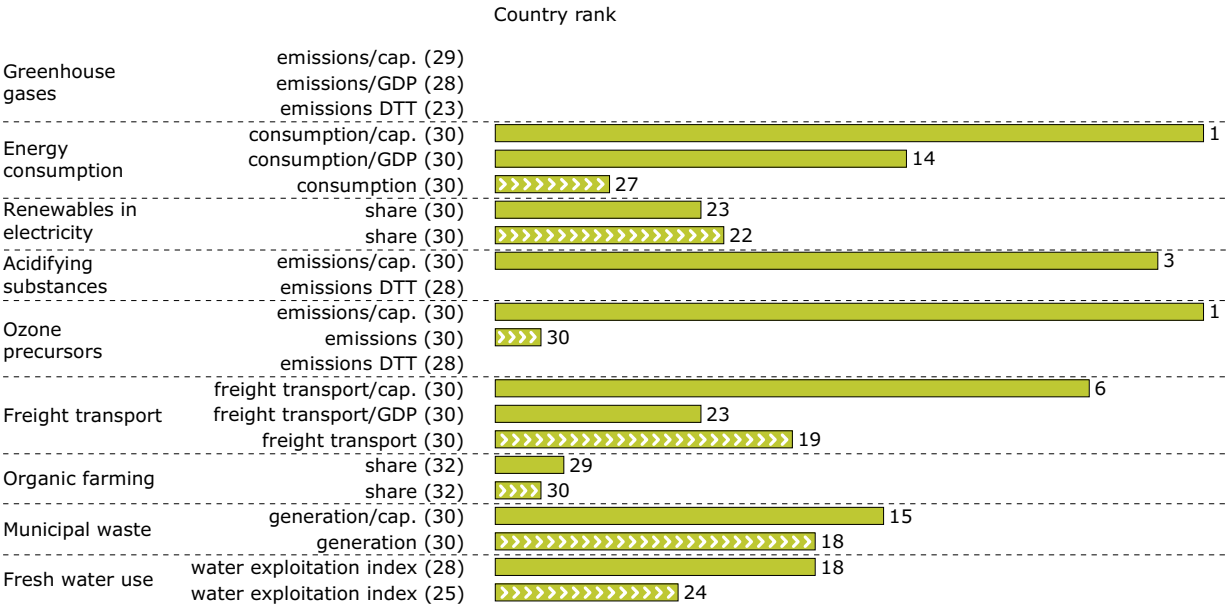
Turkey



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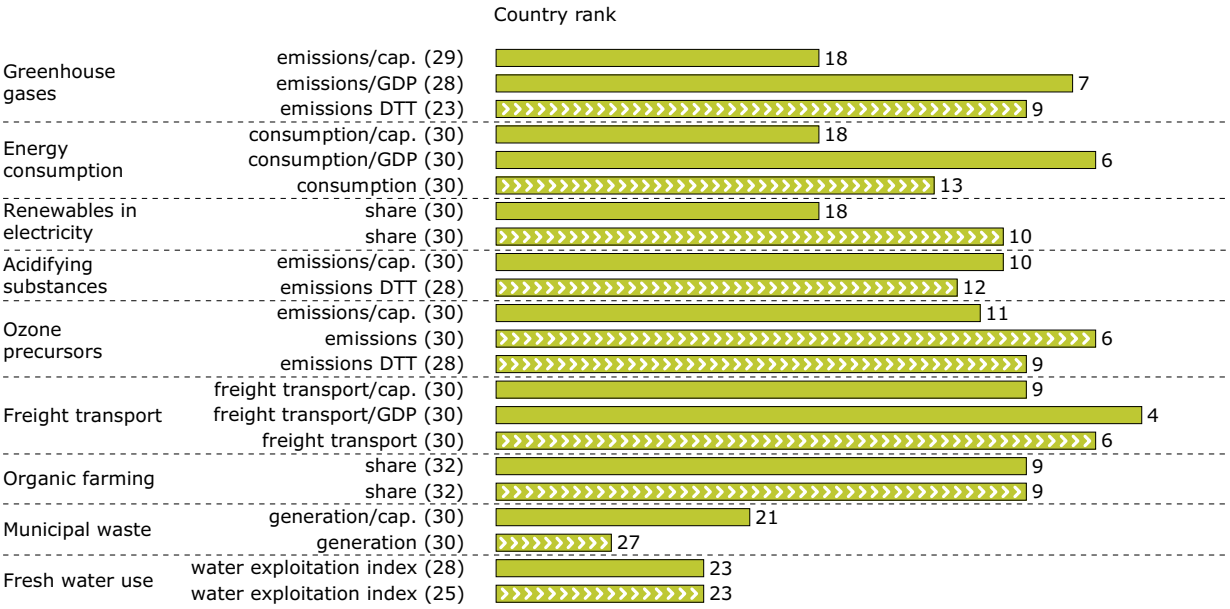
United Kingdom



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