



# *Measuring progress towards a more sustainable Europe*

*Sustainable development indicators for the European Union*

DATA 1990-2005



EUROPEAN  
COMMISSION



THEME  
General  
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# Foreword

In 2001 the European Council at Gothenburg launched a broad strategy for sustainable development. In 2002 this strategy was extended to include the external dimension, confirming the Union's leading role in the run-up to the 2002 Johannesburg World Summit.

The European Union is firmly committed to sustainable development, based on balanced economic growth and price stability, a competitive social market economy, a top level of education and social progress, and an advanced protection and improvement of the environment. The renewed Lisbon Agenda is an essential component of the overarching objective of sustainable development, allowing the EU to use the motor of a more dynamic economy to fuel a wider social and environmental ambition. The synergies between the two strategies will enable Europe to move towards an increasingly dynamic and sustainable society.

In order to ensure that the sustainable development strategy underpins all European Union work, it contains a number of specific goals and objectives. Monitoring and measuring progress towards these targets and objectives are important elements of the strategy. Previous Eurostat publications assessed the list of sustainable development indicators proposed by the United Nations in the European context. Building on this base, and drawing on the extensive knowledge and experience of national experts, Eurostat has developed a set of indicators specifically geared towards monitoring the EU strategy. In early 2005 this work was formally endorsed by the European Commission.

These indicators form the basis of the current publication, which should be seen as the first step in the assessment of progress towards the objectives and targets of the EU strategy. The indicators presented cover a very wide range of topics and I hope will contribute to public awareness of the issues raised and feed into the current discussions on the review of the strategy.



Joaquín Almunia  
Commissioner for Economic and Monetary Affairs

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# Introduction

The goal of sustainable development concerns all citizens of the European Union, and indeed of the whole world. It is about ‘a society which delivers a better quality of life for us, for our children, and for our grandchildren’. It implies the integration of the economic, social and environmental dimensions of our society, and ‘requires that economic growth supports social progress and respects the environment, that social policy underpins economic performance, and that environment policy is cost-effective’<sup>1</sup>.

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<sup>1</sup> ‘A sustainable Europe for a better world: A European Union strategy for sustainable development’, COM(2001) 264.

Sustainable development is a fundamental objective of the European Union, enshrined in its Treaty<sup>2</sup>. The Union’s commitment to sustainable development at the first Earth Summit in Rio de Janeiro in 1992 ultimately led to an EU-wide sustainable development strategy (SDS), which was adopted by the Gothenburg European Council in June 2001. Measuring progress towards sustainable development is an integral part of the strategy, and with this in mind, the European Commission adopted a set of sustainable development indicators (SDIs) in February 2005.

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<sup>2</sup> Article 2 of the Treaty on European Union.

This document, besides describing the set of indicators for monitoring the implementation of the strategy, is primarily aimed at providing a first progress report on the current state of play in the implementation of the strategy. The trends derived from the analysis of indicators are assessed against policy objectives to inform the general public and decision-makers about achievements, trade-offs and failures in attaining the commonly agreed objectives of sustainable development. This document focuses on quantitative trends, restricting the analysis to the set of indicators commonly adopted in February 2005, and in this way provides both a complement and a useful backdrop to the policy analysis provided in the Commission’s communication on the review of the sustainable development strategy, and the associated stocktaking staff working paper. This chapter sets the context for this analysis by retracing the steps in the development of Eurostat’s work on sustainable development indicators, providing the policy context, and describing the framework adopted for SDIs as well as the approach used in this report for the assessment and analysis of trends.



## 1. Historical background: the early stages of Eurostat work on sustainable development indicators

In 1996, the United Nations Commission on Sustainable Development (UNCSD) proposed a list of 134 indicators<sup>3</sup>, defined by reference to the principles and policy guidance provided by Agenda 21, to be tested in selected countries. In 1997, as a contribution to the UN official international testing phase, Eurostat produced a pilot study, 'Indicators of sustainable development'<sup>4</sup>, based on the UN list, containing 46 European indicators. In 1998, Eurostat also hosted a meeting with the European countries which were testing the UN list of indicators, to review progress and present results with the aim to advance the methodological understanding of the way in which SDIs were being developed and used across the Member States.

<sup>3</sup> *Indicators of sustainable development: framework and methodologies*, United Nations, New York, 1996.

<sup>4</sup> *Indicators of sustainable development — A pilot study following the methodology of the United Nations Commission on Sustainable Development*, European Communities, Luxembourg, 1998.

<sup>5</sup> *Measuring progress towards a more sustainable Europe — Proposed indicators for sustainable development*, European Commission, Luxembourg, 2001.

<sup>6</sup> The Statistical Programme Committee (SPC), which is chaired by Eurostat, brings together the heads of Member States' national statistical offices. The SPC discusses the most important joint actions and programmes to be carried out to meet EU information requirements. It agrees a five-year programme, which is implemented by the national authorities and monitored by Eurostat.

<sup>7</sup> 'Sustainable development indicators to monitor the implementation of the EU sustainable development strategy', communication from Mr Almunia to the Members of the Commission, SEC(2005) 161.

<sup>8</sup> 'A sustainable Europe for a better world: A European Union strategy for sustainable development', COM(2001) 264.

As a result of the international testing phase, the United Nations Department of Economic and Social Affairs opted for a revision of the indicator list. The overall framework and structure of the SDI set were adapted, resulting in a reduced but more policy-oriented set of selected indicators. In 2001, drawing upon and extending the UN revised list of 59 core SDIs, a second publication<sup>5</sup> was issued by Eurostat, containing some 63 indicators.

In September 2001, the Statistical Programme Committee<sup>6</sup> established a task force to develop a common response from the European statistical system to the need for indicators on sustainable development. The task force, originally including experts from Finland, France, Germany, Italy, the Netherlands, Sweden, the United Kingdom, Norway and the Czech Republic, quickly expanded to include Belgium, Denmark, Spain, Luxembourg, Austria, Switzerland and Estonia. The task force, comprising statisticians, researchers, members of national governments, and representatives from other European Commission services, met between April 2002 and April 2005. The set of indicators developed by the task force was deliberated on and endorsed by the Commission in February 2005, in a communication<sup>7</sup> which introduced the conceptual framework and the commonly agreed set of SDIs.

The present report builds on Eurostat's previous experience and on recent policy developments to provide a first analysis of this set of EU sustainable development indicators.

## 2. Political background: the EU sustainable development strategy

Since the adoption of the strategy in 2001, the EU has made additional commitments which have been taken into account when developing the set of SDIs. These are primarily the conclusions of the European Council held in Barcelona on 15 and 16 March 2002 and the declaration and plan of implementation of the World Summit on Sustainable Development (WSSD) which took place in Johannesburg between 26 August and 4 September 2002.

### 2.1. The EU strategy

In 2001, the European Commission attempted to translate the vision of sustainable development into an operational strategy<sup>8</sup>. This strategy, which was endorsed by the Heads of States or Government at their meeting in Gothenburg on 15 and 16 June 2001, sets out a broad vision of what is sustainable and identifies six trends that are not sustainable. Actions should focus on:

1. limiting climate change and increasing the use of clean energy;
2. addressing threats to public health;
3. managing natural resources more responsibly;
4. improving the transport system and land-use management;
5. combating poverty and social exclusion; and
6. dealing with the economic and social implications of an ageing society.

The strategy also sets out a commitment to regular monitoring, stating that it will be 'comprehensively reviewed at the start of each Commission's term of office.'





In 2002 at Barcelona, recognising the importance of both internal and external factors, the European Council added an external dimension to the strategy, committing the EU to take a leading role in the pursuit of global sustainable development. The Council endorsed a communication<sup>9</sup> outlining the following three main objectives: harnessing globalisation — trade for sustainable development; fighting poverty and promoting social development; and sustainable management of natural and environmental resources. In addition, the European Council adopted eight explicit commitments in support of the Monterrey consensus on financing for development<sup>10</sup> aimed at achieving the millennium development goals<sup>11</sup> adopted by the UN in 2000.

## 2.2. The plan of implementation of the Johannesburg World Summit on Sustainable Development<sup>12</sup>

Within the framework of the 2002 World Summit on Sustainable Development, the Johannesburg declaration and the plan of implementation reaffirmed and built upon the 1992 Rio commitments, highlighting issues such as poverty and environmental protection but also strengthening commitments in areas such as production and consumption patterns, chemicals, biodiversity, water and energy and emphasised the role of civil society and the benefits of partnership.

As stated by the Council in Brussels in March 2003, the EU is committed to translating these commitments into concrete actions. Most of the priority issues of the plan of implementation were already included in the EU measures on internal or external sustainable development. The main additions refer to sustainable production and consumption, corporate responsibility and participation.

## 2.3. Reviewing the strategy

In February 2005, the European Commission published a communication<sup>13</sup> paving the way for a review of the sustainable development strategy. Later, in June, the European Council approved the Commission's draft declaration on guiding principles for sustainable development<sup>14</sup> which will underpin the reviewed strategy.

The strategy is now under review within the EU institutions and the role of the present report is to provide a quantitative analysis to support this process, as well as to inform the general public about progress achieved since the strategy was adopted in Gothenburg.

## 3. Technical background: the EU framework for SDI

The framework has been conceived to provide a clear and easily communicable structure for the SDIs. Tight policy linkages assure strong user relevance and effective utilisation of indicators in decision-making. The framework is therefore based on priority policy issues, while being flexible enough to adjust to possible changes in these priorities and objectives, bearing in mind that new issues could emerge as a result of the review of the strategy. The framework follows a hierarchical approach where indicators are ranked in three levels.

The set of indicators comprises 155 indicators, of which 34 are not yet feasible (see 'best-needed indicators' in Section 3.4 below) and 11 others are replaced by proxies. It makes maximum use of existing indicator initiatives (see Annex 1), such as those of the UNCSD and the OECD, and various EU initiatives including the structural indicators, the Laeken indicators, indicators monitoring the Cardiff integration process (e.g. for agriculture, energy, transport), and the core set of indicators of the European Environment Agency. There is a particularly strong link with structural indicators, which have been identified throughout this report with the aid of their logo.

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<sup>9</sup> 'Towards a global partnership for sustainable development', COM(2002) 82.

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<sup>10</sup> [http://www.un.org/esa/sustdev/documents/Monterrey\\_Consensus.htm](http://www.un.org/esa/sustdev/documents/Monterrey_Consensus.htm)

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<sup>11</sup> <http://www.un.org/millenniumgoals/>

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<sup>12</sup> <http://www.johannesburgsummit.org/html/documents/documents.html>

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<sup>13</sup> 'The 2005 review of the EU sustainable development strategy: Initial stocktaking and future orientations', COM(2005) 37.

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<sup>14</sup> 'Draft declaration on guiding principles for sustainable development', COM(2005) 218.



### 3.1. A theme framework

The hierarchical theme framework comprises the six priority areas of the 2001 strategy<sup>15</sup>, together with global partnership (from the 2002 communication on global partnership), and the themes on production and consumption patterns and good governance derived from the WSSD plan of implementation. The theme on economic development highlights the economic dimension of sustainable development in the framework and bridges it to the Lisbon process.

The 10 themes are:

1. Economic development
2. Poverty and social exclusion
3. Ageing society
4. Public health
5. Climate change and energy
6. Production and consumption patterns
7. Management of natural resources
8. Transport
9. Good governance
10. Global partnership.

The themes are further divided into sub-themes and ‘areas to be addressed’. The sub-themes usually monitor the progress towards the headline objectives while the ‘areas to be addressed’ support a more detailed and diversified analysis of background factors in each theme. In some cases the sub-themes also address so-called ‘slow burning’ concerns that may need a very long time to reverse.

### 3.2. A pyramid of indicators

The hierarchical framework lends itself to a pyramid of indicators, each level being used to match the needs of different types of users. The three levels of indicators are the following.

- Level I consists of a set of 12 high-level indicators allowing an initial analysis of the theme development. These indicators are aimed at a high-level policy-making and general public and can therefore be seen as a set of ‘headline’ indicators.
- Level II corresponds to the sub-themes of the framework and, together with Level I indicators, monitors progress in achieving the headline policy objectives. These indicators are aimed at evaluation of the core policy areas and communication with the general public.
- Level III corresponds to the areas to be addressed, in other words, various measures implementing the headline objectives, and facilitates a deeper insight into special issues in the theme. Several Commission communications describe specific areas to be addressed<sup>16</sup> for several of the themes. These indicators are aimed at further policy analysis and better understanding of the trends and complexity of issues associated with the theme or inter-linkages with other themes in the framework. They are intended for a more specialised audience.

The identification of appropriate indicators is an iterative process. As the Commission is committed to regularly review the strategy, this will result in revision of the indicator set, to adapt to new needs, which may become apparent following the review.

### 3.3. Scope of sustainable development indicators

The set of SDIs — consisting of 12 headline, 45 core policy and 98 analytical indicators — forms a basis for regular monitoring of progress in the headline objectives of the sustainable development strategy. A majority of the level I and II indicators (86 %) address more than one dimension and 33 % can be considered as three-dimensional, addressing economic, social and

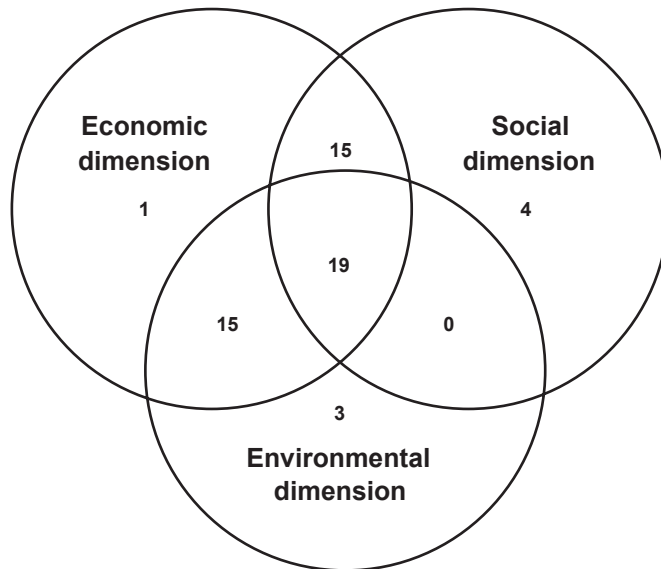
<sup>15</sup> ‘A sustainable Europe for a better world: A European Union strategy for sustainable development’, COM(2001) 264.

<sup>16</sup> See, for example, the ‘priority areas for action’ described in the sixth Community environment action programme (Decision No 1600/2002/EC of the European Parliament and of the Council).



environmental aspects of the issue simultaneously (Figure 1)<sup>17</sup>. The main weakness concerns the lack of indicators measuring both social and environmental dimensions.

<sup>17</sup> The allocation of indicators across dimensions involves some degree of subjectivity. The classification given here is for illustration only.



**Figure 1.**  
**Integration of economic, social and environmental dimensions – Number of indicators of levels I and II**

### 3.4. 'Best available' and 'best needed' indicators

The sustainable development strategy and the relevant EU policy documents encompass several priority areas for which no information or only partial information is currently available. To overcome this technical constraint and assure the production and compilation of the necessary data for policy-making in a longer time frame, the indicators were divided into two categories, 'best available' and 'best needed'.

The best available indicators refer to indicators that can be compiled on the basis of existing data. Nevertheless, some of these indicators may not be the ideal indicators for sustainable development policy issues, but serve as proxies for the ideal ones, so-called best needed indicators. Some of the indicators may also be classified as best needed due to data quality problems. Consequently, the best needed indicators are indicators for which:

- data and/or methodology do not yet exist;
- data exist, but the quality is poor or unknown or does not allow publication;
- data exist, but the breakdowns needed are not yet available.

Depending on the indicator, these categories call for different kinds of development efforts relating to concepts, methodologies and data collection procedures. The Commission, in cooperation with the European statistical system and the research community, will investigate the feasibility of the best needed indicators and will report on progress in ensuring the availability of those indicators which are feasible. This development work forms a considerable task that will contribute substantially to further improve the homogeneity of the set of indicators.



## 4. Contents of the report: approach adopted in the 2005 publication

The main aim of this report is to provide a quantitative analysis of trends in the various sustainable development themes. The emphasis is very much on visualisation of trends, with graphs and figures being presented rather than the raw data. The actual figures can be consulted and downloaded from the Eurostat SDI website (<http://europa.eu.int/comm/eurostat/sustainabledevelopment>).

### 4.1. The general structure

The structure of the report follows the 10 themes of the SDI framework. In each chapter, devoted to one of the themes, information is structured in the same way, starting with a theme overview containing a policy background, an assessment of changes, and an indication of why the indicators within this theme were selected, as a coherent set. The section on 'main changes' provides a visual assessment of the main changes since the strategy was adopted (see Box 0.1): are the changes favourable in the context of sustainable development objectives, unfavourable, has there been no significant progress, or is there insufficient data available to provide an assessment? In every chapter, the main policy objectives for each theme are summarised in a text box. Additional text boxes also make a link to other important indicator initiatives when relevant, providing useful references across chapters. Following the theme overview, the selected individual indicators are analysed, following a common presentation. Methodological notes are provided at the end of each chapter.

#### Box 0.1: Evaluation of changes

The evaluation of changes for each theme is usually made with reference to 2000 as the base year, in order to assess the changes which have occurred since the adoption of the EU strategy. When data for the most recent years are not available, this would lead to periods of time which are too short to allow a proper evaluation of the direction and magnitude of the changes. In such cases, it is necessary to use an earlier reference year, which is specified in a footnote.

Evaluations do not include future projections — future or very recent policy developments are not taken into account. What is evaluated is the relative direction of changes since the adoption of the strategy, up to the latest year for which data are available, in the light of sustainable development objectives; it is not an absolute assessment of whether the current situation is sustainable or not.

The assessment is made on the basis of quantitative rules, to ensure a consistent approach across all indicators. A change is assumed to be significant (favourable or unfavourable) if the

average annual change is greater than 1 % in absolute terms. If it is between 0 and 1 % (positive or negative), it is assumed that there has been no significant progress.

When there is a clear quantitative target associated with a policy objective, the distance to this target is taken into account in the evaluation, by measuring the distance to the theoretical linear path in the last year for which data are available. When the target has been set in the period corresponding to, or after the last measurement year, it is not taken into account in the evaluation. These rules are by nature over-simplistic and arbitrary but they are useful in providing a simple, transparent, and consistent approach. They also contribute to simplify the debate by focusing on the rule rather than the evaluation of each indicator.

The assessment of changes has been undertaken by Eurostat, with the assistance of experts from other Commission DGs and from the SDI task force.

### 4.2. Data coverage

The data used for the analysis were extracted from the Eurostat NewCronos database in June and July 2005. As far as possible they cover the period starting in 1990, up to the latest year for which data are available. To tighten the information presented in this report, a subset of indicators was selected for detailed presentation, including all available level I and level II indicators,



but leaving out a few level III indicators for which one of the following points was true: (1) they did not provide essential information for the selected theme; or (2) limited data availability did not allow an adequate analysis.

Data usually refer to current EU Member States only. Evaluations are provided for EU-25 and EU-15 aggregates as far as possible. Available data for candidate countries and countries of the European Economic Area are disseminated through the SDI website.

Most of the data used to compile the indicators come from the collection of regular statistics from the European statistical system, but some data were extracted from databases outside Eurostat, either from other Commission services or from external sources.

### 4.3. Individual indicator presentation

A common presentation has been adopted for each selected indicator, introducing its definition, relevance, analysis and potential inter-linkages. The analysis of individual indicators typically focuses on the evolution at EU level, while headline indicator sections also include an analysis at country level. The breakdown of countries is also presented for level II and III indicators when the poor availability of data does not allow the compilation of an EU aggregate. In general, one or more graphs are provided to show the change in the indicator from 1990 as far as possible, or from the earliest year available after 1990. When indices are used, the preference has been to base them on 1995 wherever appropriate, but 2000 or another year has sometimes been used because of shorter time-series or due to other considerations specific to the indicator in question.

Since space sometimes also precludes the presentation of all data associated with each indicator, reference is made to the Eurostat SDI website for further information each time it brings useful insights to the analysis.

### 4.4. About inter-linkages

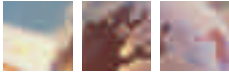
The inter-linkages section is meant to provide an illustration of the linkages between the different issues relevant to sustainable development. The linkages across the economic, social and environmental dimensions are particularly emphasised. The challenge of sustainable development is about becoming more aware of these linkages, and identifying the potential synergies and trade-offs that are an inherent part of individual actions and the policies of governments or international organisations. Once these links are identified, efforts can be devoted to minimising trade-offs and maximising synergies by choosing the appropriate actions and policies, at individual, regional, national, European and global levels. These are, however, complex issues, and knowledge is often limited. The inter-linkage sections are therefore not aimed at being comprehensive at this stage, but rather at providing a few examples for illustration. It should also be emphasised that there is not necessarily an empirical basis behind the links suggested. They could, however, be seen as hypotheses that could be further tested, for example on the basis of the data available in this report, and on the SDI website.

### 4.5. Final considerations

Finally, some limits to the approach adopted in this report should be mentioned. On the one hand, the indicators adopted are imperfect, and do not always adequately monitor the issue of concern due to data and methodological shortcomings. On the other hand, the number of indicators adopted was consciously restricted for the purposes of communication. The set of indicators presented here therefore cannot be considered as sufficient information to provide a full and comprehensive analysis of all the trends relevant to sustainable development. Nevertheless, this report should be considered as a contribution to measuring the progress towards the goals of the EU sustainable development strategy, based on commonly agreed indicators derived from official statistics. It is thus an important perspective in the search for a more sustainable development.

# Themes

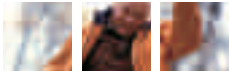
*Economic development*



*Poverty and social exclusion*



*Ageing society*



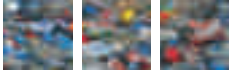
*Public health*



*Climate change and energy*



*Production and consumption patterns*



*Management of natural resources*



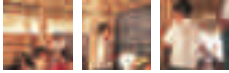
*Transport*



*Good governance*



*Global partnership*





# 1.

## Economic development



### Policy background

Sustainable development is as much about meeting the needs of the present generation as it is about enabling future generations to meet their own needs. In this context, the Gothenburg European Council concluded that to achieve sustainable development, ‘strong economic performance must go hand in hand with sustainable use of natural resources and levels of waste, maintaining biodiversity, preserving ecosystems and avoiding desertification.’

To a large extent, it is economic and labour market development that indicates the extent to which the (economic) needs of the present generation are met or not, while the level of investment influences the range of options available to future generations. Sustainable development requires a balanced economic development, characterised by sustained economic and productivity growth, high levels of knowledge and investment (both in human capital and in innovative and eco-efficient processes and products), competitive business, and full and high-quality employment, that is decoupled from environmental degradation and social exclusion.

The theme ‘economic development’ highlights the economic dimension of sustainable development and bridges it to the Lisbon process. In spring 2000, the European Council held in Lisbon set itself the ambition of becoming ‘the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion.’





<sup>18</sup> Working together for growth and jobs: A new start for the Lisbon strategy, COM(2005) 24.





The European Council of March 2005 relaunched the Lisbon strategy by refocusing on the promotion of growth and employment in Europe, 'in a manner that is fully consistent with the objective of sustainable development'<sup>18</sup>.
























## Main changes

**Table 1.1.**  
Evaluation of changes in the economic development theme (from 2000)



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

	EU-25	EU-15
<b>GDP per capita</b>		
<b>Investment</b>		
Regional breakdown of GDP		
Investment		
Net saving	:	
Total consumption expenditure		
<b>Competitiveness</b>		
Labour productivity		
Unit labour cost		
International price competitiveness		
Lifelong learning		
R & D expenditure		
<b>Employment</b>		
Employment		
Unemployment		

The signals under this theme are not overwhelmingly positive, with continued weak growth, a rather negative trend for investment, and negative trends for international price competitiveness and unemployment. Productivity growth is positive but sluggish. An increase in lifelong learning over time, and progress in the employment rate, particularly in the EU-15, are favourable trends towards sustainable development objectives.

**GDP is increasing but at a slower pace than expected**

The Union's economy grew at a relatively rapid pace in the second half of the 1990s, peaking in 2000 with more than 3 % growth compared with the previous year for real and per capita GDP. This has helped to create millions of new jobs in Europe, thus contributing to a socially more inclusive society. In response to a series of economic and other shocks that have affected the economy between mid-2000 and mid-2003, economic activity was rather sluggish in the first three years following 2000 with average annual GDP per capita growth remaining below 1.5 % in both the EU-15 and EU-25. On the other hand, it is a positive sign that disparities between regions in terms of GDP per capita have been reduced over the period 1995–2002.

This has been accompanied by investment growing more slowly than GDP, while consumption expenditure has increased at a regular pace of 1.8 % per year. Future growth prospects remain gloomy, although they have started to improve moderately.



The European Union's competitiveness potential has been put under pressure by low productivity growth rates. Another feature affecting competitiveness has been the declining real effective exchange rates since 2000 which indicates that costs and prices have moved up more strongly than in other regions of the world. In addition, investment in the knowledge-based economy has been too limited to boost labour productivity, although lifelong learning has progressed to such an extent that the Lisbon target is within reach.

Moreover, growth in labour productivity has become sluggish

### Box 1.1: Lisbon Strategy targets and objectives

The Lisbon strategy does not set particular targets for economic performance. However, a sound economy is a precondition for achieving the objectives of the strategy. That is why particular emphasis has been placed on structural reforms intended to raise the growth and employment potential of the Union. The Lisbon approach implies that:

- if the Lisbon measures are implemented against a sound macroeconomic background, an average growth rate of around 3 % per year should be a realistic prospect;
- Member States' budgets are kept close to balance or in surplus over the medium term, ensuring the long-term sustainability of public finances;
- public expenditure is redirected towards increasing the relative importance of capital accumulation (physical/human) and supporting R & D, innovation, information and communication technology.

Objectives in terms of employment, as expressed in the European employment strategy, cover the three overarching objectives of full employment, improving quality and productivity at work, and strengthening social cohesion. This means, in particular:

- an overall employment rate of 70 % in 2010 (67 % in 2005);

- a female employment rate of 60 % in 2010 (57 % in 2005);
- an employment rate for older workers (aged 55–64) in 2010 of 50 %;
- an increase by 2010 of five years in the average age at which people leave the labour market;
- availability of childcare by 2010 for 90 % of children between three years and compulsory school age, and 33 % of children under three years.

The relaunched Lisbon strategy contains a Lisbon action programme which covers three main areas:

- making Europe a more attractive place to invest in and work;
- knowledge and innovation for growth;
- creating more and better jobs.

If the action programme were fully implemented, it would be expected to increase the current EU potential growth rate bringing it closer to the 3 % objective. It would also raise employment by at least some six million jobs by 2010.

After strong increases in the second half of the 1990s, the changes in the employment rate observed since 2002 will probably not make it possible to reach the overall target of 70 % by 2010, or the intermediary target of 67 % by 2005. Moreover, the decline in the unemployment rate since the mid-1990s stopped in 2001 and since then has risen gradually from 8.4 to 9.0 % in 2004. The same tendency is observed among young people (aged less than 25 years) where the unemployment rate has grown from 17.6 to 18.6 % during the same period.

Employment growth is insufficient and unemployment is rising

### Rationale for the selection of indicators

To portray the overall situation of the European economy, a comprehensive set of indicators has been set up which focuses on key economic policy issues and priorities. Many of the selected indicators have been derived from the targets and objectives set in the framework of both the economic and employment policies (see Box 1.1). At EU level, 'Integrated guidelines for growth and jobs' for 2005–08 (see further reading) have been adopted recently by the Council in order to help Member States progress on these two priority areas as they both affect the overall economic performance of a country. Several indicators are in common with the structural indicator list (see Box 1.2) which aims to benchmark progress resulting from the implementation of the Lisbon strategy.



### Box 1.2: The structural indicators

The Lisbon European Council in March 2000 invited the Commission to draw up an annual synthesis report on the progress made towards the Lisbon objectives. This report is underpinned by a set of structural indicators, which are meant to provide an objective assessment and support the key messages of the report.

The structural indicators cover the five domains of employment, innovation and research, economic reform, social co-

hesion, environment as well as the general economic background.

In the same way as the Lisbon and the sustainable development strategies have common objectives and serve the same overarching goal of sustainable development, the set of sustainable development indicators is closely connected to the set of structural indicators. Thirty-six of the sustainable development indicators (out of 155) are also structural indicators.

The headline indicator for this theme is the 'Growth rate of GDP per capita'. Even if a very large set of factors contributes to economic development, the gross domestic product (GDP) is a widely used measure of the overall economic performance and the standard of living of a society. Its evolution per inhabitant enables comparisons by country, however it was found interesting to accompany it with an overview of regional discrepancies in GDP level, in order to show a more complete picture of the Union's economic performance. It should also be recognised that it is not just the growth rate which is important, but also its quality.

The other indicators focus on the biggest challenges to be faced by the Union for attaining balanced economic growth which include the following.

- **Investment:** a key to increasing productivity is investment, which is interdependent with the economy's growth capacity. Due to lack of information, the selected indicators do not look yet at the efficiency of investments.
- **Competitiveness:** actual level of competitiveness is assessed through unit labour costs, that is the total labour costs in relation to the output. Progress in the levels of investment in human capital, knowledge and technology (lifelong learning, R & D, innovation) enable some insights into how competitiveness may be affected in the future. An adequately skilled labour force and well informed citizens are crucial to make the turn to sustainable production and consumption patterns.
- **Employment:** employment is a key economic and social issue as it contributes to both quality of life and social inclusion, which are among the final objectives of sustainable development. Sustainable growth should lead to a rise in employment and vice versa. Therefore, a special focus is on employment and unemployment in the Union.

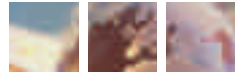
To better cover this theme, other issues that should be addressed include technological development, pricing, and other environmental economic aspects.

#### Further reading on economic development in Europe:

Commission staff working document, in support of the report from the Commission to the Spring European Council, on the Lisbon strategy of economic, social and environmental renewal, SEC(2005) 160

Integrated guidelines for growth and jobs (2005–08), COM(2005)141

EC economic data pocketbook — Quarterly publication, Eurostat



Headline indicator



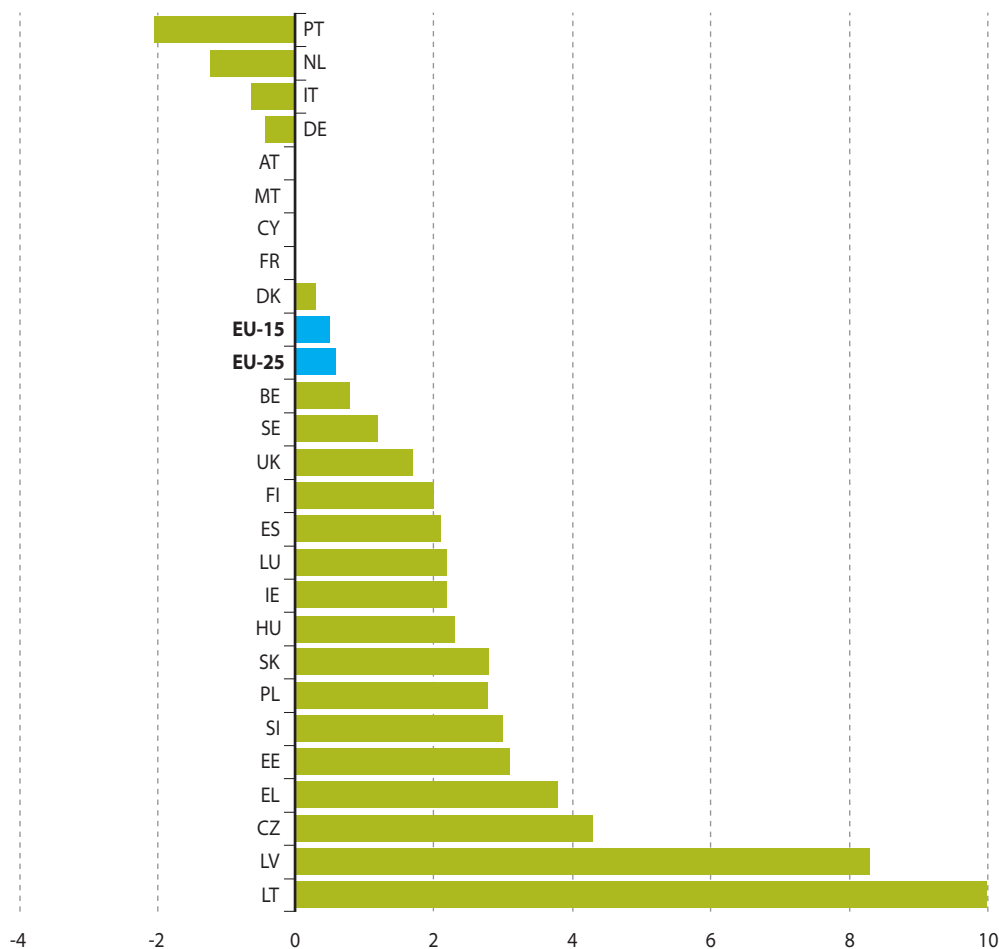
## GDP per capita



**Definition:** The indicator is defined as the **growth rate of gross domestic product per inhabitant** at 1995 constant prices (referred to as real GDP per capita), and expressed as the percentage change on the previous year. GDP is a measure for the economic activity, defined as the value of all goods and services produced less the value of any goods or services used in their creation.

While the level of GDP (per capita) is a widely used measure of the economic performance and the standard of living of a society, the growth rate of this statistic is a measure of the dynamism of the economy, of its ability to catch up with other, richer economies, and its capacity to create new jobs. The growth rate is calculated from figures at constant prices since these give volume movements only (price movements will not inflate the growth rate). A sufficiently high GDP growth rate means that society is generating additional economic resources to meet the (growing) economic needs of the present generation, to invest in view of higher returns in the future, or to address social and environmental concerns. It is, however, important to emphasise that, if GDP per capita is a proxy of citizens' material wealth, it cannot be considered as a holistic measure of their well-being. For instance, a growing production can generate pollution or health problems that lead to an increase in various expenditures, both having a positive impact on the GDP, but not contributing to the quality of life.

### Indicator relevance



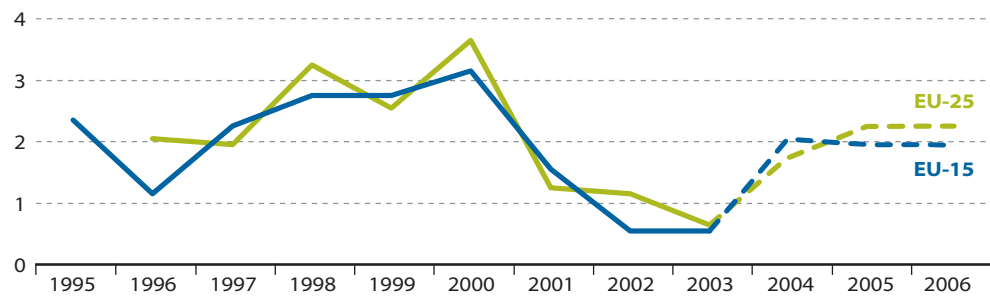
**Figure 1.1.**  
Growth rate of real  
GDP per capita  
(2003), %

Source: Eurostat.



**Figure 1.2.**  
Growth rate of real  
GDP per capita (%)

Source: Eurostat.



## Analysis

<sup>19</sup> 'Commission staff working document in support of the report from the Commission to the Spring European Council, on the Lisbon strategy of economic, social and environmental renewal', SEC(2005) 160.

The growth performance of the European Union has lagged far behind the original expectations of the 2000 Lisbon strategy. In the last decade, a series of economic and other shocks continued to affect the Union's economy until mid-2003<sup>19</sup> resulting in a per capita GDP growth rate at around 0.5 percentage point only in 2003. Forecasts for the period 2004–06 indicate a recovery to around 2 % growth per year, close to the levels of the mid-1990s.

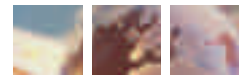
Although the new Member States are still lagging behind the EU-15 countries in terms of GDP per capita, some of the former, and particularly Latvia and Lithuania, have higher growth rates, well above the EU average, due to high export rates.

When looking at the international position of the European Union, GDP per capita is around 30 % below the US level, mainly 'because fewer people are in employment, and those that are tend to work fewer hours. While this might partly reflect a greater preference for leisure, it is often simply a question of whether it pays to work. Many people have been effectively encouraged to leave the labour market or to remain inactive, for example through relatively generous or loosely enforced benefit systems, or through incentives to take early retirement. When they do seek work, they are faced with the prospect of high labour taxes as well as withdrawal of benefits<sup>20</sup>.

<sup>20</sup> 'Commission recommendation on the broad guidelines of the economic policies of the Member States and the Community (for the 2003–05 period)', COM(2003) 170.

## Potential linkages

An increase in GDP per capita has links with most other themes of sustainable development. Employment growth is a key component of GDP growth. GDP growth can contribute to the sustainability of public finances. It may also help to mitigate poverty and social exclusion as sufficient growth provides additional economic resources to alleviate poverty. Its increase reflects growth in production and consumption as well as, at current levels of technology, a more intensive exploitation of resources, both domestically and abroad, and if not counterbalanced by an increase in resource productivity may have a detrimental influence on climate change and energy, on production and consumption patterns, on transport and on global partnership. On the other hand, some studies suggest that a higher GDP may be linked with a change in preferences for greener products and more concern for the environment.



Investment



## Regional breakdown of GDP per capita



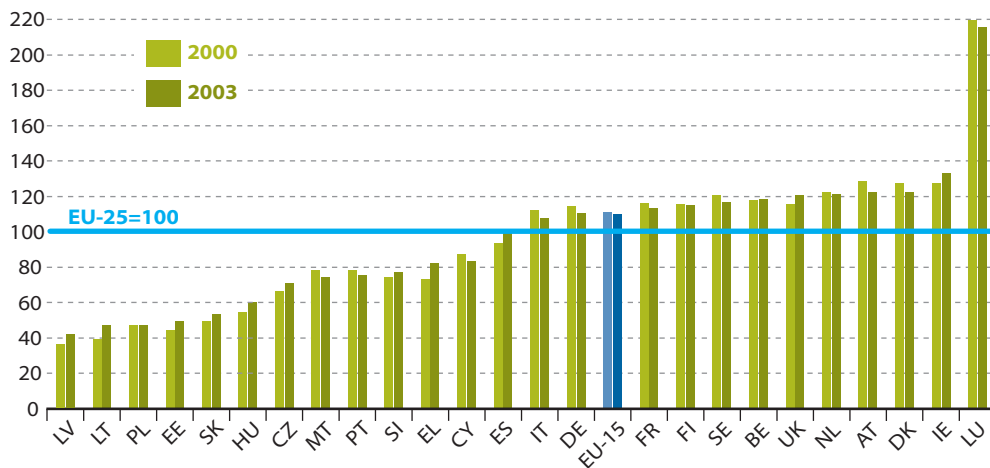
**Definition:** The indicator is expressed as the **percentage of EU-25 average of gross domestic product per capita in purchasing power standards (pps)** by region.

For each region the volume index of GDP per capita in pps is expressed in relation to the EU-25 average which is set at 100. For the calculation of regional GDP at NUTS 2 level, the same purchasing power parity is used for all regions of a given country (see ‘Methodological notes’). If the index of a region is higher than 100, this region’s level of GDP per capita is higher than the EU average and vice versa.

The indicator is intended for spatial comparison of GDP as pps are a unit enabling such analyses by eliminating differences in purchasing power created by different price levels, between countries. The volume index also makes it possible to estimate the distance to the EU-25 average and thus to identify vulnerable regions.

### Indicator relevance

Decreasing regional disparities is an important goal of the European Union and an objective of the sustainable development strategy. The budget allocated to the Community’s regional policy is significant and the Agenda 2000 reform of the Structural Funds focuses on three priority objectives, of which Objective 1 promotes the catching-up of the economies of regions whose development is lagging behind. Only those whose per capita GDP is less than 75 % of the Community average are eligible. Basic infrastructures, the development of human resources, investment in research and innovation, and the information society are the four main priority areas.



**Figure 1.3.**  
GDP per capita in pps (index EU-25=100)

Source: Eurostat.

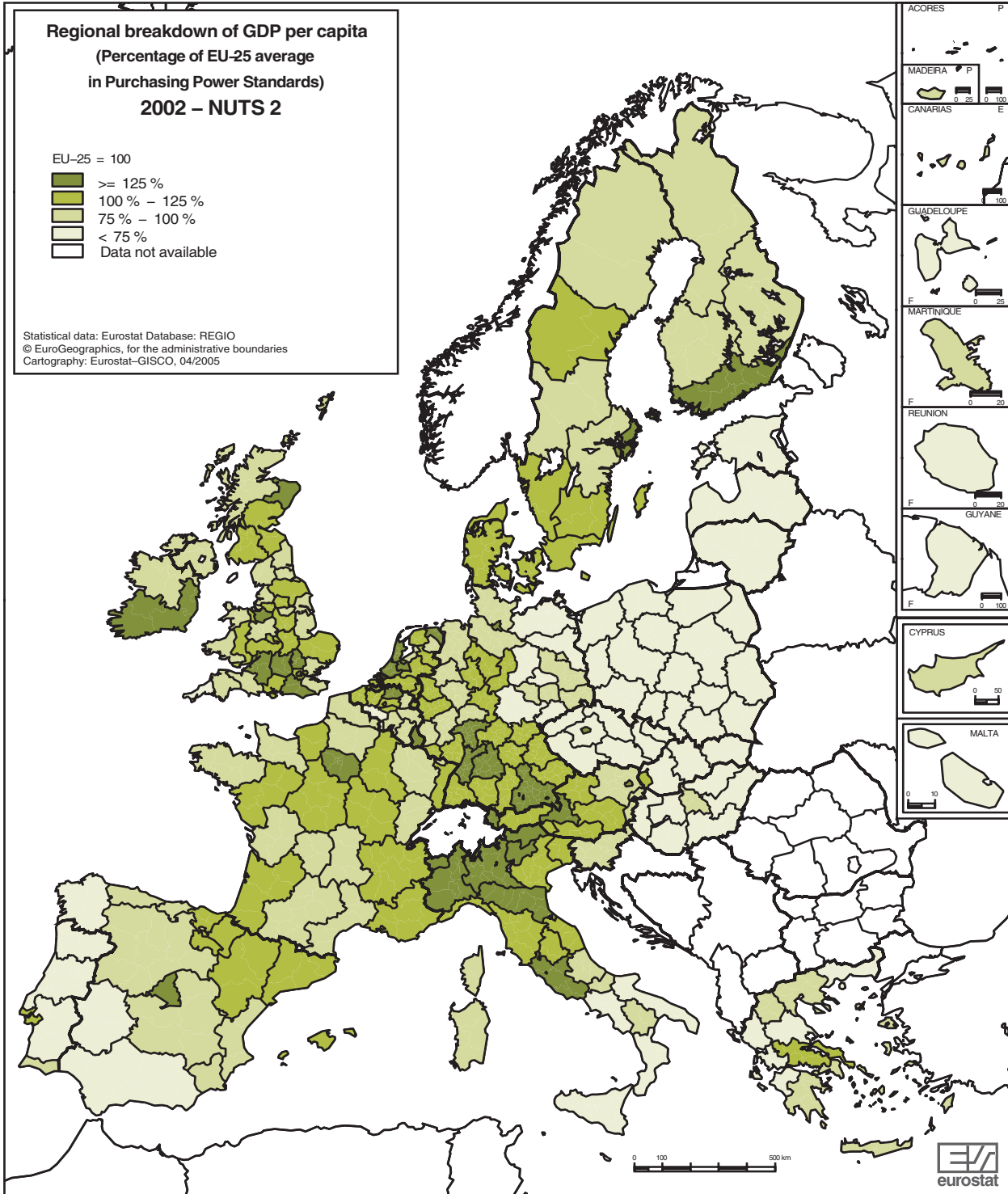
At national level, the GDP per capita in pps is lower in the EU-25 than in the EU-15. Among the EU-15 countries, only Greece, Spain and Portugal are below the EU-25 reference level while in five of the new Member States, the gap is about one-half of the EU-25 level. The situation is even worse in the candidate countries, with the exception of Croatia, who barely reach one-third of the EU-25 level. However, the difference is shrinking in almost all new and candidate countries.

### Analysis

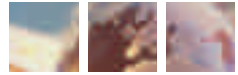


In 2002, all 24 regions (out of 254) with a per capita GDP of less than 50 % of the EU-25 average were located in the new Member States. Apart from Bratislava (120 %) and Prague (153 %), all regions above 100 % are located in the EU-15, with inner London (315 %), Brussels (235 %) and Luxembourg (213 %) taking the lead.

**Map 1.1. Regional breakdown of GDP per capita in pps in 2002 (index EU-25 = 100)**



Source: Eurostat.



Between 1995 and 2002, the following four regions improved their situation by raising their level above the EU-25 average: Bratislava (Slovakia, increasing from 94.3 to 119.7 %), Aragón (Spain, from 94.9 to 101.7 %), Derbyshire and Nottinghamshire (United Kingdom, 99.7 to 101.7 %), Herefordshire, Worcestershire and Warwickshire (United Kingdom, 99.2 to 102.3 %). On the contrary, some 19 regions have seen their level decrease from above to below the 100 reference level. Of these, seven regions are located in Germany, three in Sweden, two in Spain, France and the United Kingdom, and one in Belgium, the Netherlands and Austria.

Disparities between regions have been reduced over the period 1995–2002. The ratio between the fourth quintile (level reached by 80 % of European regions) and the first quintile (20 % of regions) has decreased from 1.77 to 1.68.

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As for GDP growth, regional GDP per capita is likely to influence employment, as well as poverty and social exclusion in providing resources to alleviate poverty. It also influences production and consumption patterns, levels of resource exploitation as well as energy and transport use. It has also close links with the level of investment and R & D expenditure. Depending on past economic development, less economically active regions could be, on the one hand, rich in biodiversity, or may, on the other hand, be affected by structural problems due to aged and therefore more polluting industries.

## Potential linkages





## Investment



## Investment

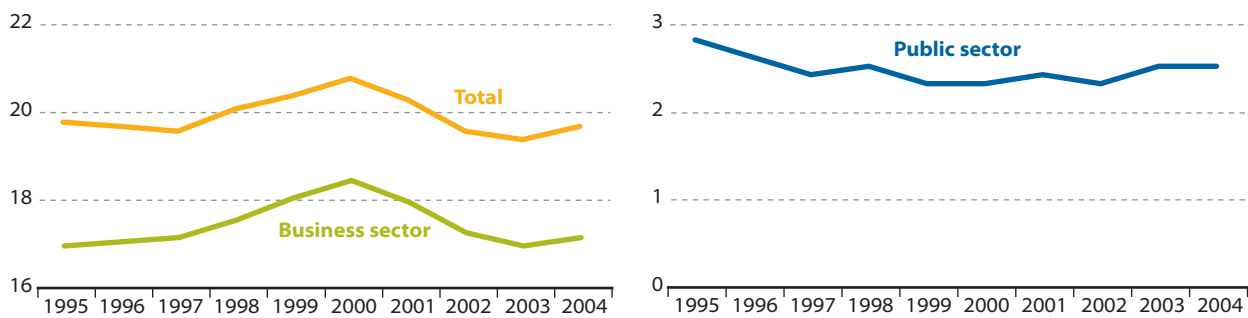
**Definition:** This indicator is defined as **total gross fixed capital formation (GFCF) expressed as a percentage of GDP**, for the public and business sector. GFCF consists of resident producers' acquisitions, less disposals of fixed assets plus certain additions to the value of non-produced (usually natural) assets realised by productive activity. GFCF includes acquisition less disposals of, for example, buildings, structures, machinery and equipment, mineral exploration, computer software, literary or artistic originals. It also includes certain additions to the value of non-produced assets realised by productive activity, covering mainly improvements to land, such as draining of marshes.



### Indicator relevance

The ratio gives the share of GDP that is used for gross investment (rather than being used for e.g. consumption or exports). Acquisitions of capital goods such as buildings, machinery and transport equipment by both private and public sectors determine to a large extent the future economic performance of a society by deepening and widening the capital stock, whether it be physical capital stock or knowledge. Therefore, together with rising labour supply, it directly impacts on potential growth rates. From a sustainable development perspective, the contribution to better jobs and improvements in eco-efficiency is crucial.

**Figure 1.4. EU-25 investment, by institutional sector (% of GDP)**



Source: Eurostat.

### Analysis

Following continuous growth between 1995 and 2000, the share of business investment — which represents by far the largest part of total investment — has decreased from 18.4 to 17.0 % of GDP between 2000 and 2004. The best performing countries over the period were Estonia (+ 3.3 %), Lithuania (+ 2.3 %) and Greece (+ 1.9 %) (see additional data on Eurostat website). Public investment declined from 3.0 % in 1995 to 2.3 % in 2000 and has since remained approximately stable at both EU-25 and EU-15 levels.

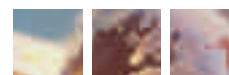
<sup>21</sup> 'Commission staff working document in support of the report from the Commission to the Spring European Council, on the Lisbon strategy of economic, social and environmental renewal', SEC(2005) 160.

Investment has remained low due to low levels of capacity utilisation in the manufacturing sector <sup>21</sup>. Promoting investment will be the result of structural changes orientated towards, for example, new, including environmental, technologies which represent an opportunity for businesses. Increasing knowledge, innovation, lifelong learning, and thus competitiveness, play an active part in reaching these goals.

### Potential linkages

From an economic perspective, an increase in investment strengthens the capacity of an economy to develop new and more efficient production processes and products, and thus contributes to the environmental dimension through improvements in the resource- and energy-efficiency of the economy. This should help to mitigate problems such as climate change and make the production and transport system more energy-efficient and cleaner.

Investment is also likely to influence both the competitiveness of European economy and employment as it would be expected to result in the creation of jobs if oriented more towards deployment of new investment goods rather than to simply replace existing stocks.



Investment



## Saving

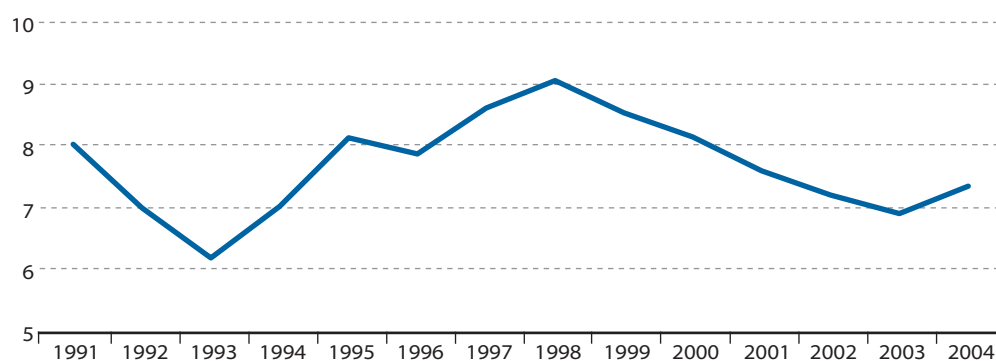


**Definition:** The indicator is defined as **net saving**, expressed as a **percentage of net national income**.

Net saving measures that are part of net national disposable income (i.e. net national income plus the balance of current transfers with the rest of the world) that is not used on consumption and may therefore be used for net investment (i.e. investment beyond just replacing depreciation) or, possibly, capital transfers to the rest of the world. Net national income equals gross national income after deduction of the consumption of fixed capital. Gross national income represents total primary income receivable by resident institutional units in return for some engagement in productive activity.

The indicator is a measure of individual wealth. Income provides both for the capacity to ‘invest’ money in goods or services (see ‘consumption expenditure’) and to save money eventually. A low level of saving can express an income shortage or a lack of confidence in the future, resulting in an incapacity or refusal to invest.

### Indicator relevance



**Figure 1.5.**  
EU-15 net saving  
(% of net national  
income)

Source: Eurostat.

While consumption expenditure (see related indicator) has grown regularly over the period 1995–2004, net saving has been regularly declining from 9.0 % of net national income in 1998 to 6.9 % in 2003. Ireland (15.3 % in 2003), Sweden (13.1 %), Slovenia (12.2 %) and Austria (11.8 %) have the highest saving rates in the EU, when Portugal has observed for the second year a negative evolution of saving (– 3.1 % in 2004) (see country breakdown on the SDI website).

### Analysis

Reflecting current and anticipated confidence in the economic and social situation, net saving is likely to be influenced by the level of employment, of poverty and social exclusion, health status, as well as anticipation on the future level of pension expenditure. It is directly linked to consumption.

### Potential linkages



## Investment



## Consumption expenditure

**Definition:** The indicator is defined as **total consumption expenditure**, expressed at **1995 constant prices**.

Consumption expenditure consists of expenditure incurred for the direct satisfaction of individual or collective needs. By definition, only private households ultimately consume goods and services, all other actors can only engage in intermediate consumption in the process of producing other goods and services. The expenditure on consumption, however, can be incurred by either private households themselves, or by non-profit-making institutions serving households (such as religious societies, sports and other clubs, political parties, etc.), or by general government, which purchases or produces goods and services and supplies them directly to private households for consumption purposes.

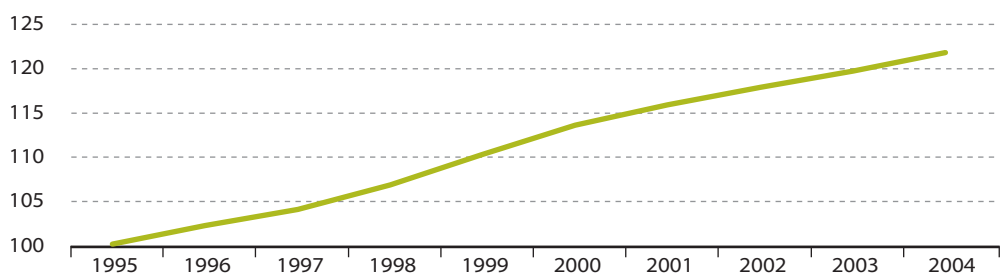


### Indicator relevance

Consumption expenditure translates consumers' expectations of the general economic situation and of their own financial situation. Consumption is usually considered as an alternative to saving. Among other reasons, delaying consumption may result from saving for later pensions, health expenditure and other precautionary reasons, but also from a lack of consumers' confidence in their current economic situation. On the other hand, high consumption shares may also reflect low incomes which do not permit households to save for future consumption. Moreover, high consumption rates (low savings rates) indicate that only limited resources are left for investment purposes, unless the economy borrows money from abroad (current account deficit).

**Figure 1.6.**  
EU-25 total  
consumption  
expenditure at  
constant 1995  
prices (index  
1995 = 100)

Source: Eurostat.



### Analysis

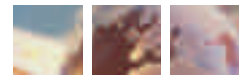
Total consumption measured at constant prices has been growing regularly since 1995, but the rate of growth has slightly reduced after 2000. While the average annual growth rate for the period 1995 to 2004 was about 2.2 % per year, it has been, since 2000, about 1.8 %. Since 2000, average annual growth rates for total consumption have been significantly higher for most of the new Member States (see additional data on the SDI website), for example for Lithuania and Latvia (+ 6.7 %), Estonia (+ 6.5 %), Hungary (+ 5.9 %) and Ireland (+ 4.4 %). Countries where the annual growth in consumption has been at the lowest levels are Germany (+ 0.4 %), Malta (+ 0.8 %) and Austria (+ 0.9 %).

Private consumption is driven by several inter-dependant factors, including disposable or expected income, price stability, and consumer confidence<sup>22</sup>. In early 2005, the latter appears to have undergone a slight decline in the euro area, at - 14 %, compared with - 13 % in 2004, but has considerably improved compared with 2003 (- 18 %). However, confidence has deteriorated strongly since 2001 (- 6 %).

### Potential linkages

An increase in consumption expenditure is likely to influence the consumption of natural resources and energy, the generation of waste, as well as transport activities, and thus counter the mitigation of climate change. However, consumption growth also has a positive influence on the general economic growth as well as on the level of investment. Finally, it is closely linked to the level of saving.

<sup>22</sup> See key indicators for the euro area, European Commission, Economic and Financial Affairs DG, available at: [http://europa.eu.int/comm/economy\\_finance/indicators/key\\_euro\\_area/t2\\_en.htm#t2](http://europa.eu.int/comm/economy_finance/indicators/key_euro_area/t2_en.htm#t2)



Competitiveness



## Labour productivity and unit labour cost



**Definition:** Labour productivity is expressed as **GDP per hour worked at 1995 constant prices.**

Unit labour cost is defined as the **ratio between the compensation per employee and the GDP or gross value added per employment.** It is measured as the percentage change on the previous year.

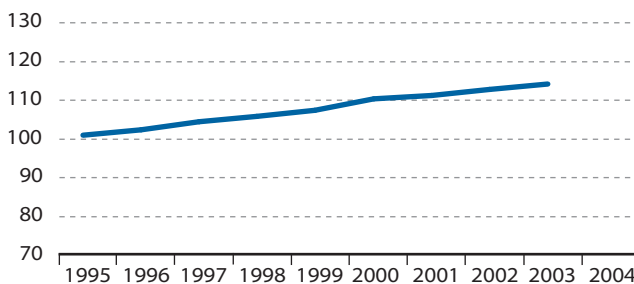
The EU suffers from a declining growth in productivity which affects competitiveness and the whole economy, especially employment. As long as GDP grows and the population of employed persons is relatively stable, this index will also inevitably grow, indicating that one hour of labour produces more wealth than in previous years. In terms of international competitiveness it is the rate of growth which is of most interest.

### Indicator relevance

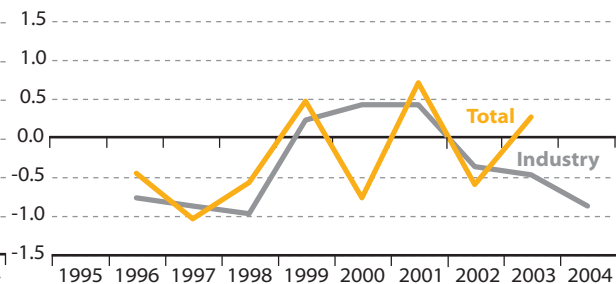
The growth rate of unit labour cost is intended to give an impression of the dynamics of the participation of the production factor labour in output value created and to show how the remuneration of employees is related to their own productivity. It is the relationship between how much each worker is paid and the value they produce through their work.

Unit labour costs link labour costs with labour productivity, and its growth rate indicates the extent to which labour is becoming more expensive or not. Declining unit labour costs indicate that labour is becoming more rewarding for employers.

**Figure 1.7. EU-15 labour productivity at constant 1995 prices, per hour worked (index 1995 = 100)**



**Figure 1.8. EU-25 unit labour cost growth (%)**



Source: Eurostat.

The average annual growth rate of labour productivity in the EU-15 has fallen to 1.2 % since 2000, compared with 1.8 % over the period 1995 to 2000. This declining growth rate can be explained in equal parts by a lower investment per employee and a slowdown in the rate of technological progress. Moreover, some of the new jobs created in the EU tend to be of low productivity.

Unit labour productivity shows a declining trend in the EU-25. Only a few years experienced a positive participation of the labour factor to the output value created. Merely 30 % of the productivity slowdown is due to a rise of employment of low-skilled people <sup>23</sup>.

### Analysis

<sup>23</sup> 'Commission staff working document in support of the report from the Commission to the Spring European Council, on the Lisbon strategy of economic, social and environmental renewal,' SEC(2005) 160.

An increase in the growth rate of labour productivity is likely to influence employment, including the average exit age from the labour force, with an impact on job strain and specific qualifications. Both variables are to be influenced by the level of education and lifelong learning, as well as R & D expenditure and innovation. Corporate and social responsibility often increases labour productivity.

### Potential linkages



## Competitiveness



# International price competitiveness

**Definition:** The indicator is defined as the **real effective exchange rate** (REER — or relative price and cost indicator) which is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) deflated by a price index or index of costs.



The specific REER used for the sustainable development indicators is deflated by nominal unit labour costs in total economy (ULCE, see unit labour cost indicator) against IC34 (EU-25 plus nine industrial countries: Australia, Canada, United States, Japan, Norway, New Zealand, Mexico, Switzerland and Turkey).

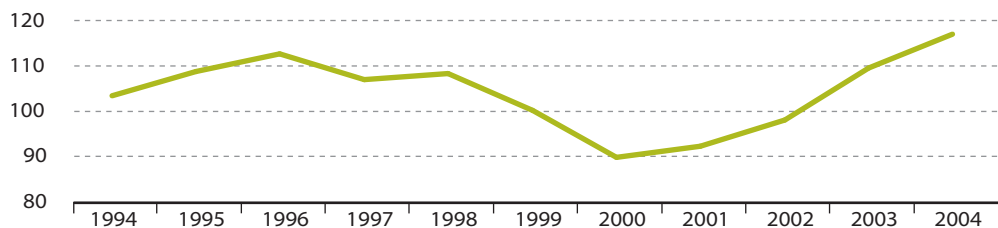
### Indicator relevance

The REER aims to assess a country's (or currency area's) price or cost competitiveness relative to its principal competitors in international markets. Changes in cost and price competitiveness depend not only on exchange rate movements but also on cost and price trends. Double export weights are used to calculate REERs, reflecting not only competition in the home markets of the various competitors, but also competition in export markets elsewhere.

A rise in the index means a loss of competitiveness.

**Figure 1.9.**  
EU-25 cost competitiveness based on ULCE (index 1999 = 100)

Source: Eurostat.



### Analysis

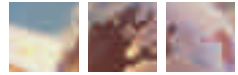
After a peak in 1996 and a low in 2000, the REER has been rising again over the last four years to reach as much as 116.8 points. This increase represents 13.6 points in comparison with 1994, but 27.2 points since 2000, and a corresponding loss of cost competitiveness. Recently, the evolution of the indicator has been influenced by the evaluation of the euro particularly versus the US dollar. The two peaks have been conditioned by the various shocks undergone by the European economy in the last decade.

In some cases, deviating price and cost trends among euro area Member States could lead to an accumulation of competitive imbalances which might ultimately hamper economic growth and therefore cause unemployment in individual Member States. In the long term, changes in relative prices and costs may be justified by changes in economic fundamentals related, for example, to a catching-up in the level of economic development, changes in non-price competitiveness factors, or changes in underlying savings and investment patterns (see investment and competitiveness indicators) <sup>24</sup>.

<sup>24</sup> See 'Quarterly data on price and cost competitiveness of the European Union and its Member States', European Commission, Economic and Financial Affairs DG, first quarter, 2005.

### Potential linkages

Fluctuations in the REER influence imports and exports of good and services, and are one of the factors affecting the access of the developing countries to EU markets. It also impacts on economic growth and, therefore, on employment, and is influenced by various indicators linked to economic health such as public debt, labour productivity and labour costs. The effects on the social and environmental dimensions depend very much on the factors which influence the REER. Improvements in the REER, which could be made by reducing labour costs or cutting back the social security system, could be detrimental to the social dimension. More stringent environmental policies will change relative prices of products and services within a currency area, favouring less polluting activities. The effect on competitiveness will depend amongst other things on relative prices in other currency areas and the structure of demand.



Competitiveness



## Lifelong learning

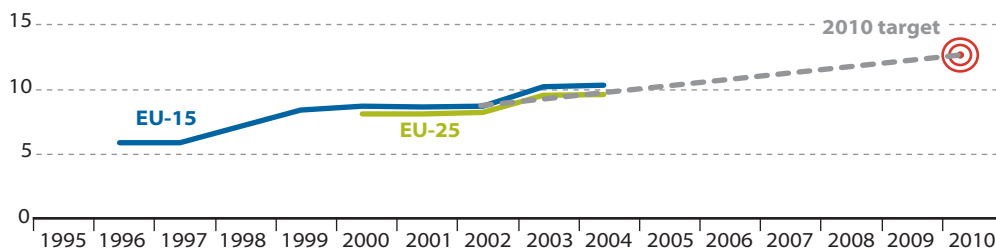


**Definition:** The indicator is defined as the **percentage of the adult population aged 25 to 64 participating in education and training.**

Lifelong learning is essential to sustainable development. As society shifts towards sustainable production and consumption patterns, workers and citizens will be needed who are willing to develop and adopt new technologies and organisational techniques as workers, as well as new attitudes and behaviour as citizens and consumers. Lifelong learning can contribute to making persons more flexible, open-minded and interested in new developments.

This is why lifelong learning is regarded as a core element for reaching the Lisbon goal of becoming the most competitive and dynamic knowledge-based economy in the world. Lifelong learning will help individuals to update and complement their knowledge, competencies and skills, thus contributing positively to reinforce their position in the labour market.

In 2002, the Barcelona Council set a goal for lifelong learning, stipulating that by 2010 the average level of participation should be at least 12.5 % of the adult working age population (25–64 age group).



### Indicator relevance

**Figure 1.10.**  
Lifelong learning (%)

Source: Eurostat.

The rate of adult participation in education and training in 2004 reached 9.4 % in the EU, which corresponds to 1.5 % more than in 2000 overall, and the share almost doubled in EU-15 since 1996, making the Barcelona target within reach. The EU is funding more than € 2 million to 17 so-called R3L initiatives (regional networks for lifelong learning), involving 120 regions in northern and southern Europe, which shows the importance attached to the promotion of lifelong learning in EU policies.

### Analysis

Increase in lifelong learning should contribute positively to all dimensions of sustainable development.

Higher skilled workers have better access to the labour market and are therefore less prone to unemployment and subsequent poverty and social exclusion. Lifelong learning is crucial to maintaining the skills and employability of citizens throughout their working lives and thus to achieving the objectives related to the ageing of society. In addition, more highly skilled workers should achieve higher labour and resource productivity and therefore contribute to competitiveness and growth in the economic dimension as well as decoupling growth from the environmental burden. As investment in human capital needs little natural resources, the gains in eco-efficiency through better skilled workers and more conscious consumers should outweigh the efforts.

### Potential linkages



### Competitiveness



## Research and development expenditure

**Definition:** The indicator is defined as **gross domestic expenditure on research and experimental development (GERD) as a percentage of GDP**. GERD includes expenditure from business enterprise, higher education, government and private non-profit expenditure in R & D.



### Indicator relevance

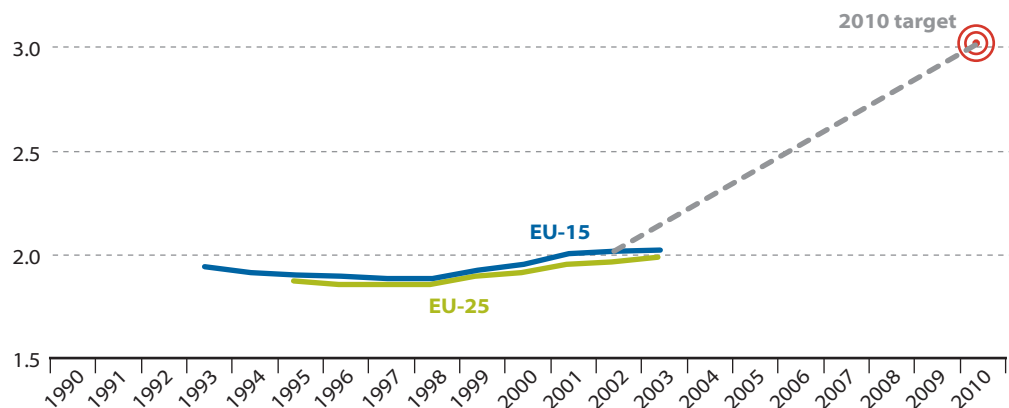
R & D aims to increase the stock of knowledge of man, culture and society and the use of this stock of knowledge to devise new applications<sup>25</sup>. New technologies and organisational techniques are necessary complements to changing behaviour to achieve the shift towards a sustainable society. Research is also needed to identify the unsustainable trends, measure them, and investigate how they can be addressed as effectively as possible. Experimental development is crucial to transform knowledge into an operational mode in order to make changes happen.

The Lisbon strategy recognises the importance of R & D and innovation, in the context of strengthening the EU's competitiveness. In order to close the gap between the EU and its major competitors, the 2002 European Council in Barcelona affirmed the need for a significant boost of the overall R & D and innovation effort in the EU, with a particular emphasis on frontier technologies (life sciences and biotechnology), which are regarded as a key factor for future growth. In that respect, the Council agreed that overall spending on R & D and innovation should be increased with the aim of approaching 3 % of GDP by 2010. Moreover, the European employment strategy contains a set of guidelines aimed at increasing and improving investment in R & D, and a redeployment of aid in favour of support for certain horizontal objectives such as research and innovation.

<sup>25</sup> Proposed standard practice for surveys on research and experimental development (Frascati Manual), sixth edition, OECD (2002), Section 6.3.

**Figure 1.11.**  
Gross domestic expenditure on R & D (% of GDP)

Source: Eurostat.

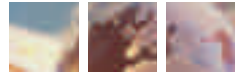


### Analysis

Gross domestic expenditure on R & D has increased by around 6 % in the EU since the mid-1990s, to reach levels close to 2 % of GDP, but remains at a 1 percentage point distance from the 3 % target. Although most Member States have set national targets, these are often not fully translated into budgetary reality. Finland and Sweden are the only Member States (along with Iceland from the EFTA countries) exceeding the 3 % target. A big effort remains to be made in the new Member States (see country breakdown on the SDI website).

### Potential linkages

An increase in R & D expenditure is crucial for the European economy to adapt to changing global conditions. Although this purely quantitative figure does not reveal whether R & D expenditure is targeted to a sustainable society, well-targeted research and development expenditure should exert a direct influence on labour productivity and is vital for the implementation of new modes of production or consumption (impact on waste, pollution, natural resources, energy or transport themes and issues).



## Employment



Employment

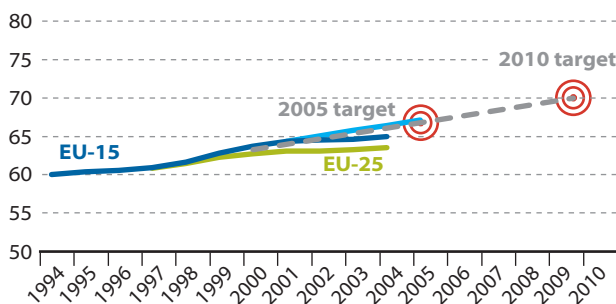


**Definition:** The **total employment rate** is calculated by dividing the number of persons aged from 15 to 64 years in employment by the total population of the same age group.

Employment is a key economic and social issue as it contributes to both quality of life and social inclusion. Employment is therefore at the centre of EU policies, such as the European employment strategy (EES), and full employment is one of the headline objectives of the Lisbon strategy.

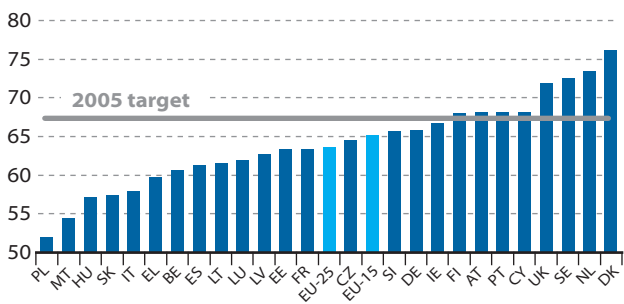
### Indicator relevance

**Figure 1.12. Total employment rate (%)**



Source: Eurostat.

**Figure 1.13. Employment rate per country (2004) (%)**



Source: Eurostat.

Differences are sizeable between Member States, and the employment rate varied in 2004 from 51.7 % in Poland to 75.7 % in Denmark<sup>26</sup>. While total employment rate increased on average by 1.1 % from 1995 to 2000 in EU-15, progress has recently slowed down with a growth rate of 0.3 % in the EU-15 and 0.3 % in the EU-25 between 2000 and 2004. The 2005 intermediate target of 67 % appears to be out of reach although reached or exceeded by eight countries in 2004. To meet the overall 2010 target of 70 %, an average annual growth rate of 1.7 % would be required in the EU-25, compared with the 0.3 % per year growth achieved in 2000–2004.

The main reasons for this tendency are the slow-down of the European economy since the early 2000s and the parallel slow-down in labour productivity growth in many Member States. To attract more people in employment, the average exit age from the labour force would need to be further increased and resort to early-retirement schemes reduced; changes in the tax and benefit system and pension reforms may also be necessary.

As exclusion from the labour market is a major factor of social exclusion, an increase of employment is likely to reduce poverty. Employment thus contributes positively to the social dimension of sustainable development. An increase of the employment rate among workers is also likely to have an impact on gross debt and pension expenditure, this holds especially true for workers aged more than 55. A high employment rate should contribute positively to the economic dimension, although an increase in part-time work can actually decrease the number of hours worked while increasing the labour force. No clear and unambiguous influence on the environmental dimension can be easily ascertained.

### Analysis

<sup>26</sup> 'Commission staff working document in support of the report from the Commission to the Spring European Council, on the Lisbon strategy of economic, social and environmental renewal', SEC(2005) 160.

### Potential linkages





## Employment



## Unemployment

**Definition:** The **total unemployment rate**, monitors the number of unemployed persons aged 15 and over as a percentage of the labour force. It is broken down by (1) gender; (2) age group; (3) level of education (see 'Methodological notes'). The latter breakdown refers to the number of unemployed persons aged 25 to 64 years, having attained a specific level of education, as a percentage of the labour force of the same age group.



### Indicator relevance

Unemployment increases the risks of poverty and consequent social exclusion. EU policies and objectives are orientated towards the promotion of full employment and the increase in employment rates among vulnerable groups. In particular, some objectives aim at improving the adaptability of workers and enterprises, the balance between flexibility and security, the working of labour market policies and the efficiency and effectiveness of employment services. Tax-benefit systems in particular need to be designed in a way to allow people to search for and take up jobs.

Figure 1.14.

Total EU-15 unemployment rate by gender and age group (% of unemployed persons aged 15 and over)

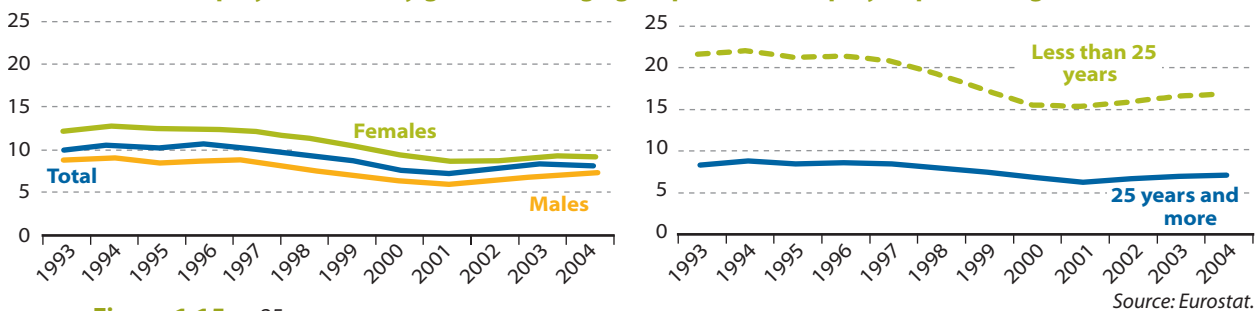
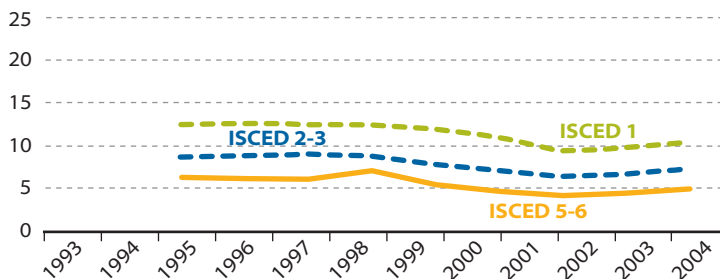


Figure 1.15.

Total EU-15 unemployment rate by highest level of education (% of unemployed persons aged 25 to 64 years)



### Analysis

The focus of EU policies on the promotion of growth and employment has had positive effects on unemployment which declined by two percentage points in the EU-15 since 1993. It is mainly young and older workers, women and low skilled people that suffer most from joblessness. The labour market situation of young workers (aged 15–24) has deteriorated since 2001 with unemployment rising from 15 to 16.5 % in 2004, compared with 7–8 % for the population aged 25 years and over. At EU level, women's unemployment rate exceeds by around two points that of men, compared with almost three points some 10 years ago. Employability also decreases with low educational attainment. The unemployment risk is almost doubled for those people with ISCED 2–3 level and more than doubled for level 1, compared with workers having ISCED 5–6.

### Potential linkages

As exclusion from the labour market is a major factor of social exclusion, a raise in unemployment is likely to increase the risk of poverty. It also has direct links with employment and long-term unemployment. It is likely to have a negative impact on a number of other issues that are key to sustainable development, including public finance sustainability, consumption patterns, and public health.



## Methodological notes

### GDP per capita

Figures are collected from the national accounts departments of Member States' national statistical institutes. GDP forecasts for 2004–06 produced by the Economic and Financial Affairs DG are used for the latest periods as long as official results have not been transmitted.

Data are expressed as growth rates in percentage points. They are derived from data expressed in euro (ecu before 1999).

Per capita figures are calculated based on the total population of a country on a given date, which consists of all persons, national or foreign, who are permanently settled in the economic territory of the country, even if they are temporarily absent from it. This means that total population is defined using the concept of residence rather than nationality. Population figures from national accounts may differ from those of population statistics.

Any GDP-derived measures for the European Union, such as GDP per capita, GDP growth, labour productivity or unit labour cost growth (see related indicators), are calculated directly from the European aggregates rather than from adequately weighing the derived measures for the Member States.

### Regional breakdown of GDP per capita

Regional GDP data are Eurostat estimates based on a harmonised methodology. Purchasing power standards (pps) are a fictive 'currency' unit that eliminates differences in purchasing power, in other words, different price levels, between countries. Thus, the same nominal aggregate in two countries with different price levels may result in different amounts of purchasing power. Figures expressed in pps are derived from figures expressed in national currency by using purchasing power parities (ppp) as conversion factors, which are also regularly calculated by Eurostat.

These parities are obtained as a weighted average of relative price ratios in respect to a homogeneous basket of goods and services, both comparable and representative for each country. They are fixed in a way that makes the average purchasing power of one euro in the European Union equal to one pps. Ppp and related economic indicators are constructed primarily for spatial comparison and not for comparison over time. Therefore any comparison of results of different years must be made keeping this in mind. In particular, the GDP in pps should not be used to derive national growth rates.

Basic data are provided by the national statistical institutes' national accounts departments.

A regulation on the nomenclature of territorial units for statistics was approved by the Commission in 2003 (Regulation (EC) No 1059/2003). The purpose is to provide a single and coherent territorial breakdown for the compilation of EU regional statistics. The current NUTS nomenclature (version 2003) subdivides the territory of the European Union into 84 NUTS-1 regions, 254 NUTS-2 regions and 1 213 NUTS-3 regions. These numbers include NUTS regions defined for the 10 new Member States from 1 May 2004. The regional breakdown is according to NUTS 2. The territory of the whole country is considered a single region for Denmark, Estonia, Cyprus, Latvia, Luxembourg, Malta, Slovenia, and Iceland.

### Investment

The data are taken from national accounts which are compiled in accordance with the European system of accounts (ESA 95). Current price figures expressed in euro (ecu before 1999) have been used to calculate the shares. Aggregate data for the EU are, in general, derived from adding the respective Member States' data, but some additional estimations or imputations have been required for the presentation of annual data. Figures for total investment in 2005 are forecasts.

The private sector consists of non-financial corporations, financial corporations, households and non-profit-making organisations serving households, in other words, all sectors of a national economy except general government which represents the public sector.

### Saving

The data are taken from the annual national accounts which are compiled in accordance with the European system of accounts. Current price figures expressed in euro (ecu before 1999) have been used to calculate the shares.

### Consumption expenditure

Consumption expenditure data are taken from annual national accounts which are compiled in accordance with the European system of accounts. Current price figures expressed in euro (ecu before 1999) have been used to calculate the shares.



### Box 1.3: The labour force survey

The labour force survey (LFS) is a quarterly household survey which provides data on persons aged 15 years and over living in private households. Its main emphasis is on employment, unemployment and inactivity. Conscripts, students aged 18–24 who live in households composed solely of students of the same age class, persons living in collective households (halls of residence, medical care establishments, religious institutions, collective workers' accommodation, hostels, etc.) and persons carrying out obligatory military service are not included. Only the employment of the residents in the country is considered. All sectors of the economy are covered.

The concepts and definitions used in the survey are based on those contained in the recommendation of the 13th International Conference of Labour Statisticians, convened in 1982 by the International Labour Organisation (referred to as the 'ILO guidelines'). To further improve comparability within the EU, Commission Regulation (EC) No 1897/2000, gives a more precise definition of unemployment. This definition remains fully compatible with the International Labour Organisation standards. The economic active population comprises employed and unemployed persons.

The LFS divides the population of working age (15 years and above) into three mutually exclusive and exhaustive groups — persons in employment, unemployed persons and inactive persons — and provides descriptive and explanatory data on each of these categories.

- Employed persons are persons aged 15 years and over (16 and over in Spain, the United Kingdom and Sweden, before 2001; 15–74 years in Denmark, Estonia, Hungary, Latvia,

Sweden, Finland; 16–74 in Iceland and Norway) who during the reference week performed work, even for just one hour a week, for pay, profit or family gain or were not at work but had a job or business from which they were temporarily absent because of, for example, illness, holidays, industrial dispute and education and training.

- Unemployed persons are persons aged 15–74 (in Spain, the United Kingdom, Iceland and Norway: 16–74) who: (i) were without work during the reference week, in other words, neither had a job nor were at work (for one hour or more) in paid employment or self-employment; (ii) were currently available for work, in other words, were available for paid employment or self-employment before the end of the two weeks following the reference week; or (iii) were either actively seeking work in the past four weeks, in other words, had taken specific steps in the four-week period ending with the reference week to seek paid employment or self-employment, or had already found a job to start within the next three months.
- Inactive persons are those who are neither classified as employed nor as unemployed.

Perfect comparability among countries is difficult to achieve, even were it to be by means of a single direct survey, that is, a survey carried out at the same time, using the same questionnaire and a single method of recording. Nevertheless, the degree of comparability of the EU labour force survey results is considerably higher than that of any other existing set of statistics on employment or unemployment available for Member States.

#### Labour productivity

The EU average for labour productivity includes many estimates prior to 2001–02 and forecasts thereafter. Expressing productivity per hour worked eliminates differences in the full-time/part-time composition of the workforce.

The variables used in the unit labour cost numerator (compensation per employee) refer to employed labour only, while those in the denominator (GDP per employment for total and gross value added per employment for industry) refer to all labour, including self-employed. Unit labour cost figures include a few estimates and many forecasts, especially for 2004–05.

#### International price competitiveness

Due to data constraints, the real effective exchange rates are calculated to measure cost competitiveness and are currently based on IC34 (EU-25 plus the following nine industrial countries: Australia, Canada, United States, Japan, Norway, New Zealand, Mexico, Switzerland and Turkey). In future, REERs will be available based on a new reference group including IC34 plus Bulgaria, Romania, Russia, China, Brazil, South Korea and Hong Kong in order to measure price competitiveness. This will make it possible to cover over 80 % of extra-EU-12 exports instead of the current 58 %, and will thus better reflect trade patterns, including those with the new Member States.



### Lifelong learning

Education and lifelong learning data are taken from the European Union labour force survey (LFS) spring results (see Box 1.3) and relate to all education or training whether or not relevant to the respondent's current or possible future job. The EU 2003 lifelong learning values contain a break in series compared with figures from previous years. Values for 2004 are provisional.

Lifelong learning refers to persons who stated that they received education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding those who provided no answer to the question on participation in education and training.

### R & D expenditure

Gross domestic expenditure on research and experimental development (GERD) data are collected through the annual

Eurostat R & D questionnaires and are calculated using current euro values. The figures relating to GDP are compiled in accordance with ESA 95.

### Employment and unemployment

The indicators are based on the EU labour force survey (see Box 1.3) adjusted series (annual averages). Any missing quarters at the end of the series are estimated to produce the annual average.

The data for the unemployment rate by educational level refer to the second quarter of each year, except for France and Austria (quarter 1 all years) and Italy (quarter 4 in 1992). Levels are coded according to the international standard classification of education (ISCED, 1997): pre-primary, primary and lower secondary education: levels 0–2; upper secondary and post-secondary non-tertiary education: levels 3–4; tertiary education: levels 5–6.



# 2.

## Poverty and social exclusion



### Policy background

Following the introduction by the Amsterdam Treaty (Articles 136 and 137) of the fight against social exclusion among the Union objectives, the Lisbon European Council of March 2000 asked Member States and the European Commission to take steps to make a decisive impact on the eradication of poverty by 2010. This commitment was further built upon with the European social agenda agreed in Nice in the same year. In 2001, the social dimension was confirmed as one of the three pillars of the sustainable development strategy at the Gothenburg Council, and a set of commonly agreed indicators as a means of comparing best practice and measuring progress was established in Laeken. The goal of social inclusion was further stressed at the Barcelona Council (March 2002), which called for the setting of targets for the significant reduction of the number of persons at risk of poverty and social exclusion by 2010. Following the revision to the Lisbon strategy, the Social Protection Committee of the European Council is expected to propose a revised set of objectives towards the end of 2005.

Defining and measuring poverty and social exclusion is a difficult task as these notions are closely related to the concepts of well-being and standard of living, which are difficult issues to tackle. Although there is no single universally accepted measure of poverty, the one given by the EU Council of Ministers in 1984 is often used: those regarded as poor are 'those persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude







them from the minimum acceptable way of life in the Member State to which they belong'. Monetary aspects of poverty are important as low income impairs access to a range of basic goods and services. However, poverty and social exclusion are multi-dimensional concepts, and other equally relevant aspects should be considered, such as access to employment, education, housing, healthcare, the degree of satisfaction of basic needs and the ability to participate fully in society.












## Main changes

**Table 2.1.**  
Evaluation of changes in the poverty and social exclusion theme (from 2000) <sup>27</sup>



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

	EU-25	EU-15
<b>Risk of poverty</b>	:	
<b>Monetary poverty</b>		
Persistent risk of poverty	:	
Income distribution	:	
<b>Access to labour market</b>		
Long-term unemployment		
Jobless households	:	
Gender pay gap		
<b>Other aspects of social exclusion</b>		
Early school leavers		
Persons with low educational attainment	:	

<sup>27</sup> Due to the shortness of the time-series for the headline and the monetary poverty indicators, evaluations concern the period from 1999 to 2001.

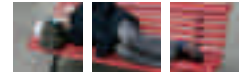
### The risk of poverty has increased in 2001 <sup>28</sup>

<sup>28</sup> The monetary poverty data presented in this analysis should be interpreted with some caution. During the transition to data collection under EU-SILC regulations by all countries, full comparability cannot be guaranteed. Moreover, EU-level aggregates are computed as population-weighted averages of individual national totals rather than the application of a common reference measure. See 'Methodological notes' at the end of this chapter.

While the headline indicator in this theme displays an unfavourable change, a majority of indicators show no or little progress, with some encouraging changes for persons with low educational attainment (in the EU-15), and gender pay gap (in the EU-25).

The risk of poverty rate in the EU-15 has remained stable from 1998 to 2000, but increased from 15 to 16 % in 2001. This is evaluated as a negative trend, as it can in no way be considered as a 'decisive impact' on the eradication of poverty, as agreed in the Lisbon strategy. Some of the highest rates of poverty risk are found among single parents (mainly women) who have more difficulties to reconcile work and family responsibilities and are more often than others depending on minimum income schemes. Rates are also high amongst the elderly and families with multiple dependents. Short-term exposure to poverty risk should not automatically be assumed to imply low living standards, but long-term dependence on low income is usually seen as a barrier to social inclusion, and is reflected in the at-persistent-risk-of-poverty indicator, which has not shown any recent significant progress.

As regards the new Member States, no trend can yet be derived from the data currently available, but the relative poverty risk in 2001 was at a slightly lower level in these countries than in the EU-15. However, it should be noted that people living below the at-risk-of-poverty line have much lower incomes than people in the EU-15 countries as the overall income level is much lower. This is more likely to be linked with absolute poverty and material deprivation, especially in some groups such as ethnic minorities, the homeless and children in institutions.



Inequality of income distribution adds another important strain on sustainable development, and can be seen as measuring the lack of 'fairness' of our society. The trend has been favourable from 1995 to 1999, with a progressive decrease of 9.8 % overall, but there has been no more progress between 1999 and 2001. The combined incomes of the 'richest' 20 % of the population still exceeded those of the 'poorest' 20 % by more than four times in 2001.

### Box 2.1: Sustainable development strategy: objectives related to poverty and social exclusion

The strategy reiterated the commitments made at the Lisbon, Nice and Stockholm Summits (COM(2001) 264):

- make a decisive impact on the eradication of poverty;
- raise the employment rate to 67 % by January 2005 and to 70 % by 2010; increase the number of women in employment to 57 % by January 2005 and to more than 60 % by 2010 (see the economic development theme);
- halve by 2010 the number of 18 to 24 year-olds with only lower secondary education who are not in further education and training.

There has been a modest decrease in overall long-term unemployment from 1995 to 2000, but from 2001 to 2002, progress has stalled in the EU-15 and EU-25. Long-term unemployment is closely associated with social distress. Beyond the loss of income, long-term unemployment is often accompanied by a loss of skills and a deterioration of social participation that makes it increasingly difficult to regain a foothold on the labour market, unless appropriate and timely support is provided.

**No significant progress in long-term unemployment**

The number of persons living in jobless households, which is around 10 % in the EU-25, is one of the most worrying indicators of social exclusion. Following a progressive decrease from 1995 to 2001, it has stabilised, and even slightly increased in recent years among children. Beyond the dependency on social benefits, living in a jobless household extends the lack of contact to the labour market, and for children it increases the risk of inter-generational transmission of poverty since no working adult is in a position to act as a role model. Gender pay inequality can also increase the poverty risk of households, as low-paid women become more vulnerable. The overall trend here is rather negative for the EU-15 as progress has stalled since 2000 in the EU-15, while there has been a decrease of 2.1 % annually on average from 2000 to 2003 in the EU-25.

The proportion of early school-leavers has decreased progressively, both in the EU-15 and EU-25, with an annual decrease of 1.7 % and 1.9 % respectively, from 2000 to 2004. However, in 2004, 18 % of those aged 18–24 still left the education system with lower secondary education at best in the EU-15, which is still well above the 2010 target of 10 %. Looking at the cohort of ages, it is clear that the situation has improved as the proportion of younger people (25–34 years) with low educational achievements is much lower than the proportion of elderly people (65 and over). However, more than one-third of the population aged 25–64 is still handicapped by low educational achievement.

**Reducing the number of early school-leavers**

### Rationale for the selection of indicators

The Commission's communication on the sustainable development strategy in 2001 reiterated the objectives on social inclusion agreed in Lisbon, Nice and Stockholm (Box 2.1). The indicators in this theme are related to these objectives.

The whole set of indicators in this theme is derived from the Laeken indicators list (see Box 2.2). The central issue of 'poverty and social exclusion' is reflected in the headline indicator on 'at-risk-of-poverty rate after social transfers' which measures income poverty with reference to the poverty line, an arbitrary threshold of 60 % of the national median equivalised annual





income under which people are considered poor. It does not measure poverty in itself but the risk of becoming poor. The other indicators are split into three sub-themes, and address the following issues.

- **Monetary poverty:** this aspect is measured with reference to the poverty line but also in terms of 'poverty gap' and of individual income inequality within a country.
- **Access to labour market:** lack of access to the labour market is an issue that is both the target of labour market and social inclusion policies. Long-term unemployment is one of the main factors leading to poverty and social exclusion for both adults and children, the number of people living in jobless households is a factor of persistent risk of poverty, and gender discrimination must also be prevented as it puts women in unfavourable positions in the labour market.
- **Other aspects of social exclusion** include elements such as poor housing conditions and inadequate education, which have to be fought against through investment in human capital and lifelong learning, and social security.

### Box 2.2: The Laeken indicators

The list of Laeken indicators is an answer to the request set by the Nice Council to define a set of indicators to monitor progress towards the fight against social exclusion and poverty, in the context of the open method of coordination, based on common objectives aimed at:

- facilitating 'participation in employment and access by all to resources, rights, goods and services';
- preventing 'the risks of exclusion';
- helping 'the most vulnerable'; and
- mobilising 'all relevant bodies'.

The Laeken European Council, in December 2001, endorsed a set of criteria and a first set of 18 common statistical indicators for social inclusion, which allow monitoring in a comparable way of Member States' progress towards the agreed objectives. The list is under regular review by the 'Indicators' sub-group of the Social Protection Committee to develop and refine its coverage. These indicators should be considered as a consistent set covering four important dimensions of social inclusion: financial poverty, employment, health, and education.

The focus of the monetary poverty indicators is on income, which is complemented by additional indicators highlighting alternative dimensions of poverty and social exclusion: the last two groups of indicators look at the issue through the situation on the labour market and in education, as the risk of poverty is particularly high for the unemployed and the low skilled. Some areas such as poverty mobility, the probability to enter or exit poverty, and access to decent housing, a major feature in the determination of living standard, are not depicted due to the current absence of robust methodologies and data sets covering all countries in a harmonised way.

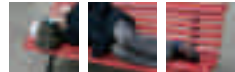
### Further reading on poverty and social exclusion in Europe

*European social statistics: Income poverty and social exclusion: Second report, 2003*, Eurostat

*Statistics in focus: Poverty and social exclusion in the EU*, No 16/2004, Eurostat

*Joint report on social inclusion 2004*, European Commission, Employment and Social Affairs DG

*Report on social inclusion in the 10 new Member States, 2005*, European Commission, Employment and Social Affairs DG



Headline Indicator



## Risk of poverty



**Definition:** The ‘at-risk-of-poverty rate after social transfers’ indicator is defined as the share of persons with an equivalised total net income after social transfers (total income) below the 60 % national median income. Net income is total income from all sources minus income tax. The median is the value which splits the distribution of income into two parts of equal size; exactly 50 % of people fall below that value and 50 % are above it. Household income is ‘equivalised’ using a methodology established by the OECD, which takes into account differences in household size and composition, making comparisons more realistic (see ‘Methodological notes’)

This ‘at-risk-of-poverty rate after social transfers’ indicator is the headline indicator within the context of the Laeken indicators list <sup>29</sup>, which aims at measuring progress towards the fight against poverty and social exclusion.

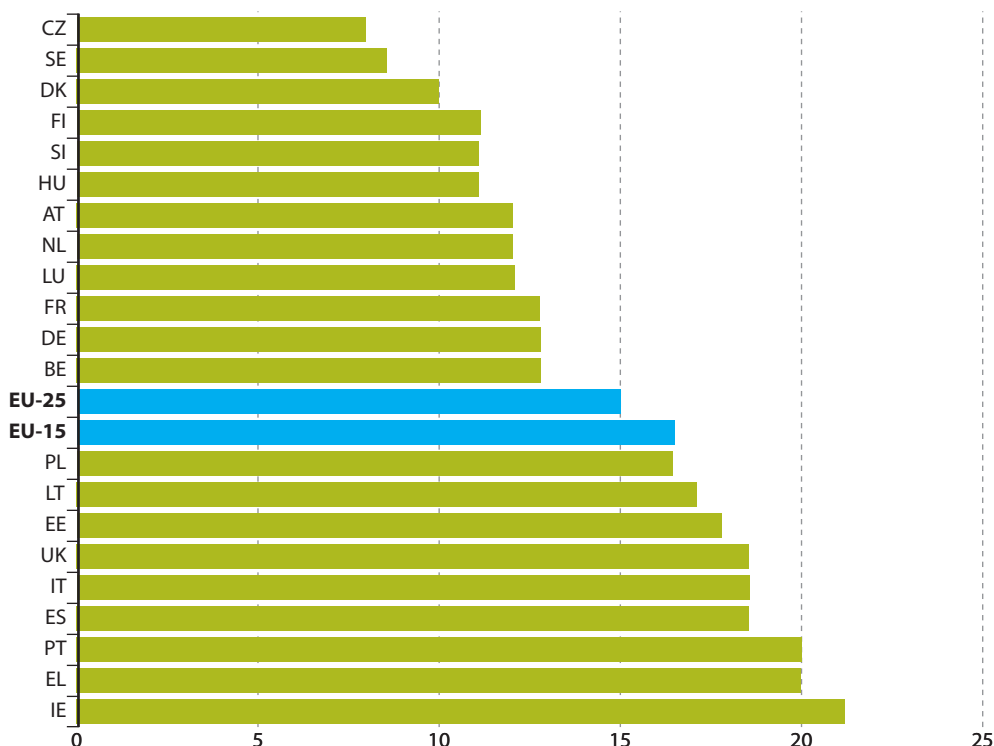
The income level is usually considered as one of the main factors in determining an individual’s standard of living. More income enhances consumption by offering ‘more choices and access to goods and services’ <sup>30</sup> within society and hence also gives rise to a higher quality of life. To complement the risk of poverty rate indicator, a risk of poverty gap can be calculated to identify how severe the poverty risk is. Social transfers are important factors to alleviate poverty and are reflected in the data.

The at-risk-of-poverty rate is also broken down by gender, age group and household type to show which categories are most vulnerable. People do not face the risk of poverty in the same way, depending on their age, their gender and whether they are single or living in larger households, with or without dependent children, and depending on their activity status.

### Indicator relevance

<sup>29</sup> See theme overview.

<sup>30</sup> *Income on the move*, European Commission, Directorate-General for Employment and Social Affairs, 2002.

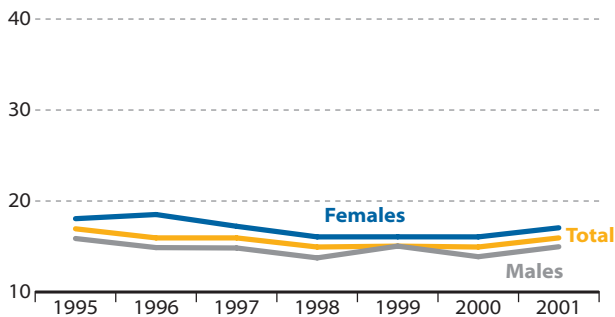


**Figure 2.1.**  
At-risk-of-poverty rate after social transfers in 2001 (%)

Source: Eurostat.

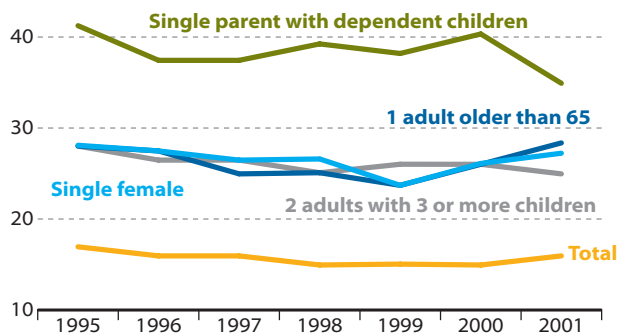


**Figure 2.2. EU-15 at-risk-of-poverty rate, by gender (%)**



Source: Eurostat.

**Figure 2.3. EU-15 at-risk-of-poverty rate, by household type (%)**



### Analysis

From 1995 to 2000, the EU-15 population classified as being at risk of poverty decreased from 17 to 15 %, but increased again to 16 % in 2001 (corresponding to more than 59 million individuals in the EU-15). When taking the new Member States into account, the EU-25 figure (15 %) represents around 68 million persons at risk of poverty across the EU (see the SDI website).

This average value for the EU-25 masks considerable variations between Member States, with the share of the population at risk of poverty in 2001 ranging from 8 % in the Czech Republic and 9 % in Sweden to 20 % in Greece and Portugal, and 21 % in Ireland. The 2003 provisional value for Slovakia also places it amongst the countries with the highest risk of poverty (see additional data on the website). Southern countries in general, as well as Ireland and the United Kingdom, are above the average with a rate varying from 19 to 21 %. Analysis elsewhere has shown that social protection has a positive effect on the reduction of inequality by redistributing wealth to the less favoured population groups<sup>31</sup>. Variation in social transfers partly explains the differences among the countries.

In the EU-15, the at-risk-of-poverty rate is generally higher among women than men (Figure 2.2), and among single parents with dependant children households (rate varying from 41 to 34 % for the EU average), most of which are headed by women. The risk has increased amongst households of one adult older than 65 in recent years (Figure 2.3).

It should be borne in mind when interpreting this indicator that it is based on a relative (as opposed to absolute) concept of poverty. A change in the indicator reflects a change in the number of people with an income below a poverty threshold, which varies in relation to the prevailing socioeconomic situation.

### Potential linkages

The risk of poverty is influenced by the state of the economy, as a higher level of poverty is a burden to national economies — on the other hand, a stronger economy can free up resources to alleviate poverty. A higher risk of poverty is also likely to increase public spending, and may therefore have a negative impact on pensions and on healthcare. As long-term unemployment can also be a key factor in social exclusion, and since employed people are less likely to enter poverty, there is also a link with labour market issues. This is especially of concern for children, as there can be an inter-generational effect. On the other hand, education has been shown to have a positive impact on poverty and social exclusion, and further education could potentially reduce the risk of poverty rate. Finally, an increase in the risk of poverty is likely to have an impact on public health, as well as on consumption patterns.

<sup>31</sup> *The social situation in the European Union — 2003, Eurostat.*



Monetary poverty



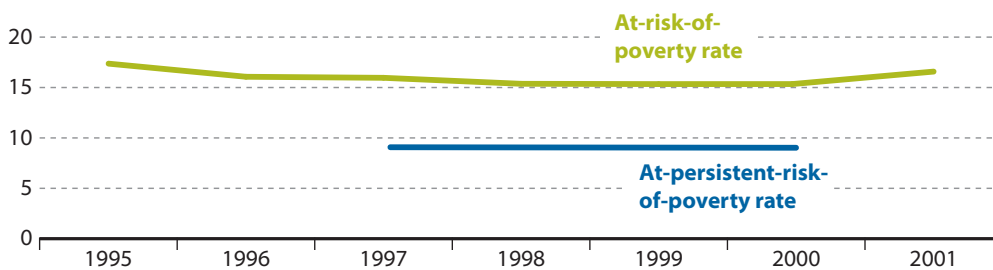
## Persistent risk of poverty



**Definition:** The ‘at-persistent-risk-of-poverty rate’ indicator is defined as the share of persons, within the total population, with an equivalised total net income (see ‘Methodological notes’) below the risk-of-poverty threshold in the current year and in at least two of the preceding three years. The population consists of all the persons that have been living for four years in private households.

The at-persistent-risk-of-poverty rate is another measure of poverty risk retained in the Laeken list of indicators for social inclusion. It concerns the share of the population living on a low income for an extended period of time, which is recognised as being a significant factor contributing to poverty and social exclusion.

### Indicator relevance



**Figure 2.4.**  
EU-15 at-persistent risk-of-poverty rate (%)

Source: Eurostat.

NB: Due to a change of data source, there is a disruption in the time-series availability of this indicator.

Though the at-risk-of-poverty rate decreased from 17 to 16 % between 1995 and 2001, as appears from Figure 2.4, the at-persistent-risk-of-poverty rate remained unchanged from 1997 to 2000. In 2000, some 9 % of the EU-15 population were persistently at risk of poverty, as well as in the preceding three years.

### Analysis

Comparing the at-persistent-risk-of-poverty rate indicator with the at-risk-of-poverty rate indicator at EU level, well over half of the total number of people at risk of poverty were persistently facing that risk. The fact that the at-persistent-risk-of-poverty rate has not decreased is of particular concern as long-term dependence on low income has been identified as a factor increasing the risk of social exclusion: whereas short-term exposure to poverty risk may not necessarily indicate low living standards (due to access to credit, accumulated savings, assistance from friends and relatives, etc.), the cumulative impact of prolonged exposure is likely to be a constraint.

Linkages with the persistent risk of poverty are similar to those presented under the headline indicator, with possibly even stronger linkages with the state of the economy, and public expenditure issues such as pensions. An increase in unemployment is also likely to worsen the persistent risk of poverty. The persistent risk of poverty would also be expected to have a negative impact on health issues.

### Potential linkages



## Monetary poverty



## Income distribution

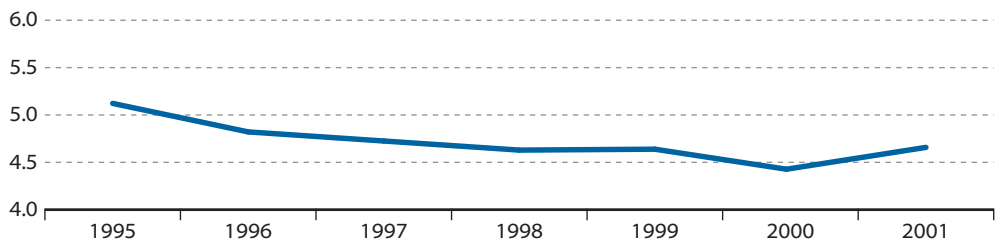
**Definition:** The indicator attempts to measure inequality in income distribution and is defined as the **S80/S20 income quintile share ratio**, which is the ratio of equivalised total net income (see 'Methodological notes') received by the 20 % of the country's population with the highest income (top quintile) to that received by the 20 % with the lowest income (lowest quintile). The higher the ratio, the wider the gap between the most (top 20 %) and least well off (bottom 20 %).



### Indicator relevance

The S80/S20 ratio is a summary measure of inequality in terms of net income available and is considered easier to grasp than the Gini coefficient<sup>32</sup> as it shows the gap between the richest 20 % of the population and the poorest 20 %. Reducing inequality has been a longstanding commitment of the EU, and is generally considered as an important aspect of sustainable development.

**Figure 2.5. EU-15 inequality of income distribution — Income quintile share ratio**



Source: Eurostat.

### Analysis

The focus of the poverty risk measure is on the bottom part of the income distribution. It is also interesting to look at the overall income distribution, for example as measured by the relative position of the bottom quintile to that of the top group. It is notable that income inequality appears to have decreased overall in the period 1995 to 2001 (- 9.8 %). In 2001, the total equivalised income received by the top income quintile was 4.6 times greater than that received by the poorest income quintile group, with no change compared with 1999.

Income distribution is closely related to the social model applied by countries. Progressive taxation and redistributive social transfers are one of the ways to reduce inequality in income distribution.

### Potential linkages

An increase in income inequality is likely to require more public resources to reinforce cohesion, and would therefore be expected to influence public finance sustainability. People from different income groups usually have different consumption patterns.

<sup>32</sup> The Gini index measures inequality in terms of individual (per capita), net-monetary income distribution (after taxes and social security transfers). It varies from 0 (no inequality) to 100 (total inequality, which would mean that only one person has all income). Both the S80/S20 ratio and the Gini index are Laeken indicators.



Access to labour market



## Long-term unemployment



**Definition:** The **long-term unemployment rate** is the share of persons who have been unemployed for 12 months or more in the total number of active persons in the labour market. Active persons are those who are either employed or unemployed.

Unemployed persons are all persons aged between 15 and 74 years who were not employed during the reference week, had actively sought work during the past four weeks and were ready to begin working immediately or within two weeks.

The duration of unemployment is defined as the duration of a search for a job or as the length of the period since the last job was held (if this period is shorter than the duration of search for a job).

Employment policy is, together with economic policy, a key strategic area for the future of the European Union. Many indicators are used for monitoring the progress towards the attainment of the objectives of the 1997 European employment strategy (EES, also known as the ‘Luxembourg process’) for fighting against unemployment as a whole. It is also important to monitor the trends in long-term unemployment as it leads to high risks of poverty and especially of social exclusion (precariousness, marginalisation, etc.).

### Indicator relevance

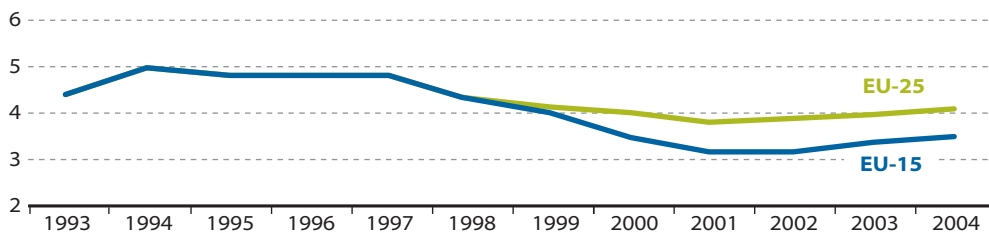


Figure 2.6.  
Total long-term unemployment rate (%)

Source: Eurostat.

During the first half of the 1990s, structural unemployment increased in the EU-15 together with long-term unemployment; since 1998, one year after the introduction of the EES, they have declined in both the EU-15 and EU-25. However, long-term unemployment started slowly increasing again around 2001–02. Both total and long-term unemployment have remained a problem in the European Union with 9 % of the economically active population unemployed, almost half of which (46 %) were ‘long-term unemployed’ in 2004.

### Analysis

Although the overall unemployment rate is expected to stabilise over 2005–06, there is a continuing risk of a surge in long-term unemployment and inactivity as a consequence of the economic downturn throughout most of 2002–03, with GDP growth under 1 %. Prevention and activation are essential factors in the fight against long-term unemployment by reducing long-term inactivity and providing a good basis for the future reintegration of job seekers.

Long-term unemployment is likely to have an impact on GDP growth, and potentially also on investment and employment. Higher unemployment benefits are also likely to have a negative impact on public finance sustainability. Long-term unemployment is expected to increase the risk of poverty.

### Potential linkages



### Access to labour market



## Jobless households

**Definition:** The ‘persons living in jobless households’ indicator shows the number of children aged 0–17 years and of persons aged 18–59 years who are living in eligible households where none of the members are working, expressed as a percentage (proportion) of the total population aged 0–17, respectively aged 18–59, who are living in eligible households.



### Indicator relevance

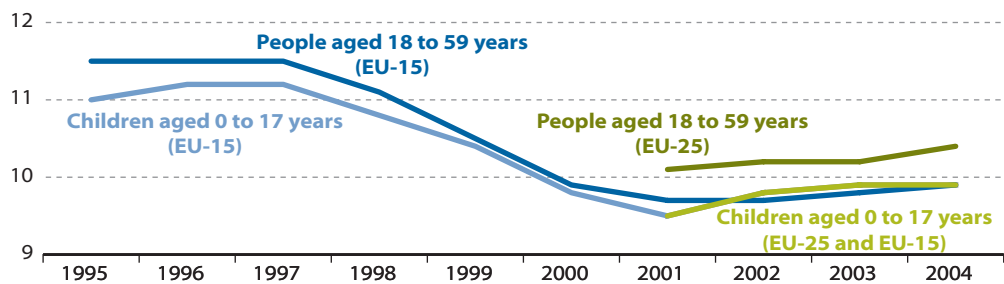
It is important to consider the structure of those households affected by joblessness, as it is the well-being of the whole household that is put at risk by the fact that no-one in the household is working. Beyond the dependence on social benefits, living in a jobless household extends the lack of contact to the labour market, and for children it increases the risk of inter-generational transmission of poverty since no working adult is in a position to act as a role model. In addition, access to basic services in the field of health, housing, education, justice and to other private services such as culture, sport and leisure may be seriously hampered.

Following the Nice Council (December 2000), objectives have been agreed within the framework of the European employment strategy asking Member States to facilitate ‘access to resources, rights, goods and services for all’, thus exceeding the more traditional objective of access to employment.

**Figure 2.8.**  
People living in jobless households by age group (%)

Source: Eurostat.

NB: 2002 figures are estimates and 2004 figures provisional.



### Analysis

The risk for people, whether children or adults, to live in jobless households declined overall in the EU-15 during the period 1995–2001, but has clearly been increasing again since then. The EU-25 has also seen an increase since 2001, especially for children (+ 4.2 percentage points over 2001–04 compared with + 3.0 percentage points for adults).

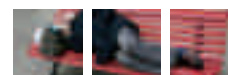
However, these overall trends hide big differences between countries, with values ranging between 3.1 % in Luxembourg and 16.8 % in the United Kingdom for children, and between 5.3 % in Portugal and 15.8 % in Poland for adults. On average, 11.5 % of women live in jobless households as compared with 9.2 % of men<sup>33</sup>.

The share of people living in jobless households thus appears to be the result of the a whole set of conditions, ranging from the type of household, the distribution of employment across households as well as the non-employment rate at the level of individuals. A particular concern arises when children are living in jobless households, without almost any links to the world of work. The resulting material deprivation may affect negatively their development and future, namely job, opportunities, as many of them will be early school-leavers (see ‘early school-leavers’) thus creating again the conditions for future joblessness.

<sup>33</sup> See ‘Joint report on social inclusion 2004’, European Commission, Employment and Social Affairs DG.

### Potential linkages

As other unemployment-related issues, the number of people living in jobless households has a negative impact on economic development. Being in a jobless household may also influence people’s capacity to return to employment, thus affecting employment and public finance sustainability. Through its impact on children, it may also affect society’s long-term health and capacity to adapt to changes.



Access to labour market



## Gender pay gap

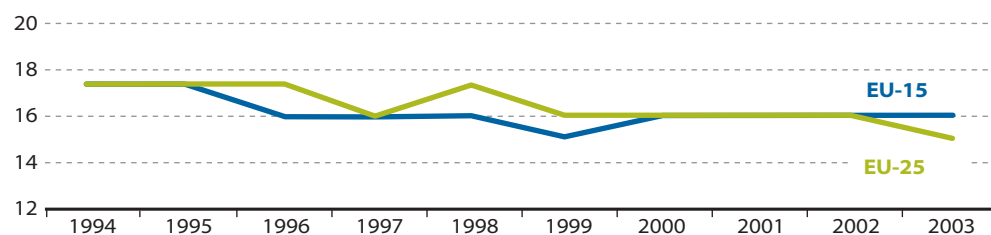


**Definition:** The **gender pay gap in unadjusted form** is the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. The population consists of all paid employees aged 16–64 that are ‘at work 15 + hours per week’, covering all sectors and firm sizes of the economy.

Gross earnings cover remuneration in cash paid by the employer during the reference year, before tax deductions and social security contributions payable by wage-earners and retained by the employer.

The gender pay gap indicator presents one aspect of gender inequality, through the analysis of wage discrepancies on the labour market. It is believed that gender inequality in pay increases the poverty risk for households, in particular with dependent children, as low paid women, by relying mainly on male earnings, become more vulnerable, especially in the case of divorce or death of their spouse. This is one of the reasons why single-female households appear amongst the most at-risk household types (see ‘risk of poverty’).

Eliminating inequalities and promoting equality between women and men has been set as an EU goal since the 1957 Treaty of Rome.



### Indicator relevance

**Figure 2.7.**  
Gender pay gap in unadjusted form (%)

Source: Eurostat.

Although the overall trend is positive, with a reduction of the gender pay gap since 1994, important gaps remain in European labour markets and on average women continue to receive significantly lower gross hourly earnings than men, with average earnings in the EU-25 15 % below those of men in 2003 (compared with 16 % in the EU-15).

A reduction of the gender pay gap will require addressing the following factors: differences in male and female labour market participation and career structures, differences in male and female wage structures and gender effects of pay and promotion policies, and the concentration of women in low-paying sectors and occupations. Incentives such as provision of full-day childcare will enhance female participation in the labour market.

### Analysis

An increase in the gender pay gap is likely to have an impact on employment, as it would probably reduce work attractiveness for women. As women tend to live longer, it may also have an impact on issues related to an ageing society, and in particular on public finance sustainability, through reduced revenues for pensions. It is also likely to influence the risk of poverty as single women are more exposed to poverty. An increase in further education might have an impact on the gender pay gap.

### Potential linkages





### Other aspects of social exclusion



## Early school-leavers

**Definition:** The indicator is defined as the **percentage of the population aged 18–24 with at most lower secondary education and not in further education or training**. Early school-leavers refers to persons aged 18 to 24 in the following two conditions: the highest level of education or training attained is ISCED 0, 1 or 2 and respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions on ‘highest level of education or training attained’ and ‘participation in education and training’.



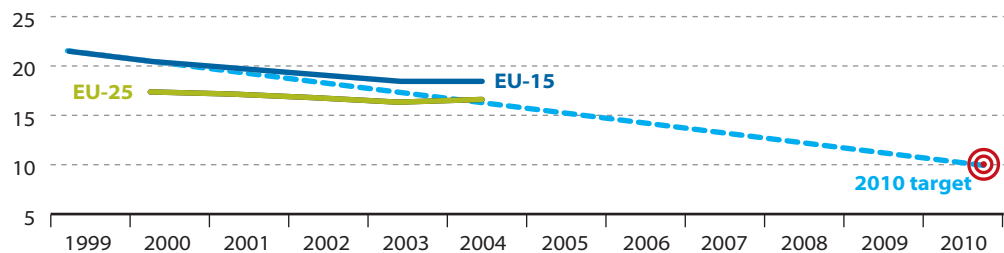
### Indicator relevance

In order to fully participate in society, it is essential that all people have a set of basic knowledge and skills. This is crucial in social and political life but also for a smooth entering of the labour market, and will enable young people to understand and adapt to our fast-evolving societies, especially in the context of globalisation.

Reducing the number of early school-leavers is crucial in a European Union which has set itself the ambition of becoming ‘the most competitive and dynamic knowledge-based economy in the world.’ Given the difficulty for young people to enter the labour market, it is important to reduce the number of pupils leaving school early. Fighting early school-leaving will require acting from the very early stages of the problem by improving the level of reading literacy of teenagers.

The Lisbon strategy includes the aim of halving the number of 18 to 24 year-olds with only lower secondary level education by 2010.

**Figure 2.9.**  
Early school-leavers (%)



Source: Eurostat.

NB: 2003: break in series.

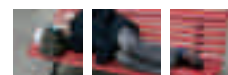
### Analysis

The percentage of early school-leavers has decreased overall from 1999 to 2004. However, there is still around one in six (almost 16 %) of those aged 18–24 who leave the education system with only lower secondary education at best, in other words, less than an upper secondary qualification, and have not attended education or training in the four weeks preceding the survey. This is well above the 2010 target of 10 %.

### Potential linkages

Education has a direct impact on employability and an increase in early school-leavers is likely to impact negatively on employment and competitiveness. It may therefore also have long-term impacts on public finance sustainability. Education can also have a significant impact on lifestyles and nutrition.

An increase in early school-leavers would also reduce society’s capacity to adapt to new modes of consumption and production, having a wide-ranging effect on issues related to production and consumption, climate change and energy, and transport. Education can also have a positive impact on the risk of poverty.



Other aspects of social exclusion

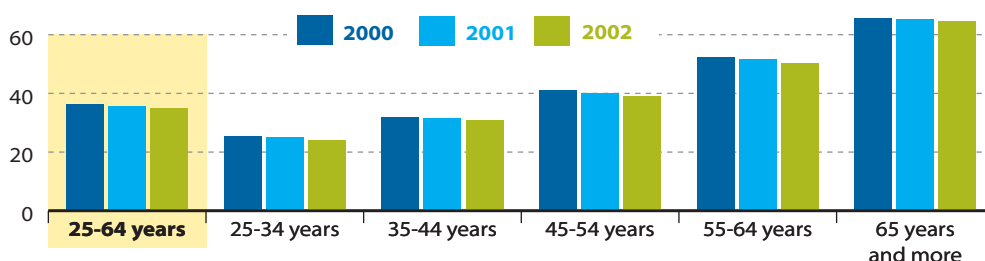
## Persons with low educational attainment



**Definition:** The ‘persons with low educational attainment’ indicator is defined as the **percentage of the population aged 25–64 years who have achieved ISCED level 2 or less** (pre-primary, primary and lower secondary).

Low educational attainment is regarded as a barrier to both personal and professional development and is also a drawback for society’s ambition of reducing the disparities and inequities between individuals or groups. The low qualified are less likely to be engaged in well paid and stable employment, which will result in inadequate pension once retired. They are also less capable of providing themselves and their children with basic needs in, for instance, the field of health by their lack of basic education.

### Indicator relevance



**Figure 2.10. EU-15 persons with low educational attainment by age group (%)**

Source: Eurostat.

The share of persons with low educational attainment has decreased by 3.6 % overall between 2000 and 2002. Trends over time can be observed by looking at different age cohorts of people: the difference between the share of people with low educational attainment among the younger category (25 to 34 years) and the elderly (aged 65 years and over) is striking: in the EU as a whole, in 2002, as many as 65 % in the latter group had attained less than upper education, as opposed to 24 % of all 25–34 year olds.

### Analysis

If low educational attainment has declined over time, it still concerns more than one-third of the total population aged from 25 to 64 years. This not only has negative effects on the capacity of these people to enter the working force and to develop their real career opportunities, but also to have satisfactory pension schemes in future.

The number of persons with low educational attainment is related to education, and linkages are therefore similar to those described under ‘early school-leavers’. An increase would reduce an economy’s capacity to engage its human resources for the creation of economic welfare, and to adapt to changing conditions, linking it to GDP growth, employment and competitiveness. The level of educational attainment may also change consumers’ behaviour, with consequences for production and consumption patterns, climate change and energy and transport. Lower qualification is also often correlated to poor healthcare, suggesting a link with public health. Educational attainment may also have a significant impact on poverty issues.

### Potential linkages



## Methodological notes

### Risk of poverty, persistent risk of poverty

The data are derived from the European Community household panel (ECHP) (see Box 2.3). The population consists of all persons living in private households. The term 'person' therefore includes all members of the households, whether adults or children. Persons living in collective households, homeless persons or other difficult to reach groups are not covered. The EU aggregate is a population-weighted average of individual national figures. In line with the European Council decision, the risk-of-poverty rate is measured relative to the situation in each country rather than applying a common threshold to all countries.

'Equivalent income' involves adjusting household income to take into account economies of scale within a household. It is calculated by adding together the income received by all the members of the household, divided by the equivalent household size, where members of a household are weighted differently according to age.

The modified OECD equivalence scale which is used assigns a weight of 1 to the first adult in a household, 0.5 to the other adult and 0.3 to children.

For the new Member States, no time-series are available for the at-persistent-risk-of-poverty rate due to the timing of the national surveys.

### Box 2.3: The European Community household panel (ECHP)

The ECHP is a panel survey based on a standardised questionnaire that involves annual interviewing of a representative panel of households and individuals, covering a wide range of topics: income (including the various social benefits), health, education, housing, demographics and employment characteristics. The sample of people selected for the first year of the survey were followed-up throughout the subsequent eight years of the survey, wherever they may have moved. Children born to sample women were included as sample persons and followed up.

The ECHP is considered to be the sole common source of comparable data currently available for EU-15 Member States. The most recent ECHP database (December 2003) incorporates data corrections for certain countries and methodological improvements (weightings and adjustment for non-response) for all countries. These have had some impact upon the reported indicators for all years.

In principle, the target population covered by ECHP samples includes all private households throughout the national territory of each country. In all, the sample covers some 60 000 households comprising 130 000 adults aged 16 or over at 31

December of the previous year.

Further information on the characteristics of the survey and availability of data issued from it can be found on the Internet at <http://forum.europa.eu.int/irc/dsis/echpanel/info/data/information.html>

The ECHP expired in 2001 and is currently being replaced by the EU statistics on income and living conditions (EU-SILC), which is expected to become the reference source of data on poverty and social exclusion in the EU. The EU-SILC is based on the European Parliament and Council Regulation (EC) No 1177/2003 of 13 June 2003.

During the transition to EU-SILC for former EU-15 countries, and in all cases for new Member States, comparable indicators are compiled from national sources.

Whilst every effort has been made to assure maximum consistency, these indicators cannot be considered to be fully comparable with one another due to the differences of underlying data sources.

An examination of the transition and its impact can be found in the recent Eurostat working paper, 'The continuity of indicators during the transition between ECHP and EU-SILC', 2005.

### Income distribution

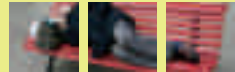
The data stem from the ECHP (see Box 2.3). The 80/20 share ratio is a measure of income distribution based on 'quintiles' of income distribution, ranking individual income into five 'income groups' of equal size, each containing 20 % of the total population living in one country. Firstly, households are sorted according to their 'equivalised total net income' (sorting order: lowest to highest value). The households at the lower end of the distribution that represent 20 % of persons are defined as 'poorest' (first quintile), those at the upper end of the distribution that represent 20 % of persons are defined as 'richest' (fifth quintile). The population consists of all persons

living in private households of a country. To make income levels comparable, the concept of 'equivalised' disposable income is used (see 'risk of poverty' above).

The EU aggregate is a population weighted average of individual national figures.

### Long-term unemployment, and jobless households

The data are derived from the quarterly EU labour force survey which is the main source of internationally comparable EU labour market statistics (see Box 1.3 for the population covered and the definition of unemployment). It is governed principally



by Council Regulation (EC) No 577/98 of 9 March 1998 on the organisation of a labour force sample survey in the Community (OJ L 77/3). The indicator long-term unemployment is based on annual averages of the quarterly data (missing quarters are estimated by Eurostat). The indicator population in jobless households is based on spring results. The EU aggregate is derived from total populations obtained at national level. Since all the data are expressed in absolute values (i.e. number of people) no weighting is used, and aggregate figures are calculated by adding up all the national data series.

### Gender pay gap

The indicator is based on several data sources, including the ECHP (see Box 2.3), the EU survey on income and living conditions, and national sources. For the calculation of gross earnings, all bonuses, whether or not regularly paid, are included (13th/14th month, holiday bonuses, profit-sharing, allowances for leave not taken, occasional commissions, etc.). Severance payments as well as payments in kind are excluded. Hourly earnings are obtained by dividing gross monthly normal earnings from the main job by four times the number of worked hours per week in the main job, including normal overtime, but excluding bonuses, irregular overtime, any 13th month payments and the like. EU-25 and EU-15 estimates are population-weighted averages of the latest available national data, adjusted, where possible, to take into account a change in the data source. Countries without any previous gender pay gap data for a specific year are excluded from the EU-25 and EU-15 estimates. Where data have been provided by the national statistical offices based on national sources, the indicators for these countries cannot be considered to be fully comparable. In such cases, the gender pay gap value is estimated to have been increased by up to four percentage points. In order to improve this indicator, the methodology and data assessment and source is currently under revision.

### Early school-leavers and persons with low educational attainment

The data are derived from the spring European Union labour force survey (see Box 1.3). Education levels are coded according to the international standard classification of education (ISCED, 1997): pre-primary, primary and lower secondary education: levels 0–2; upper secondary and post-secondary non-tertiary education: levels 3–4; tertiary education: levels 5–6. The information collected relates to all education or training whether or not relevant to the respondent's current or possible future job. It includes initial education, further education, continuing or further training, training within the company, apprenticeship, on-the-job training, seminars, distance learning, evening classes, self-learning and so on. It includes also courses followed for general interest and may cover all forms of education and training such as language, data processing, management, art/culture, and health/medicine courses. Before 1998, education was related only to education and vocational training which was relevant for the current or possible future job of the respondent. Due to the implementation of harmonised concepts and definitions in the survey, information on education and training lack comparability with former years in some cases and consequently for the EU-25 and EU-15. Moreover, due to changes in the survey characteristics, data lack comparability with former years in several countries (Belgium from 1999, Denmark from 2003, Italy from 1993, Latvia and Lithuania from 2002, Hungary from 2003, Austria quarter 2 from 2003, from 2004, Poland quarter 1 from 1999, Portugal from 1998, Finland from 2000 and quarter 1 from 2003, Sweden from 2001, the United Kingdom from 1999, Bulgaria from 2001). In Denmark, Luxembourg, Iceland, Norway, Estonia, Latvia, Lithuania, Cyprus, Malta and Slovenia, the high degree of variation of results over time is partly influenced by a low sample size.



# 3.

## Ageing society



### Policy background

The post-war baby boom led to a bulge in the population pyramid that has gradually been working its way through the age groups: those born in the late 1940s are already reaching retirement age. The boom lasted well into the 1960s and this generation will continue to reach retirement age over the next 25 years. However, there are other, longer-term structural factors which are also influencing the age distribution of the population. Europeans are living longer than they used to and their birth rate has fallen well below the level needed to sustain a stable population. Although immigration may compensate to some extent for these effects, current levels are too low to make a major contribution. As a result the balance between the generations is changing and the numbers of middle-aged and elderly people are growing in relation to the young.

These demographic changes have profound implications. The European Council, at its meeting in Lisbon in March 2000, requested an assessment of whether adequate concrete measures were being taken to 'ensure the long-term sustainability of public finances, examining the different dimensions involved, including the impact of ageing populations'. At Stockholm, in March 2001, it was 'agreed to set an EU target for increasing the average EU employment rate among older women and men (55–64) to 50 % by 2010', and in June of the same year, the conclusions from the Gothenburg Council emphasised the need for a comprehensive approach to meet the challenges of an ageing society.



The Laeken Council (2002) also set out objectives in the area of pensions, including adequacy of pensions and financial sustainability of pensions systems, and the Barcelona Council (2002) prepared orientations in the field of healthcare and care for the elderly based on three objectives (accessibility, quality, financial sustainability of systems), while recognising at the same time that all health systems in the EU are based on the principles of solidarity, equity and universality.

At the Brussels meeting in March 2003 the European Council urged Member States 'to maintain the momentum of reform of national labour markets by focusing on ... increasing labour supply particularly amongst older people, women, immigrants and young people; encouraging active ageing, by discouraging early retirement incentives', and stressed that the 'reform agenda must now also address more effectively the challenges from ageing populations if it is to secure the long-term sustainability of public finances.'

## Main changes

**Table 3.1. Evaluation of changes in the ageing society theme (from 2000)** <sup>34</sup>

	EU-25	EU-15
<b>Old-age dependency ratio</b>	☁	☁
<b>Pensions adequacy</b>		
Risk of poverty for persons aged 65 and over	:	☁
<b>Demographic changes</b>		
Life expectancy at age 65 (males)	☀	☀
Life expectancy at age 65 (females)	☀	☀
Fertility rate	☀	☀
Inwards migration	☀	☀
<b>Public finance sustainability</b>		
Government debt	☁	☁
Pensions expenditure	:	☀
Expenditure on care for the elderly	:	☀
Employment rate by age group	☀	☀

<sup>34</sup> Due to the shortness of the time-series for the at-risk-of-poverty rate for persons aged 65 and over, the evaluation concerns the period 1999-2001. The geographical spread for the net inwards migration data is not sufficient to support an evaluation at EU level.



**LEGEND:**

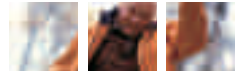
- ☀ favourable change
- ☀☁ no or little change
- ☁ unfavourable change
- :
- insufficient data to evaluate change

<sup>35</sup> A change of data sources limits the ability to make comparisons over time, which is exacerbated by the fact that the EU aggregate is a population-weighted average of individual national values. See the poverty and social exclusion chapter and 'Methodological notes'.

The overall message revealed by the indicators of this theme is unfavourable <sup>35</sup>. Although the life expectancy of persons at the age of 65 is continuing to increase it is not accompanied by the fertility rates necessary to sustain the balance between the generations. This will lead to further increases in the numbers of pensioners relative to those of working age. Even if the decrease of the population could be avoided by a replacement fertility rate, population ageing is bound to progress further as a result of this increasing life expectancy. As a result, pension systems and public finances risk being stretched to meet future demand. Policies aimed at boosting the very low employment rate of older workers would help to offset the increase in dependency resulting from demographic change. Higher levels of inward migration may also augment the younger sections of the population.

### The ageing of the population is becoming gradually more important

The old-age dependency ratio (those aged over 65 years as a percentage of the population aged 15 to 64 years) increased at an annual rate of 1.2 % between 2000 and 2004, reflecting an ageing of the population in the Union as a whole. Recent Eurostat projections show that the ratio will double between 2004 and 2050. By the middle of the century, there will be one person aged 65 or over for every two aged between 15 and 64. In the next decades, an ever-smaller working age population will have to support an ever-greater number of pensioners.



The ratio of median household equivalised income of persons aged 65 and over to median household equivalised income of persons aged less than 65 was at around 86 % in 2001. It has decreased since 2000, indicating a greater disparity of income between pensioners and the working population, but this is difficult to interpret in itself as a favourable or unfavourable trend<sup>36</sup>. The risk of poverty for the older members of the population exceeds by two or three percentage points the risk incurred by the total population, and increased from 17 to 19 % from 1999 to 2001. Therefore our pensions system needs to be adapted to guarantee an adequate standard of living throughout life.

Life expectancy at age 65 has grown for both males (+ 1 % on average per year) and females (+ 0.8 %) in the EU-15 over the period 1990–97. From 2000 to 2002, this rate increased for males to an average annual rate of 1.3 %, and decreased to 0.3 % for females. Although this trend towards longer life expectancy is positive, it is accompanied by persistently low fertility rates. Even if immigration has become the major driving force of population growth over recent years, the age structure of immigrants tempers any influence on the ageing of the population. As a result the old-age dependency ratio will inevitably increase, placing a high burden on public finances and pension schemes.

Following a period of growth at 0.7 % per year on average from 1990 to 2000, pension expenditure has remained stable from 2000 to 2002 in the EU-15, at 12.6 % of GDP. Other old-age care expenditures increased from 0.3 to 0.4 % of GDP from 1990 to 1992, and have remained stable since. General government debt has decreased overall from 1996 to 2000 by 2.7 % on average in the EU-15, but has increased slightly again by 0.2 % per year in the EU-15, and 0.4 % in the EU-25. In 2004, it was still four to five points above the 60 % reference value. Employment for the 55–64 year-old age group increased from 38.8 % in 2000 to 41.7 % in 2003, but is still at much lower levels than the 25–54 category. Reaching the 50 % target for 2010 is possible, but will require further significant progress.

### Rationale for the selection of indicators

‘Meeting the challenges of an ageing population’ is one of the headline objectives set in the sustainable development strategy in Gothenburg (see Box 3.1).

The selected indicators are based on these objectives as well as on the sub-objectives of the European employment strategy, which aims at increasing access to the labour market (see economic development chapter overview) and the indicators selected under the Lisbon strategy’s ‘open method of coordination’ which applies in the field of pensions.

### Pensions adequacy is not guaranteed

<sup>36</sup> This is a descriptive indicator and is difficult to evaluate in terms of sustainability, except that a drastic decrease would be undesirable. It has therefore not been included in the evaluation table.

### Demographic changes provide both encouraging and worrying signs for the future

### The sustainability of public finance is a pre-requisite to maintain our social model

#### Box 3.1: Sustainable development strategy: objectives related to ageing society

The communication from the Commission to the Gothenburg Council reiterated the commitments made at the Lisbon Summit to deal with the economic and social implications of an ageing society (COM(2001) 264), namely:

- to ensure the adequacy of pension systems as well as of healthcare systems and care of the elderly, while at the same time maintaining sustainability of public finances and inter-generational solidarity;
- to address the demographic challenge by raising employment rates, reducing public debt and adapting social

- protection systems, including pension systems;
- to increase the average EU employment rate among older women and men (55–64) to 50 % by 2010.

In June 2001, the conclusions from the Gothenburg Council stated that ‘a comprehensive approach is needed to meet the challenges of an ageing society. The European Council endorses the three broad principles for securing the long-term sustainability of pension systems: safeguarding the capacity of systems to meet their social objectives, maintaining their financial sustainability and meeting changing societal needs’.





The headline indicator of 'ageing society' compares the elderly population with the population of working age. The 'old-age dependency ratio' is a commonly used indicator to monitor changes in population structure. Other problems to be tackled by the Union for mitigating the effects of an ageing population are covered by a set of indicators dealing with the following.

- **Pensions adequacy:** retired people have to be able to pay for the costs linked with their lack of independence, and appropriate pension levels are necessary to protect them from the risk of poverty. It is intended in the future to exchange the relative median income ratio with a ratio of the income after and prior to retirement.
- **Demographic changes:** an increasing life expectancy and a declining fertility rate are leading to a scenario where the number of pensioners will drastically increase over the next 25 years, whilst the numbers of those of working age will decrease; immigration can only make a limited contribution to safeguarding the future of social protection systems.
- **Public finance sustainability:** pensions, old-age care and the low employment rate for the elderly have a high financial and social cost; adequate social protection can only be maintained without jeopardising public finances if the older generations stay longer on the labour market and lead active and healthy lives. As well as the indicators presented here on current expenditure on pensions and care for the elderly, there is a need for projections of future expenditure. A further indicator on the average exit age from the labour market is not presented here for reasons of space.

Although not exhaustive, the set of indicators depicts the main milestones for addressing the demographic challenge in Europe over the next decades. Other indicators could have been selected to monitor the trend in the average retirement age, an aspect which is nevertheless encompassed in the employment indicator. Moreover, no indicator is currently available on the rate of employment of disabled people, which could be raised through the promotion of telework.

#### Further reading on ageing society in Europe:

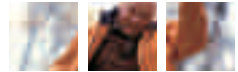
Joint report from the Commission and the Council: Report requested by the Stockholm European Council, 'Increasing labour force participation and promoting active ageing', 2002, No 6707/02

'Europe's response to world ageing. Promoting economic and social progress in an ageing world', contribution of the European Commission to the second World Assembly on Ageing, COM(2002) 143

'Adequate and sustainable pensions', joint report by the Commission and the Council, 2003

'Modernising social protection for the development of high-quality, accessible and sustainable healthcare and long-term care: support for the national strategies using the "open method of coordination"', COM(2004) 304

'Budgetary challenges posed by ageing populations: the impact on public spending on pensions, health and long-term care for the elderly and possible indicators of the long-term sustainability of public finances', EPC/ECFIN/630-EN



Headline indicator



## Old-age dependency ratio

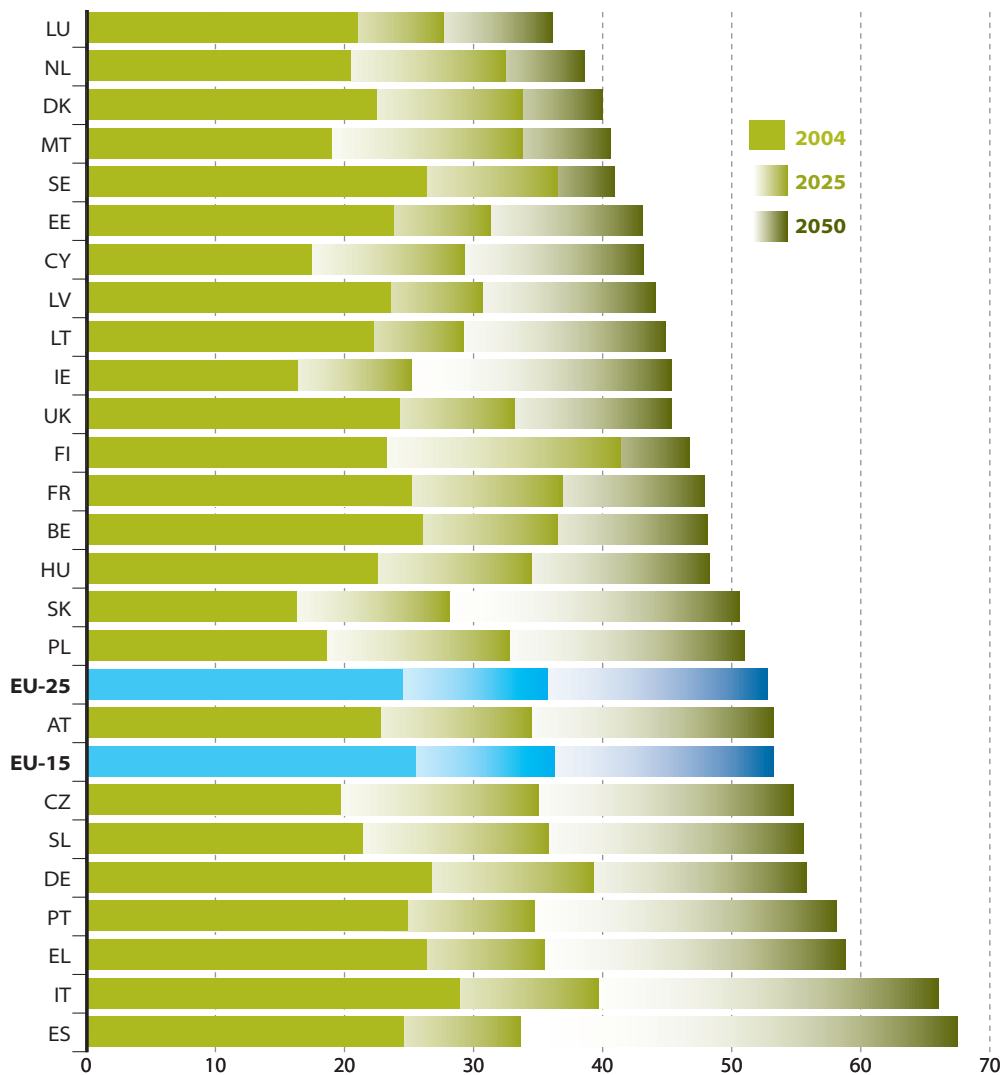


**Definition:** Projected old-age dependency ratio is defined as the number of persons aged 65 and over expressed as a percentage of the number of persons aged between 15 and 64. It should be noted that projections are not forecasts and they are based on assumptions about the future, not on certainties.

The indicator is an approximation of the ratio between the retired and working age populations and as such provides an insight into the potential future financial burden of care for the elderly, and especially pensions.

### Indicator relevance

This issue is a topic of discussion in most European countries as about 11 % of GDP is spent on support for the elderly, of which the major part is old-age pensions. To mitigate the effects of an ageing population, the European employment strategy has set the objectives for 2010 of increasing by five years the average age at which people leave the labour market and increasing to 50 % the employment rate of older workers aged 55–64.

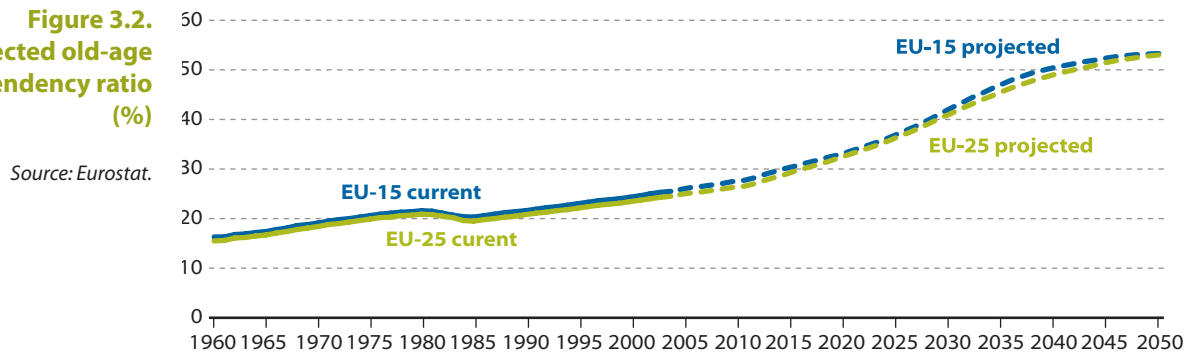


**Figure 3.1.**  
Projected old-age  
dependency ratio  
(%)

Source: Eurostat.



**Figure 3.2.**  
Projected old-age  
dependency ratio  
(%)



## Analysis

The old-age dependency ratio has been growing at an annual average rate of about 1.2 % since 2000. However, it is important to examine the development of this indicator over a long time-frame as changes are gradual and highly dependent on the past. Whereas there was one pensioner for eight persons of working age in 1960, this has risen to one pensioner for four persons of working age in 2005. It is expected that by 2050 there will be one pensioner for only two persons of working age, placing a huge burden on the financial resources of the future working population. The ratio in 2050 would range from 36.1 % in Luxembourg to 67.5 % in Spain. The most dramatic changes are expected to take place in Slovakia, where the ratio could increase threefold.

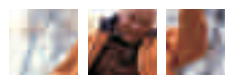
As the baby boom generation moves into retirement between now and 2030, the elderly population will inflate at a faster rate than has been seen in recent years. At the same time, due to the low fertility rates of the past 40 years, the population of working age will start to diminish. Immigration levels are not expected to be sufficient to have more than a marginal impact on this scenario. Although there are uncertainties as to the exact level of the future old-age dependency ratio, the fact is that the population is getting older and further ageing is inevitable. This fore-knowledge places us in a very strong position to plan and gradually introduce the changes needed to adapt our societies to demographic shift.

Measures such as structural reforms of the labour market and old-age insurance and pension schemes, particularly with the aim of raising the average retirement age, encouraging inwards migration, growth in productivity and technological developments are necessary to offset the consequences of the trend in the ratio and guarantee adequate social protection without jeopardising the sustainability of public finance systems. In addition to mitigating the consequences of population ageing, population ageing itself could be moderated by increases in fertility rates, and to a lesser extent by immigration.

## Potential linkages

The old-age dependency ratio is directly influenced by demographic variables, such as fertility rate and migration, which have a direct impact on the current or future age distribution of the population, and its evolution is therefore reflected in life expectancy.

The old-age dependency ratio increases the financial burden of old age, and therefore influences government debt, pensions expenditure, and expenditure on care for the elderly.



Pensions adequacy



## Relative median income ratio



**Definition:** The indicator is defined as the **ratio of median household equivalised income of persons aged 65 years and over to the median household equivalised income of persons aged less than 65 years.**

Net income is total income from all sources, including income from work (mainly wages and pensions), investment and social benefits, calculated net of taxes and social contributions. Household income is 'equivalised' using a methodology established by the OECD which takes into account differences in household size and composition, making comparisons more realistic (see 'Methodological notes').

The indicator provides a comparison between the standards of living of households of persons aged 65 and over and those of persons aged less than 65. It gives contextual information on the potential adequacy of pensions, but it would not be meaningful to set an optimum level which would be considered as sustainable. A potential target could be to set a minimum level for the indicator under which the level of pensions would not be considered socially sustainable, but there is currently no agreement on this.

### Indicator relevance

This indicator focuses on income in contrasting the situation of persons before and after retirement. A fuller picture would be gained by considering additional information, including household situation (older households are more often owners of their own accommodation than younger ones) and access to services. Note that this indicator does not compare the 'before' and 'after' situation of the same individual, but rather contrasts the current situation of separate and distinct groups of the population.

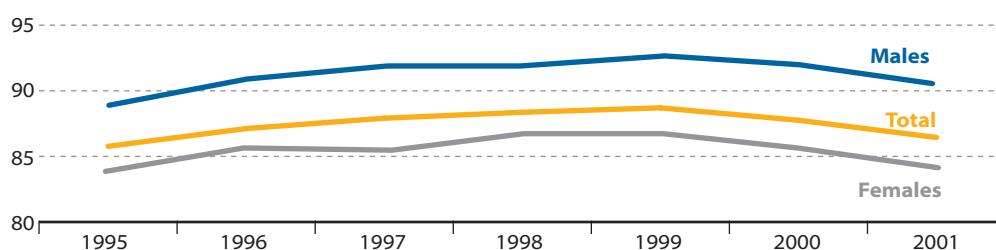


Figure 3.3. EU-15 relative median income ratio (%)

Source: Eurostat.

The ratio shows an increase until 1999, up to 88.6 %, followed by a decrease down to a value of 86.3 % in 2001, with a slight increase in the gender gap. Within this age group and for the EU as a whole, the income levels of women stand about six points below those of men in 2001, reflecting the fact that women are often more at risk of poverty than their male counterparts. Among the causes of these differences are the tendency of women to work fewer years because of childcare and other reasons, their lower personal investment in career development, and their generally lower educational attainment. Another factor is that the oldest pensioners tend to have lower incomes, and women are the major part of this group.

### Analysis

An increase in the relative median income ratio (a relative improvement of the situation of persons aged 65 and over) should influence positively both the risk of poverty and healthy life expectancy of persons aged 65 and over. An increase in the employment rate is expected to influence positively both the denominator of the ratio at rather short term and its numerator on a longer-term perspective. Reciprocally, an increase in the unemployment rate is expected to have a negative influence on both denominator and numerator.

### Potential linkages



Pensions adequacy



## Risk of poverty for persons aged 65 and over

**Definition:** The indicator is defined as the **share of persons with an equivalised disposable income** (see 'Methodological notes'), before social transfers, **below the risk-of-poverty threshold**, which is set at 60 % of the national median equivalised disposable income (after social transfers). Retirement and survivors' pensions are counted as income before transfers and not as social transfers.

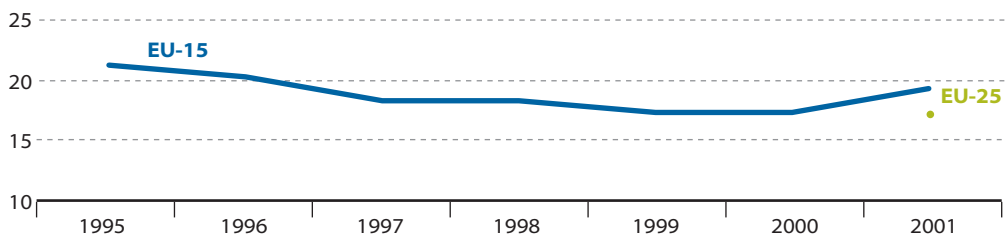


### Indicator relevance

The at-risk-of-poverty indicator measures the difference between actual income and the poverty line. People whose income lies below that reference level are considered to be suffering from income poverty and are threatened by social exclusion in the medium or long term. Tackling poverty and social exclusion is essential as these problems have a high social cost.

**Figure 3.4.**  
At risk of poverty rate for persons aged 65 and over (%)

Source: Eurostat.



### Analysis

At 17 % in the enlarged Union, compared with 19 % in the EU-15, the risk of poverty is higher by two or three points for pensioners compared with the population as a whole. The share of pensioners at risk in the EU-15 fell from 21 to 17 % in the 1990s but increased again to 19 % in 2001.

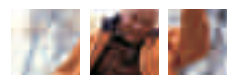
One of the headline objectives of the Lisbon strategy is to make a decisive impact on the eradication of poverty by the end of this decade. For future retired people, this implies ensuring decent wage levels during the working age period by maintaining skill levels, so as to generate decent pensions.

### Potential linkages

This is a specific breakdown of the headline indicator in the poverty and social exclusion chapter, to which it is closely linked and with which it shares most potential linkages.

In particular, it is strongly influenced by the state of the economy and by public expenditures, and first of all by pensions expenditures. Since pensions and other income are related to employment over one's lifetime, the risk of poverty for persons aged 65 and over is likely to be influenced by labour market issues (both employment and unemployment).

An increase in poverty is likely to be reflected on public health (and on consumption patterns), which should anyway significantly vary for this part of the population from those of other population groups.



Demographic changes



## Life expectancy at age 65

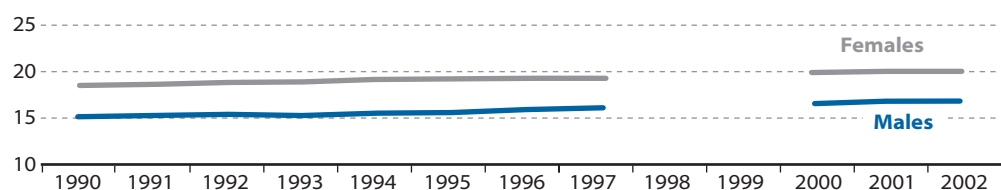


**Definition:** The indicator is defined as **life expectancy at age 65**, by gender. It refers to the mean number of years still to be lived by a man or a woman who has reached the age of 65, if subjected throughout the rest of his or her life to the current mortality conditions (age-specific probabilities of dying).

The indicator reflects improvements in living conditions, especially in terms of wealth, housing, nutrition and healthcare. An increased life expectancy is a goal of our societies and is advantageous to them, but it also challenges the sustainability of public finances, the healthcare system and the provision of care for the elderly.

### Indicator relevance

The Lisbon strategy calls for the adaptation of healthcare systems to an ageing population while at the same time guaranteeing adequacy, quality, accessibility and financial sustainability. Moreover, it calls for the promotion of inclusion in Member States' policies, including health, through action under the Structural Funds. Poverty and social exclusion can lower life expectancy.



**Figure 3.5.**  
EU-15 life expectancy at age 65 (years)

Source: Eurostat.

Since 1990, there has been a general trend towards increasing life expectancy at age 65. Life expectancy increased from 18.4 years in 1990 to 19.9 in 2002 for women. Progress has been slightly higher for men, with an increase from 14.6 to 16.3 years during the same period of time. It results from these changes that women having reached the age of 65 live on average 3.6 years more than men as a consequence of consistently higher mortality rates for men throughout their lives.

### Analysis

Life expectancy at age 65 is closely linked to healthy life years at birth and at age 65, and is influenced by the cancer incidence rate and percentage of present smokers. Issues such as food safety and quality, chemicals management and health risks due to environmental conditions could also have a direct impact on its evolution.

### Potential linkages

Long-term economic, social and environmental policies aiming at improving the overall quality of life impact positively on life expectancy. For example, GDP per capita, employment or the risk of poverty influence the well-being of citizens, and could therefore influence life expectancy.



### Demographic changes



## Fertility rate

**Definition:** The indicator is defined as the **mean number of children** that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the fertility rates by age of a given year. This rate is therefore the completed fertility of a hypothetical generation, computed by adding the fertility rates by age for women in a given year (the number of women at each age is assumed to be the same).

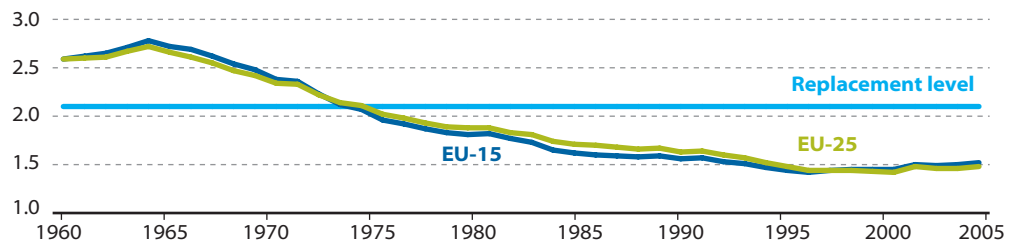


### Indicator relevance

Future population size and age distribution within that population are to a very large extent determined by the total fertility rate. It is generally considered that at a level of 2.1, other things being equal, the total fertility rate would lead to a more or less stable population size and age distribution. Given the lifespan of a human being, the trends in this indicator exert long-term impacts. For this reason it is necessary to consider the development of the indicator over a rather long time frame. Periodic fluctuations in this indicator are normal, but sustained periods above or below the replacement level lead to a shift in the balance between generations and the need to plan for future demands on pension funds, social security and provision for education and care for the elderly.

**Figure 3.6.**  
Total fertility rate (number of children per woman)

Source: Eurostat.



### Analysis

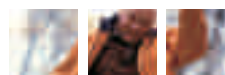
Total fertility rates fell steadily across the EU from a level well above the replacement level in the mid-1960s to a level of about 1.5 in the mid-1990s. For the EU-15, the minimum was reached in 1995 with 1.42, when for the EU-25, there was a longer period of decrease, and the minimum was reached in 1999, also at 1.42. Since then fertility rates increased to reach respectively 1.52 for the EU-15 and 1.48 for the EU-25 in 2002. This means that for a period of 30 years the numbers of babies entering the population have been declining. This will in turn lead to smaller numbers of adults of child-bearing age, which will reduce further the numbers of babies entering the population.

High fertility rates are seen as an asset for the economy as they will result — with a long time lag — in an increase in labour supply. Access to health and care measures, the provision of childcare facilities aimed at promoting female participation in the labour market and providing financial support to households with dependent children — which are most at risk of poverty — may influence fertility rates to some extent.

On the other hand, the potentially lower demand for childcare and education also provides the opportunity to both economise and improve on these services.

### Potential linkages

Fertility rate has a direct influence on the old-age dependency ratio as the level of fertility rate is a major factor behind imbalances in the age distribution of the population. Fertility rate is very much influenced by the overall economic situation (GDP per capita), the social situation (risk of poverty) and the state of the labour market (employment, unemployment, gender pay gap).



Demographic changes



## Inwards migration

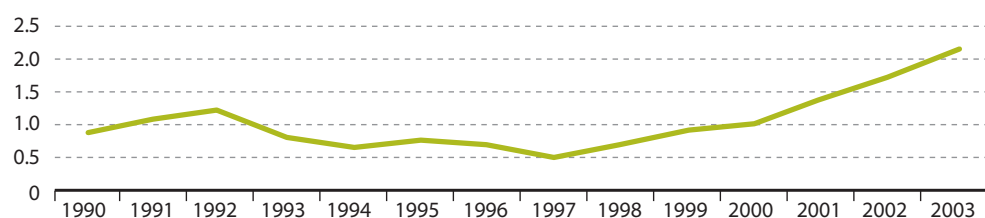


**Definition:** Inwards migration is the net balance between immigration to and emigration from an area, expressed as a number of persons.

The EU as an 'area of freedom, security and justice' has a strong tradition as a shelter for asylum-seekers and refugees. If illegal migration must be fought against, as it generates problems linked with the integration of the newcomers and can give rise to trafficking in human beings, illegal employment and even, terrorism, 'legal migration can play an important role in enhancing the knowledge-based economy in Europe, in advancing economic development, and thus contributing to the implementation of the Lisbon strategy. It could also play a role in partnerships with third countries'<sup>37</sup>. Moreover, immigration is considered a chance to counter-balance the effects of ageing resulting from increasing life expectancy and decreasing fertility.

### Indicator relevance

<sup>37</sup> Conclusions from the Brussels Council held in November 2004.



**Figure 3.7.**  
EU-25 inwards migration (million persons)

Source: Eurostat.

The number of persons immigrating into the EU from non-EU countries is high. During the 1990s the number of inward migrants fluctuated at around 800 000 per year, and showed a moderate annual average growth rate of 1.2%. Since 2000 the average annual growth rate has increased to 28.2%, and nearly 2.2 million immigrants entered the EU in 2003. Already representing about 50% of EU population growth in 1990, immigration has grown at such a rate over recent years that, whilst the EU fertility rate has fallen, immigration contributed more than 90% of population growth in 2003. Nevertheless, the significance of this contribution to population growth on the ageing of society is tempered by their age structure as most immigrants are of employable age. Furthermore, although able to make a positive contribution to society, it also needs to be recognised that they will grow older and eventually need to be supported in their old age.

### Analysis

Inwards migration has a direct influence on the old-age dependency ratio as the level of migration may contribute to balance the inequalities in the age distribution of the population. It has also an influence on the ageing society theme in general.

### Potential linkages

Depending on the level of qualification of immigrants, migration may also have a positive or negative impact on low educational attainment, employment, the risk of poverty, and inequality of income distribution.





Public finance sustainability



Government debt

**Definition:** The indicator is defined as **general government gross debt as a percentage of GDP** at current market prices.



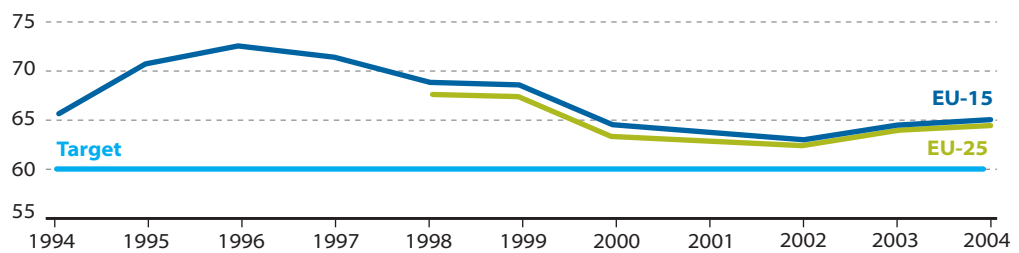
Gross debt refers to the amount of money borrowed from the State to support its financing requirements. General government sector comprises the sub-sectors of central government, State government, local government and social security funds.

**Indicator relevance**

The comparison between general government debt and GDP provides an indication of an economy's health by showing to what extent a country relies on borrowing in order to cover its expenditure. (Nevertheless, it should be borne in mind that debt is generally long term and may result from how well the economy has been managed in the past as well as other specific factors related to a country's current situation.) Healthy public finances are one of the criteria of the stability and growth pact (1997) and are used to assess the eligibility of Member States to join the single currency. The ratio of euro-zone government debt to GDP should not exceed the reference value of 60 % unless the excess is exceptional and temporary and the ratio is diminishing substantially and continuously. Governments have the obligation to notify their debt statistics to the European Commission twice per year under the excessive deficit procedure. A reduction in the level of debt also reduces future interest payments and thus creates more financial leeway for meeting the increasing needs of an ageing population.

**Figure 3.8. General government gross debt (% of GDP)**

Source: Eurostat.



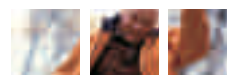
**Analysis**

Between 1996 and 2000 there was an overall improvement of general government debt, with an annual average decrease of 2.7 %. However, the trend has been less favourable in recent years, with an annual average increase of 0.2 % in the EU-15, and 0.4 % in the EU-25 between 2000 and 2004.

In 2004, the 60 % level was exceeded in nine out of the 25 Member States, including Germany and France whose economic weight strongly influences the overall size of EU debt. The highest figures were with Greece (110.5 %) and Italy (105.8 %), while Estonia and Luxembourg were below 10 % (see country breakdown on the website). The EU-15 and EU-25 averages have been consistently above the threshold of 60 % since 1994.

**Potential linkages**

Government debt is influenced by government spending (e.g. pensions expenditure and expenditure on care for the elderly) and growth in GDP. Since the scale of the financial burden of supporting the elderly is proportional to the numbers of elderly and the costs are borne by the active workforce, it is also influenced by the old-age dependency ratio.



Public finance sustainability



## Pensions expenditure

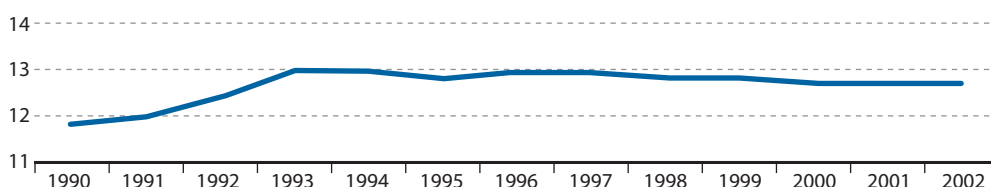


**Definition:** The indicator is defined as the **share of pension expenditures in GDP**. Pensions include old-age pension, anticipated old-age pension, partial pension, disability pension, survivors' pension and early retirement benefit.

The share of GDP devoted to pensions is an important measure of the economic burden of pensioners on society. It should be noted that this indicator is not limited to old-age pensions.

### Indicator relevance

The modernisation of pension systems is an important item on the European agenda; objectives set in the Lisbon strategy and endorsed by the Laeken Council are twofold, aimed at: (1) ensuring their adequacy so that older people are not placed at risk of poverty and can enjoy a decent standard of living; and (2) maintaining the financial sustainability of pension systems notably through a high level of employment. This second objective includes targets designed to increase the employment rate of older workers and the average age at which people stop working.



**Figure 3.9.**  
EU-15 pensions expenditure (% of GDP)

Source: Eurostat.

The share of pension expenditure in GDP has remained relatively stable at a level of around 12.6 % since 2000. This represents a fall of some 0.3 % from the higher level of the mid-1990s. Variation in the share of pension expenditure in GDP is influenced by the age structure of the population (number of beneficiaries) and in some case is a consequence of pension reforms.

### Analysis

Compared with net national income (see chapter on economic development), which has grown by less than 1 % over the last 10 years, the share of pensions has progressed much better (+ 5 %). Under plausible assumptions, pension expenditure could increase by 3–5 % of GDP in the majority of Member States between 2000 and 2040 <sup>38</sup>.

<sup>38</sup> 'Budgetary challenges posed by ageing populations: the impact on public spending on pensions, health and long-term care for the elderly and possible indicators of the long-term sustainability of public finances', EPC/ECFIN/630-EN.

Pensions, like all social transfers, are intended to reduce the risk of poverty and to replace income from work for those who are no longer able or expected to work. They facilitate access to decent living conditions and participation in society. However, their modernisation is necessary and most countries have set up reforms, whose effects are not always sufficiently felt yet to guarantee long-term financial sustainability.

Reducing early retirement and increasing working life, so that the average retirement age will follow the trend in life expectancy, are measures that will contribute to the maintenance of the system. Increased contributions to private, funded schemes can also play a part in securing future adequacy without overburdening public finances.

Since the financial burden of supporting the elderly is borne by the active workforce, pensions expenditure is influenced by the old-age dependency ratio. Given that pensions expenditure includes anticipated old-age pensions and other types of pension, it is also influenced by total employment by age group. As with the other expenditure indicators, pension expenditure would be expected to have an impact on net national income, with possible knock-on effects on other types of public expenditure. As it is also likely to affect old-age income, it could be related to the at-risk-of-poverty rate for persons aged 65 and the relative median income ratio.

### Potential linkages



Public finance sustainability



## Expenditure on care for the elderly

**Definition:** The indicator is defined as the percentage **share of social protection expenditure devoted to old-age care in GDP**. These expenditures cover care allowance, accommodation, and assistance in carrying out daily tasks.



### Indicator relevance

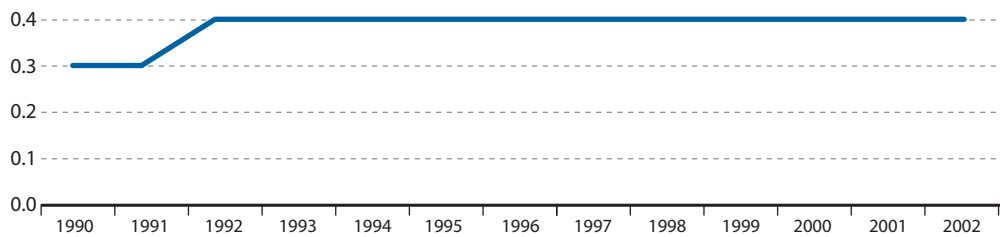
The indicator shows the extent to which the elderly population is protected from a set of risks through specific social protection. Social protection is financed from both general government tax-funded transfers, accounting for one-third of the total and social contributions, paid by employers and by protected persons (around two-thirds) <sup>39</sup>.

<sup>39</sup> Eurostat Yearbook 2004.

The Lisbon strategy requires Member States to maintain 'healthy' public finances in the long term, taking into consideration the impact of ageing populations.

**Figure 3.10. EU-15 expenditure on care for the elderly (% of GDP)**

Source: Eurostat.

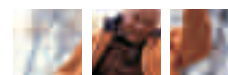


### Analysis

Expenditure on old-age care, expressed as a share of GDP, has remained rather stable in recent years at a level of 0.4 %. This has risen from the level of 0.3 % in the early 1990s. Data for EU-25 are available over the period 2000 to 2001 and do not differ from the EU-15 figure.

### Potential linkages

Expenditure on care for the elderly is strongly influenced by the old-age dependency ratio, as such future levels of expenditure are related to trends in life expectancy at age 65, as well as to the total fertility rate and net inwards migration. Healthy life years at birth and at age 65 are also relevant, since the healthy are less reliant on outside care. In addition, there is a link to the ability of future pensioners to support themselves as reflected in the employment rate by age group.



## Employment rate by age group

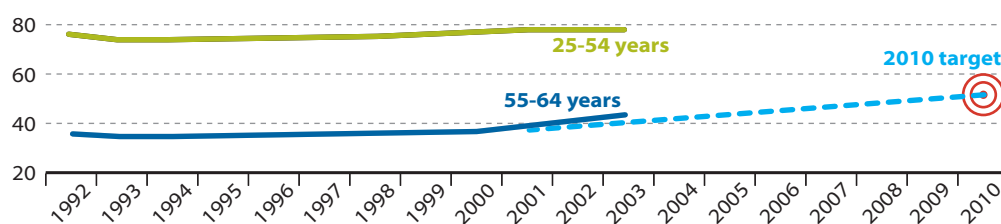


**Definition:** The indicator is defined as **total employment rate by age group**. The employment rate is calculated by dividing the number of persons in employment within each age group by the total population of the same age groups.

The employed population consists of those persons who during the reference week performed work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent.

Employment among older people is low and many withdraw from the labour force at a relatively young age. An augmentation of the labour force is indispensable for mitigating the future impacts of the unfavourable demographic trends. This indicator is intended to monitor progress in the objective, set at the Stockholm European Council of March 2001, that at least half of the EU population in the 55–64 age group should be in employment by 2010. The Barcelona European Council of March 2002 further concluded that efforts should be stepped up to increase opportunities for older workers to remain in the labour market. To meet this objective it proposed that a five-year delay in the average age at which people withdraw from the labour force should be sought by the end of the decade.

### Indicator relevance



**Figure 3.11.** Total EU-15 employment rate by age group (%)

Source: Eurostat.

As at 2003, the total employment rate stood at 63 % in the EU-25 and 64.4 % in the EU-15 (see economic development chapter). However, these figures mask discrepancies between the employment rates for different age groups. Only 40.2 % of the EU-25 population (41.7 % in the EU-15) aged between 55 and 64 years were in employment, compared with 76.5 % (77.2 %) for the 25–64 year-old age group. It is difficult to draw firm conclusions about the youngest group of workers (15–24) as the employment rate is not adjusted to take account of participation in education and they are therefore left out of this discussion.

### Analysis

The employment rate of older workers remains very low and raising it to 50 % represents a challenge for the coming years, even though recent changes are encouraging, with an increase of 3.9 percentage points between 2000 and 2003. In 2001, only 39 % of the population aged 55–64 was in work, around 3 % was unemployed and the remaining 58 % was inactive. Given this very high rate of inactivity, it is clear that the Barcelona target of delaying the exit age is a prerequisite for reaching the goal of 50 % employment for this age group.

Employment rate by age group is a specific breakdown of the employment indicator in the economic development theme, to which it is closely linked and with which it shares most potential linkages.

### Potential linkages

Employment rate by age group is related to the ability of providing adequate social protection for future pensioners and is thus strongly linked to pensions expenditure and expenditure for the elderly. It is also influenced by lifelong learning, early school-leavers and low educational attainment, since education and appropriate skills are key factors in employability.



## Methodological notes

### Old-age dependency ratio

The current data are collected by Eurostat from the national statistical offices, based on the most recent census round or on the data extracted from a population register. The data include Eurostat estimates.

The projections are based on one among several scenarios of population evolution based on assumptions of fertility, mortality and migration. The current trend scenario does not take into account any future measures that could influence demographic trends. It should be noted that the assumptions adopted by Eurostat may differ from those adopted by national statistical institutes and therefore the results published by Eurostat can be different from those published by Member States.

### Relative median income ratio

The data are drawn from the European Community household panel (ECHP) (see Box 2.3 in the poverty and social exclusion 'Methodological notes'). The median is the value which splits the distribution of income into two parts of equal size; exactly 50 % of people fall below that value, and 50 % above it. Household income is 'equivalised' using a methodology established by the OECD, which takes into account differences in household size and composition, making comparisons more realistic (see the poverty and social exclusion 'Methodological notes').

### Risk of poverty rate for persons aged 65 and over

The data come from the ECHP (see Box 2.3). The population consists of all persons living in private households. For more details, see headline indicator 'at-risk-of-poverty rate after social transfers' in the chapter entitled 'Poverty and social exclusion'.

### Life expectancy at age 65

The data come from the European Community household panel (ECHP) up to 2001, with extrapolations for 2002 (see Box 2.3).

### Fertility rate

The data are collected by the national statistical institutes and depend on the registration systems used in each country. There are no international recommendations for demographic statistics. Eurostat has established a permanent conversion method (Syscodem), which permits comparability of data compiled according to any definition from across the European Union. Moreover, a new methodology for the calculation of this indicator should be available from 2003 onwards.

### Inwards migration

The data are collected by Eurostat from the national statistical offices, based on the most recent census round or on the data extracted from a population register. Since most countries either do not have accurate figures on immigration and emigration or have no figures at all, net migration is generally estimated on the basis of the

difference between (total) population increase and natural increase between two dates. The statistics on net migration are therefore affected by all the statistical inaccuracies in the two components of this equation, especially population increase. Given these limitations, data are not fully comparable and include Eurostat estimates.

### Government debt

Data are based on the European system of national accounts. Since this is one of the key aspects of convergence under the Maastricht Treaty there is a high degree of comparability within the EU-15 and the new countries and the data are generally complete and of high quality.

Debt is valued at nominal (face) value, and foreign currency debt is converted into national currency using end-year market exchange rates (though special rules apply to contracts). The national data for the general government sector are consolidated between and within the sub-sectors of general government. Basic data are expressed in national currency, converted into euro using end-year exchange rates for the euro provided by the European Central Bank. Data are compiled on an accrual basis.

### Pensions expenditure

The data are taken from the European system of integrated social protection statistics (Esspros) — see Box 3.2 below. The 'pensions' aggregate comprises only part of periodic cash benefits under the disability, old-age, survivors and unemployment functions. It is defined as the sum of the following social benefits (followed by the function to which the category of benefits belongs):

1. disability pension (disability function);
2. early-retirement benefit due to reduced capacity to work (disability function);
3. old-age pension (old-age function);
4. anticipated old-age pension (old-age function);
5. partial pension (old-age function);
6. survivors' pension (survivors' function);
7. early-retirement benefit for labour market reasons (unemployment function).

These benefits may be means-tested or non-means-tested.

The value of the 'pensions' aggregate has been calculated for all countries according to the above definition, regardless of differences between countries in the institutional organisation of social-protection schemes. Some benefits classed as 'pensions' (such as disability pension) may be paid to persons not yet having reached the statutory retirement age. The various categories of social protection are defined in the Esspros manual, 1996. Under Esspros, pensions are recorded without deduction of tax or other compulsory contributions payable by beneficiaries on benefits. They do not, on the other hand, include the social contributions paid by pension schemes on behalf of their pensioners to other social protection schemes (such as health schemes). Esspros



### Box 3.2: European system of integrated social protection statistics (Esspros)

Data on social protection expenditure and receipts are harmonised according to the European system of integrated social protection statistics, as described in Eurostat's 1996 Esspros manual. Social protection expenditure includes provision of social benefits, administration costs and other expenditure (for example, interest paid to banks). Benefits provision represents the core of social protection expenditure. Expenditure on education is excluded. Social benefits are direct transfers in cash or kind by social protection schemes to households and individuals to relieve them of the burden of distinct risks or needs. Benefits via the fiscal system are excluded. Benefits are classified according to eight social protection 'functions'.

1. Sickness/healthcare benefits include mainly paid sick leave, medical care and provision of pharmaceutical products.
2. Disability benefits include mainly disability pensions and the provision of goods and services (other than medical care)

to the disabled.

3. Old-age benefits include mainly old-age pensions and the provision of goods and services (other than medical care) to the elderly.
4. Survivors' benefits include income maintenance and support in connection with the death of a family member, such as survivors' pensions.
5. Family/children benefits include support (except health-care) in connection with the costs of pregnancy, childbirth, childbearing and caring for other family members.
6. Unemployment benefits also include vocational training financed by public agencies.
7. Housing benefits include interventions by public authorities to help households meet the cost of housing.
8. Social exclusion benefits include income support, rehabilitation of alcohol and drug abusers and other miscellaneous benefits (except healthcare).

records such payments under the heading of 're-routed social contributions'.

#### Total employment rate by age group

The indicator is based on the EU labour force survey (see Box 1.3 in the economic and development 'Methodological notes').

#### Expenditure on care for the elderly

The data are derived from the European system of integrated social protection statistics (see Box 3.2 above). Old-age care is not a category which is explicitly defined within Esspros, but has been aggregated from the following benefits from the old-age function: care allowance, accommodation, and assistance in carrying out daily tasks.



# 4.

## Public health



### Policy background

Article 152 of the Treaty establishing the European Community lays down that ‘a high level of human health protection shall be ensured in the definition and implementation of all Community policies and activities.’ This is a recognition of the fact that whilst health is key to the well-being of European citizens, and is a fundamental right<sup>40</sup>, it is also heavily dependent on policies in a wide range of areas, including environmental, agricultural, industrial, trade, social and economic. The health of the population is also indispensable to economic development. Improvements in health status, and increases in life expectancy and in healthy life years, lead to longer, more productive working lives. Ill health results in healthcare costs, absence from work and a loss in productivity.

The EU Treaty (Article 152) states that ‘Community action, which shall complement national policies, shall be directed towards improving public health, preventing human illness and diseases, and obviating sources of danger to human health’. At the Gothenburg European Council in June 2001, public health was singled out as one of the four priority areas for the sustainable development strategy. It was stated that ‘the European Union must respond to citizens’ concerns about the safety and quality of food, use of chemicals and issues related to outbreaks of infectious diseases and resistance to antibiotics.’

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<sup>40</sup> *Charter of Fundamental Rights of the European Union* (Articles 31 [Fair and just working conditions] and 35 [Healthcare]).
















## Main changes

**Table 4.1.**  
**Evaluation**  
**of changes**  
**in the public**  
**health theme**  
**(from 2000)** <sup>41</sup>



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
- : insufficient data to evaluate progress

	EU-25	EU-15
<b>Healthy life years</b>	:	
<b>Human health protection and lifestyles</b>		
Overweight people	:	:
Resistance to antibiotics	:	:
Cancer incidence rate	:	:
Present smokers	:	:
Suicide death rate		
Serious accidents at work	:	
<b>Food safety and quality</b>		
Salmonellosis incidence rate		
<b>Chemicals management</b>		
Production of toxic chemicals	:	
<b>Health and environment</b>		
Population suffering from noise and from pollution	:	

<sup>41</sup> In general, trends have been evaluated over the period from 2000 to the latest year where data are available. Exceptions, due to lack of recent data, are suicide death rate and population suffering from noise and pollution (evaluation period: 1998–2000). Insufficient data are available for the indicators on overweight people, percentage of smokers, antibiotic resistance and incidences of cancer to be evaluated in the above table.

**We are living relatively longer and healthier lives**

Sustained economic development, improved healthcare systems, a better environment, better housing, better nutrition and a better educated population are factors which have led to a relative increase in life expectancy and the number of years lived in good health, although the average annual increase remains below 1 % (0.8 % per year for men, and 0.5 % for women).

**But our lifestyles show little signs of improvement**

There are a number of factors that work against an improvement in public health. The share of overweight and obese people increased in eight of the nine countries for which data were available. The percentage of smokers in the total population increased in six out of nine EU-15 countries, and the proportion of young smokers (aged 15 to 24 years) increased in seven out of 11 countries. From 2000 to 2002, resistance to erythromycin increased in 10 out of the 15 EU-25 countries for which data were available. Cancer incidence increased in the EU-15 from 1995 to 1998, but no recent data are available to confirm this trend in recent years. The suicide death rate is falling, but was still at a high level in 2000, at over 10 persons per 100 000 in the EU-15. A positive trend has been the fall in the incidence of serious accidents at work.



The incidence of salmonellosis has fallen by about 20 % since 2000, bringing the EU-25 average to 45.5 new cases per 100 000 people. This favourable trend results from better food safety education, and concerted efforts on the part of governments, the food industry and consumers, which have resulted in more checks and controls at all stages of the food chain. It should, however, be borne in mind that the EU average hides large discrepancies between countries.

**Food is becoming safer**

Large quantities of toxic chemicals continue to be produced in the EU. Although production of total toxic chemicals has stabilised since 2000, over the same period the production of the most dangerous group (carcinogenic, mutagenic and reprotoxic chemicals) has increased at an average rate of 3.4 % per year. This represents a worrying shift to the most harmful category of toxic chemicals.

**We are continuing to produce large quantities of toxic chemicals**

Between 1998 and 2000, the proportion of households who perceive that they suffer from noise decreased by 3.6 % annually on average, and the proportion of households who perceive that they suffer from 'pollution, grime or other environmental problems caused by traffic or industry' decreased by 4.4 % per year on average.

**Our local environment is improving and we notice it**

The headline indicator for this theme is 'healthy life years'. It is presented separately for each gender, at birth and at age 65. It goes beyond a measure of health in terms of longevity to consider the number of quality years that a newborn child or a person of retirement age can expect to live.

## Rationale for the selection of indicators

### Box 4.1: Sustainable development strategy: objectives related to public health

The communication from the Commission to the Gothenburg Council included the following headline objectives to address threats to public health:

- make food safety and quality the objective of all players in the food chain;
- by 2020, ensure that chemicals are only produced and used in ways that do not pose significant threats to human health and the environment;
- tackle issues related to outbreaks of infectious diseases and resistance to antibiotics.

The remaining indicators are arranged in four sub-themes, reflecting the three health-related objectives of the strategy (see Box 4.1), with an additional sub-theme on health and the environment.

- **Human health protection and lifestyles** covers the issue of antibiotic resistance and the incidence rate of certain cancers, indicators reflecting lifestyle, such as overweight people and the percentage of present smokers, as well as suicide death rates, and serious accidents at work. An indicator on healthcare expenditure has not been included in this publication due to lack of space. A further indicator on work with a high level of job strain or stress has yet to be developed.
- **Food safety and quality**, includes the salmonellosis incidence rate as a proxy for deaths due to infectious food-borne diseases. Additional indicators need to be developed covering dioxins and PCBs in food and feed; heavy metals, and mercury in particular, in fish and shellfish; and pesticides residues in food.
- In **chemicals management**, the index of chemicals production is a proxy for an indicator on the consumption of chemicals.



- In **health risks due to environmental conditions**, the perception indicator ‘population affected by noise and pollution’ is a proxy for exposure to pollution and noise having an influence on public health. Additional indicators need to be developed on population exposure to air pollution by particulate matter, population exposure to air pollution by ozone, and monetary damage of air pollution as a percentage of GDP.

The whole set of public health indicators thus covers issues as diverse as length and quality of life, lifestyle, (smoking, overweight rates), incidence of cancers, mental health, potential risks to health from disease, from food, from toxic chemicals and from the environment.

### Further reading on public health in Europe

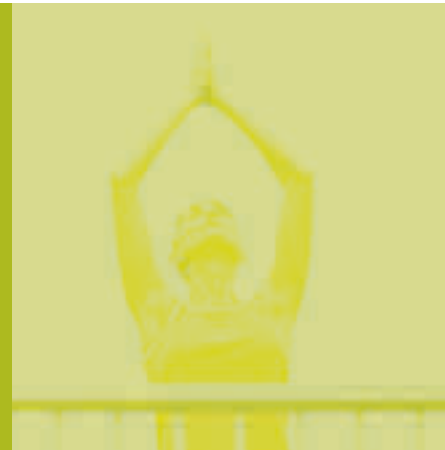
*Health statistics — Key data on health 2002*, Eurostat

*European social statistics — Demography*, 2004 edition, Eurostat

‘The future of healthcare and care for the elderly: guaranteeing accessibility, quality and financial viability’, COM(2001) 723

‘Adapting to change in work and society: a new Community strategy on health and safety at work 2002–06’, COM(2002) 118

Decision No 1786/2002/EC of the European Parliament and of the Council adopting a programme of Community action in the field of public health (2003–08)





Headline indicator



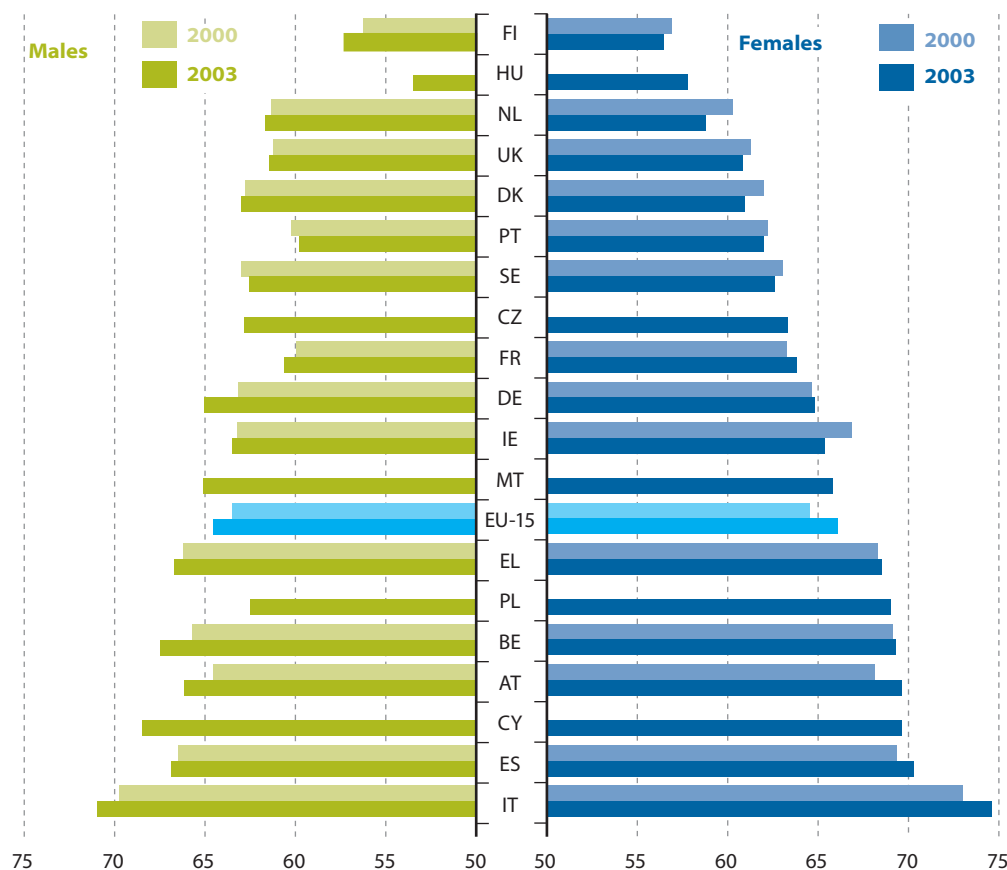
## Healthy life years



**Definition:** The indicator is defined as the **number of years that a person is expected to continue to live in a healthy condition**. It is compiled separately for males and females, at birth and at age 65. It is based on age-specific prevalence (proportions) of the population in healthy and unhealthy conditions and age-specific mortality information. A healthy condition is defined by the absence of limitations in functioning/disability. The indicator is also called disability-free life expectancy.

The indicator combines information on both the quality and length of life, for newly born and elderly populations. It therefore reflects an emphasis that has shifted from measuring health simply in terms of longevity to one which also considers well-being. An improvement in healthy life years should be one of the main health goals for the EU.

### Indicator relevance



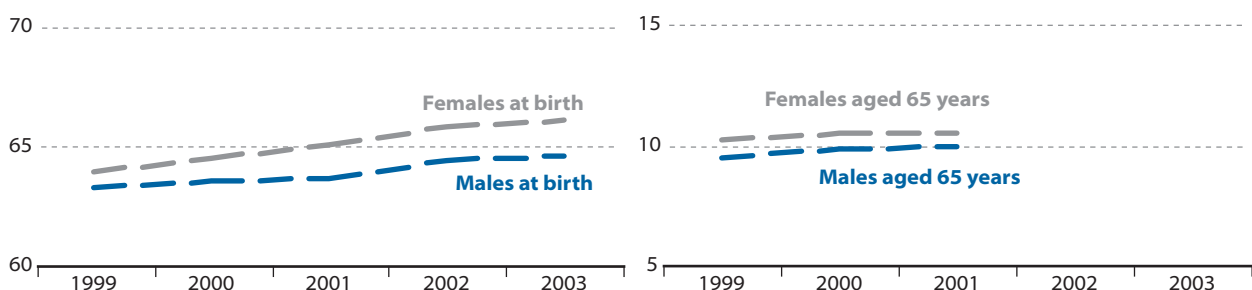
**Figure 4.1. Healthy life years at birth by gender (2000 versus 2003) (years)**

Source: Eurostat.

NB: The figures for 2000 include estimated values for Germany, France (females), Finland (females) and the United Kingdom. The 2003 figures are provisional values, except Cyprus and Poland; in some cases estimates or figures for 2002 have been used.

**Figure 4.2. EU-15 healthy life years by age and gender (years)**

Source: Eurostat.





## Analysis

The expectancy of healthy life years at birth has risen steadily since 2000, by 1.6 years for women and one year for men. Figure 4.2 shows that at birth healthy life years are on average 1.5 years higher for females than for males. For the EU as a whole, women can expect to live 66 years free of any disability and men to the age of 64.5. By the age of 65, the gender gap has reduced to about 0.5 years. At that age, men and women can still expect to live around 10 more years in good health.

It should not be surprising that Figure 4.1 shows significant differences between countries, due to lifestyles (nutrition, physical activity, smoking), environmental conditions, working and living conditions, poverty, genetic predisposition and differences in healthcare systems. At birth, Hungarians and Finns, of both sexes, can expect less than 60 years of healthy life. At the other end of the scale, Italian men can expect about 70 years of healthy life and women close to 75 years. It is also striking that Italy shares with Austria the highest average annual growth rates in healthy life years.

In some cases healthy life years are decreasing slightly. This is the case for men in Portugal and Sweden, and for women in Finland, the Netherlands, the United Kingdom, Denmark, Portugal and Ireland.

Moreover, some national data suggest that the expectancy of healthy life years can vary across socioeconomic groups measured using education, working category or income. There are, however, no data available at EU level on healthy life years by socioeconomic status.

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## Potential linkages

Lifestyle is an important factor in health protection. Healthy life years are likely to be reduced by being overweight. It is thus not surprising to see that Italians are the least overweight and Finns the most overweight of the countries for which data are available. One would also expect the indicator to be influenced by the percentage of present smokers.

Poverty may be an influence as the poor are more exposed to dangerous and unhealthy environments and have less resources to eat healthily, to maintain healthy lifestyles and for preventative health measures. Thus there may be a link with the at-risk-of-poverty rate and to poor housing conditions as measured by the indicator on the population suffering from noise and from pollution.

Education is also an important factor in knowing how to adopt healthy habits and lifestyle, so there could be links to early school-leavers and persons with low educational attainment.

Similarly, poor mental health, as reflected in the suicide death rate may be accompanied by a pattern of neglect and poor health over many years.

Healthy life years also measures the capacity of the population to make a productive contribution to society. There is therefore a probable link to the employment rate, GDP per capita and unit labour cost.



Human health protection and lifestyles



## Overweight people

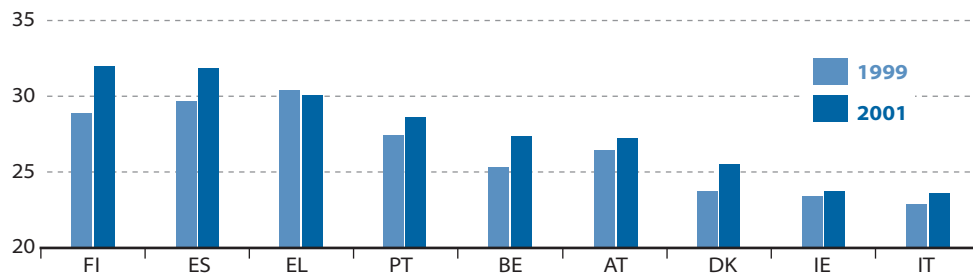


**Definition:** The indicator is defined as the **percentage of overweight people**. Overweight people are those with a body mass index (BMI) greater than or equal to 27. This includes people who are severely overweight ('obese'), having a BMI greater than or equal to 30.

The BMI is a measure of the body fat content of adults calculated as the ratio between the weight measured in kilograms, and the square of the height measured in metres.

Being overweight is an important public health problem, affecting all income and age groups. Apart from genetic predisposition (e.g. in the case of under-active thyroid), the condition results from an imbalance between diet and activity. Overweight children are of particular concern, because when unhealthy nutritional habits and a sedentary lifestyle are maintained over years the result is obesity. And obesity is one of the most serious risks to health in Europe, being linked to diabetes, hypertension, heart disease and cancer. Lesser, but also debilitating, problems associated with being overweight are osteoarthritis, hernias and problems with the main weight-bearing joints, particularly the hips and knees.

### Indicator relevance



**Figure 4.3.** Percentage of overweight people (%)

Source: Eurostat.

Being overweight and obese has become very common, affecting between one-fifth and one-third of the population of those countries for whom data are available, and its incidence is growing. Between 1999 and 2001, all countries showed increases, except Greece, which showed a slight decrease (- 0.3 percentage point). The highest increase occurred in Finland, with a 3.1 percentage point increase.

### Analysis

Being overweight can shorten life and can lead to a number of debilitating conditions. As such, it influences healthy life years at birth and at age 65, as well as the life expectancy at age 65. Premature mortality will also have an influence on the old-age dependency ratio. It may also be linked to the cancer incidence rate.

### Potential linkages



### Human health protection and lifestyles



## Resistance to antibiotics

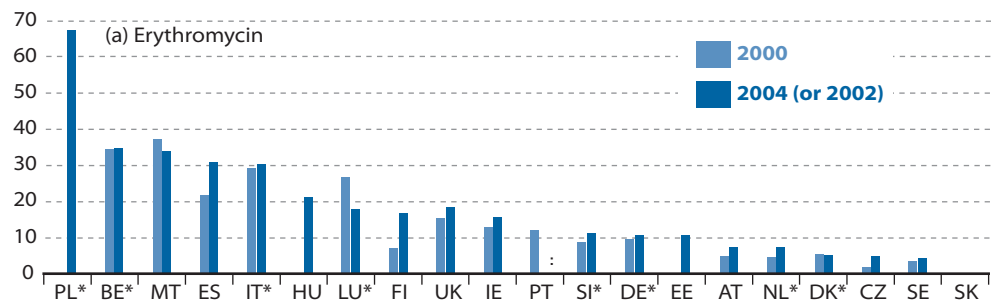
**Definition:** The indicator shows the trends of **erythromycin or penicillin resistance among invasive *Streptococcus pneumoniae***, the single most important cause of infections of the lower respiratory tract (such as pneumonia) in adults and children.



### Indicator relevance

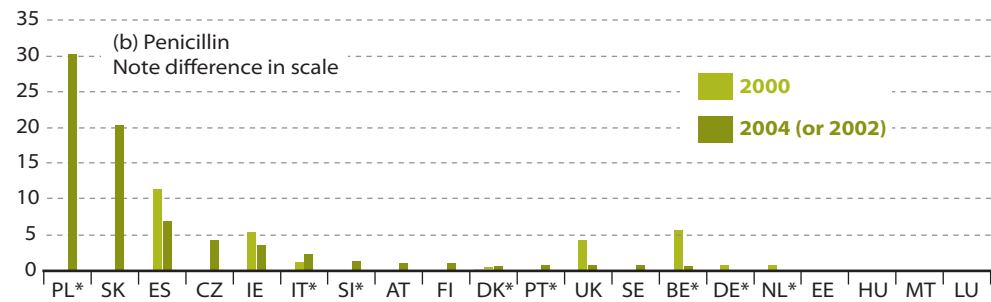
Antibiotics are essential for the treatment of infectious diseases and infections. However, their use has been accompanied by an increasing prevalence of micro-organisms that have acquired resistance to one or more of these. This resistance may be related to lack of compliance on the part of patients and inappropriate use of antibiotics. Antibiotic resistance poses a threat to public health, may prolong the suffering of patients, and leads to increased healthcare costs. It is therefore an issue healthcare systems need to address and was one of the key public health issues mentioned by the Gothenburg European Council in June 2001.

**Figure 4.4. Share of *Streptococcus pneumoniae* isolates showing resistance to (a) erythromycin or (b) penicillin (%)**



Source: European anti-microbial resistance surveillance system (EARSS).

NB: Asterisks indicate countries where 2002 data have been used in place of 2004. Missing values, as opposed to real zero, are shown by '?'



### Analysis

The data available on antibiotic resistance do not show any clear trend over time: in some countries the situation seems to be improving and in others it is deteriorating. Resistance to erythromycin is particularly common in Poland, Belgium, Malta, Spain and Italy. And resistance to penicillin is most prevalent in Poland, Slovakia and Spain. It is problematic to derive a consistent overall picture at European level from the geographical and time coverage available.

### Potential linkages

Antibiotic resistance reduces recovery capacity in particular of younger and older patients who are more prone to severe infections and are threatened by reduced life expectancy.



Human health protection and lifestyles



## Cancer incidence rate

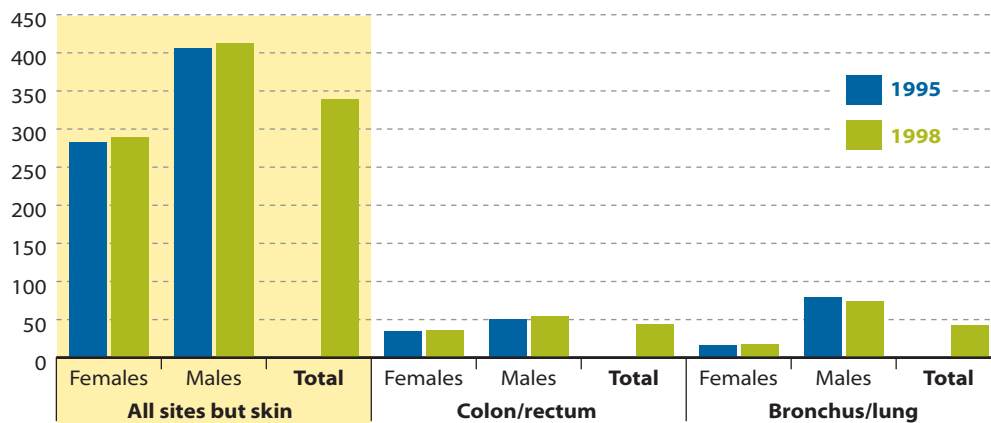


**Definition:** The indicator is defined as the **age-standardised cancer incidence rate**, by gender of: (1) all sites except skin; (2) colon, rectosigmoid junction, rectum and anus; (3) trachea, bronchus and lung.

As the incidence of cancer varies significantly with age and sex, the indicator is expressed using age-standardised rates which improve comparability over time and between countries, as they adjust raw incidence rates according to a standard European age structure.

Cancer, the colloquial term for malignant neoplasms, is characterised by the uncontrolled growth of abnormal cells in the body. With an incidence rate becoming increasingly high throughout the EU, cancer has become a major public health concern, with its own programme ('Europe against cancer') within the framework for action in the field of public health.

### Indicator relevance



**Figure 4.5. EU-15 cancer incidence by gender and site, age-standardised incidence rate per 100 000 people**

Source: European Network of Cancer Registries (ENCR).

Based on estimates carried out by the ENCR in 1995 and 1998, cancer incidence has increased slightly in Europe, for cancers as a whole (excluding skin cancers) and for cancers of the colon and rectum. For bronchus and lung cancers there has been a moderate improvement in the incidence rate for men, although it has increased for women. It is, however, not currently possible to confirm this trend in more recent years due to lack of data after 1998.

### Analysis

The incidence rate of cancers should have a strong influence on healthy life years at birth and at age 65, as well as on the life expectancy at age 65. The resulting premature mortality is also likely to influence the old-age dependency ratio. Cancer is also an outcome of lifestyle: bronchus and lung cancers are expected to be related to the percentage of present smokers, and cancers of the colon and rectum to diet.

### Potential linkages





### Human health protection and lifestyles



## Present smokers

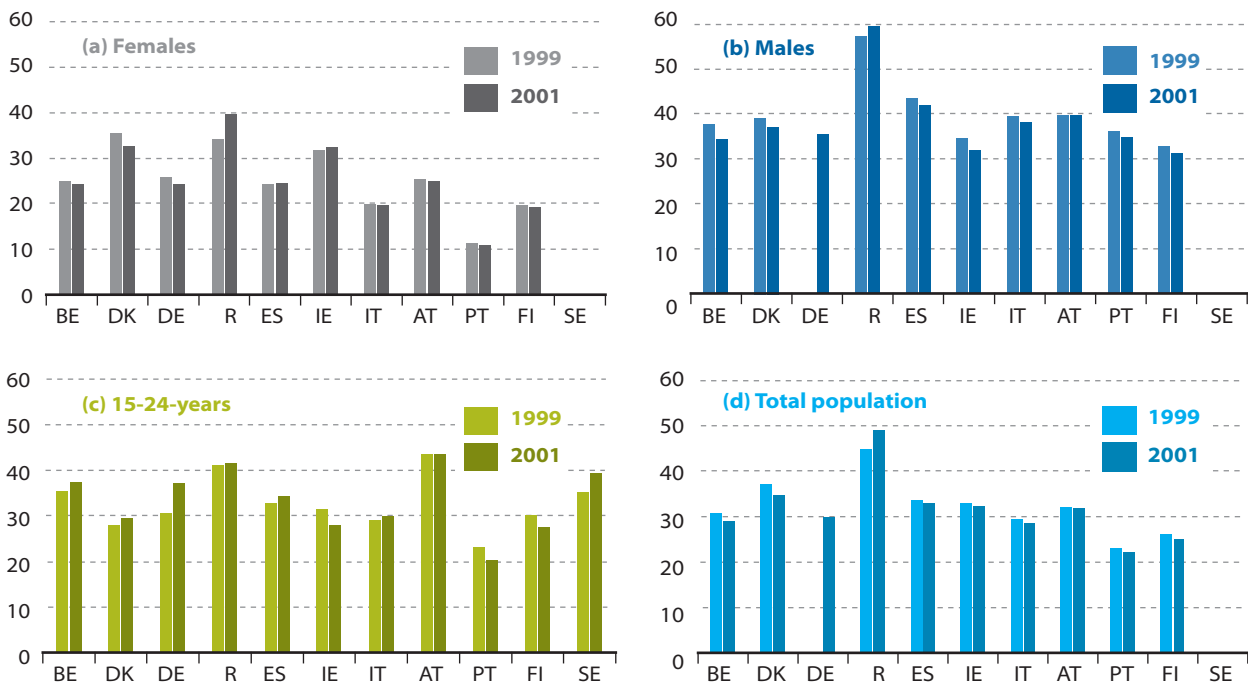
**Definition:** The indicator is defined as the percentage share of current tobacco smokers out of the total population. A person is a present smoker if he/she declares that they smoke tobacco daily or occasionally.



### Indicator relevance

Tobacco use is a major risk factor for diseases of the heart and blood vessels, chronic bronchitis, emphysema and lung cancer, and remains the leading avoidable cause of death and disease in our society. It is responsible for 650 000 deaths a year in the EU-25, of which nearly half are in the 35 to 69 year-old age group. Secondary smoking also has health impacts on non-smokers, in particular on vulnerable groups. The fight against tobacco is thus of importance on the EU public health agenda.

**Figure 4.6.** Percentage of present smokers: (a) females, (b) males, (c) 15–24 year-olds, and (d) total population (%)



Source: Eurostat.

NB: Data for Greece and Sweden for the 15–24 year-olds are considered unreliable or uncertain.

### Analysis

In the countries for which data are available, roughly one-third of the total population smoke, although in Greece it is closer to one-half. Over recent years the share of smokers appears to be falling slightly in most countries, and again Greece appears to be the exception. A higher proportion of males than females are smokers: these gender differences being marginal in Denmark and Ireland and most marked in the Mediterranean countries. Nevertheless, the share of male smokers is in general falling faster than that of females.



It is as young adults that the habit of smoking tends to be taken up. The trend in the 15–24 year-old age group is therefore particularly significant. Generally, a smaller share of this group smoke than for the population as a whole, exceptions being mainly Austria, Belgium and Germany. There are encouraging signs that in some countries (e.g. in Ireland, Finland and Portugal) this share is diminishing.

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Percentage of present smokers is expected to influence negatively healthy life years and cancer incidence as it is estimated that 25 % of all cancer deaths and 15 % of all deaths in the EU are related to smoking. Moreover, it is likely to influence public finance sustainability given the important costs incurred for treatment. Promotion and prevention activities intended to decrease tobacco use are often seen as an investment: a current increase in expenditure with those activities can lead to future lower overall costs of care and thus contribute to the financial sustainability of care systems. Despite the high financial and human cost of smoking, in some countries production and sales of tobacco products make a significant contribution to the economy and there might therefore be an influence on per capita GDP growth rate.

### Potential linkages



Human health protection and lifestyles



# Suicide death rate

**Definition:** The indicator is defined as the **standardised death rate from suicide** and intentional self-harm per 100 000 people, by gender. Standardised rates are adjusted rates that enable comparisons between countries and between the genders, using a 'standard' population that is structured by age in the 'region of Europe' as defined by the WHO.



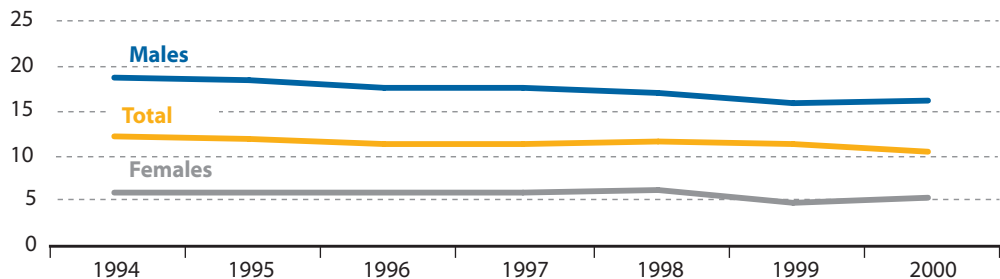
Figures should be interpreted with care as suicide registration methods vary between countries and over time. Moreover, the figures do not include deaths from events of undetermined intent (part of which should be considered as suicides) and attempted suicides which did not result in death.

### Indicator relevance

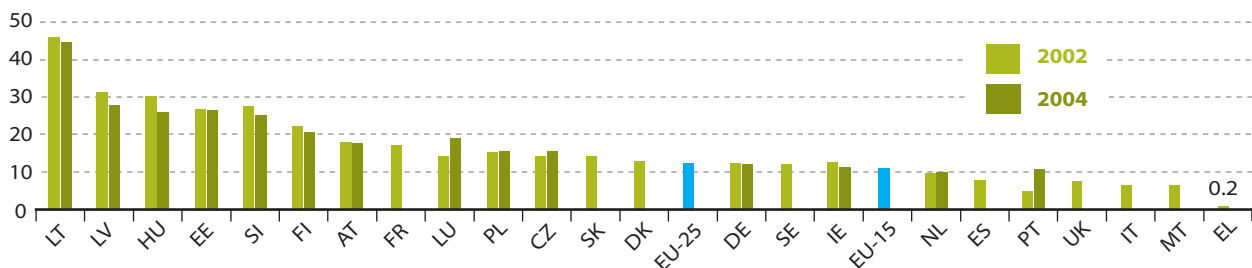
The most common causes of death are, in order of importance, ischaemic heart disease and cerebrovascular disease followed by cancer, chronic liver disease, transport accidents and suicides. Suicide is therefore a major public health concern. The suicide death rate is an important indicator of mental health.

**Figure 4.7.**  
EU-15 suicide death rate, total and by gender, standardised death rate per 100 000 people.

Source: Eurostat.



**Figure 4.8. Suicide death rate, by country, standardised death rate per 100 000 people**



Source: Eurostat.

### Analysis

Suicide death rates in the total population have fallen in the EU-15 from 11.8 in 1994 to 10.2 per 100 000 in 2000, representing a 2.4 % average annual decrease. For males this fall has been from 18.5 in 1994 to 16.0 in 2000 and for females from 5.8 to 5.0. The rate for males is approximately three times higher than for females.

There is evidence of a stabilisation or further decrease for most countries for which recent data are available, with the exception of Portugal and Luxembourg. The geographical distribution in 2000 is very evident. At the lower end of the scale, Greece registered only 0.2 deaths per 100 000, and low rates are also registered by other southern countries: Italy, Malta, Portugal and Spain. On the other hand, several of the Baltic States register very high rates, with Lithuania at well over 40. However, the differences in coding of suicide as outlined in the 'Methodological notes' have to be borne in mind.

### Potential linkages

Suicide is a consequence of many factors creating psychological distress, such as poverty, social exclusion, sickness, addiction to alcohol or drugs, and so on. Suicide rate is thus likely to be influenced by risk of poverty, income, pensions, and unemployment. Moreover, there are likely links to labour productivity and unit labour cost because of the years of depression preceding suicide. There may also be links to the life expectancy and healthy life years indicators, as well as cancer and smoking.



Human health protection and lifestyles



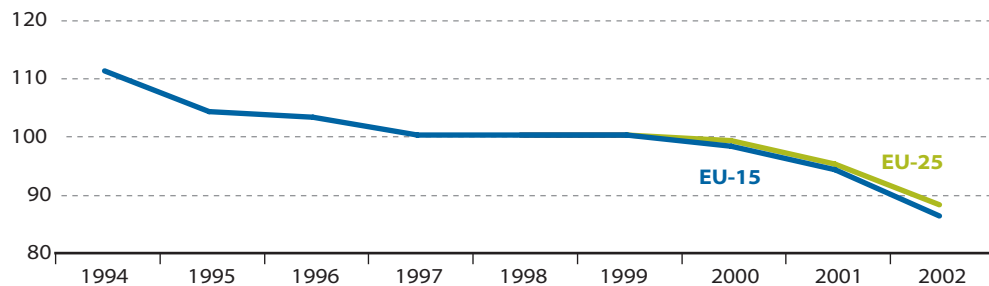
## Serious accidents at work



**Definition:** The indicator is defined as the **incidence rate of serious accidents at work**, indexed on the rate in 1998 (1998 = 100). The incidence rate of serious accidents at work is the number of accidents at work resulting in more than three days' absence per 100 000 persons in employment.

The longstanding Community policy on health and safety at work is of particular relevance to public health and to ensuring the attainment of a high level of health protection. It is based on a preventive approach towards protection against workplace risks, work accidents and occupational diseases.

The indicator, developed within the framework of the ESAW (European statistics on accidents at work) project, is used for monitoring trends in health and safety at work in the Union and for promoting accident prevention both at Community level and in the individual Member States. The goals are to provide data on high-risk groups and sectors and indicators on both the causes and the socioeconomic costs of accidents at work.



**Figure 4.9.**  
Number of serious accidents at work per 100 000 persons in employment (index 1998 = 100)

Source: Eurostat.

NB: Figures for 2002 are provisional.

The incidence of serious accidents has decreased sharply since 2000, with an index declining from 99 to 88 % in the EU-25 and from 98 to 86 % in the EU-15. Although these reductions of about 11 or 12 % are positive, the absolute figures remain high with about 4.7 million serious accidents at work occurring in the EU-15 in 2001. In addition to the major impact of accidents at work in human terms, it is estimated that 210 million days are lost annually in the EU-15 because of accidents at work <sup>42</sup>.

### Analysis

<sup>42</sup> *Work and health in the EU: a statistical portrait*, 2004, Eurostat.

A reduction of the incidence of serious accidents would be expected to positively influence labour productivity and competitiveness. To a lesser extent, it might also influence the risk of poverty. Safety at work is an integral part of production patterns as can be illustrated by the manipulation of chemicals and it is recognised that safer modes of production could have a direct impact on the number of serious accidents, which may indicate a link with the production and consumption patterns theme.

### Potential linkages



Food safety and quality



## Salmonellosis incidence rate

**Definition:** The indicator is defined as the **number of reported new cases of salmonellosis per 100 000 persons.**

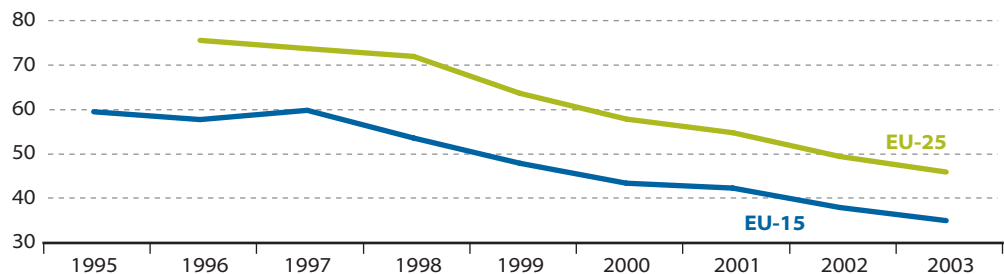


### Indicator relevance

Salmonellosis is a food-borne illness caused by the *Salmonella* bacterium which infects the digestive system. It is usually transmitted to humans by contaminated meat, eggs or milk from animals which have been given feeding stuffs contaminated with animal faeces. Salmonellosis is a communicable disease, threatening the health of the citizens of the European Union.

**Figure 4.10.**  
Salmonellosis incidence rate  
(number of new cases per 100 000 persons)

Source: Eurostat.



### Analysis

The salmonellosis incidence rate has undergone a continuous downward trend, falling on average by 7.5 % per year in the European Union as a whole since 2000, bringing the EU-25 average to 45.5 new cases per 100 000 people and the EU-15 average to 34.6 in 2003. This favourable trend results from greater food safety education, and concerted effort on the part of governments, the food industry and consumers, resulting in more controls at all stages of the food chain.

Nevertheless, between 2000 and 2003, detected occurrences of this disease have grown in eight Member States. And the EU average therefore hides large discrepancies between countries, with only 6.5 new cases per 100 000 people in Portugal and more than 263 in the former Czechoslovakia (see breakdown by country on the SDI website).

### Potential linkages

A change in the salmonellosis incidence rate is likely to be influenced by a change in meat consumption as salmonellosis is mainly transmitted through meat, in particular poultry. Strains of *Salmonella* resistant to anti-microbials are encountered frequently, and there may therefore be a link with antibiotics resistance. The salmonellosis incidence rate is also expected to be driven by EU imports of agricultural products from developing countries.



Chemicals management



## Production of toxic chemicals



**Definition:** This indicator presents the trend in **aggregated production volumes of toxic chemicals**, broken down into five toxicity classes. The toxicity classes, beginning with the most dangerous, are: carcinogenic, mutagenic and reprotoxic (CMR-chemicals); chronic toxic chemicals; very toxic chemicals; toxic chemicals; and harmful chemicals.

The EU sixth environmental action programme <sup>43</sup> highlights the need for the development of a new policy on chemicals and requests that by 2020 chemicals will only be produced in ways that do not pose significant threats to human health and the environment. The White Paper on a strategy for a future policy on chemicals <sup>44</sup> recommends a major overhaul of the current legislation and the establishment of a single integrated system for chemical legislation. The proposed REACH regulation <sup>45</sup> (registration, evaluation, authorisation and restriction of chemicals) which aims at generating unambiguous information about the properties and potential risks of chemicals and supporting the development of strategies to manage these risks, should make a decisive contribution towards ensuring the 'sound management of chemicals' requested in Johannesburg.

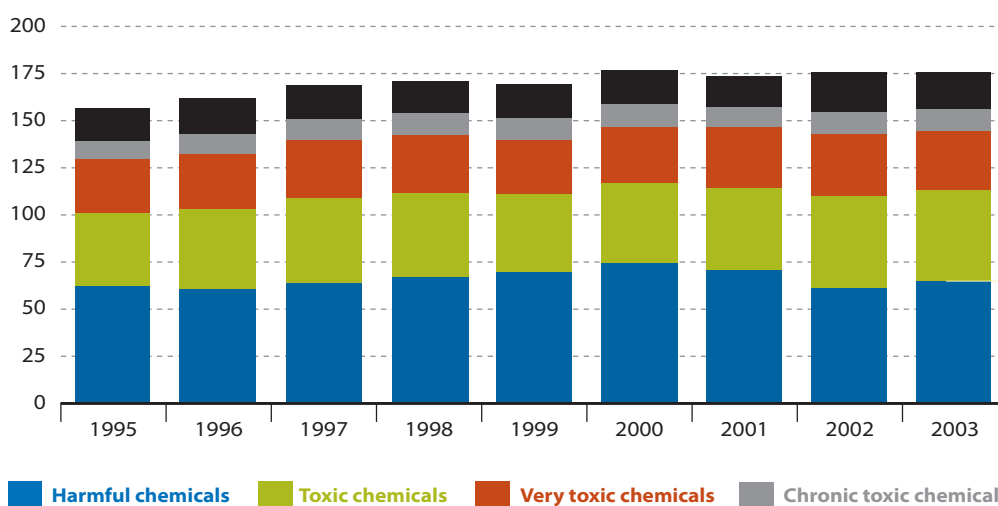
This indicator monitors progress in shifting production from the most toxic classes of chemicals to less toxic classes. However, it does not provide any information on the risk from the use of chemicals. There are some 30 000 man-made chemicals currently in use in the EU, which are produced or imported in quantities of more than 1 tonne per year. For most of them basic information on their toxicological properties, their various use patterns and the quantities on the market are simply not available at the moment. Moreover, production and consumption are not synonymous with exposure, as some chemicals are handled only in closed systems, or as intermediates in controlled supply chains. Further very detailed information on use patterns of the different chemicals is needed.

### Indicator relevance

<sup>43</sup> Decision No 1600/2002/EC of the European Parliament and of the Council laying down the sixth Community environment action programme.

<sup>44</sup> 'Strategy for a future chemicals policy,' COM(2001) 88.

<sup>45</sup> 'Proposal for a regulation of the European Parliament and of the Council concerning the registration, evaluation, authorisation and restriction of chemicals (REACH), establishing a European Chemicals Agency and amending Directive 1999/45/EC and Regulation (EC) {on persistent organic pollutants}' COM(2003) 644.



**Figure 4.11.** Evolution of EU-15 production of toxic chemicals, by toxicity class (million tonnes per year)

Source: Eurostat.



The production of toxic chemicals reached a peak in the year 2000, and since then has more or less stabilised. However, the production of the most dangerous group (carcinogenic, mutagenic and reprotoxic chemicals: shown as 'CMR-chemicals' in Figure 4.1 above) has grown by 3.4 % per year since 2000, whilst that of the least harmful category has shrunk by 4.3 % per year. This shift between the least harmful and the most toxic categories of chemicals represents a worrying trend if continued.

## Analysis

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The production of toxic chemicals may exert an influence on the future cancer incidence rate. There may also be links to serious accidents at work (insofar as they are caused by chemicals), and to the generation of hazardous waste. Toxic substances emitted to air, soil, freshwater and the marine environment may accumulate in some species and may enter the food chain, possibly leading to loss of biodiversity and health problems in humans. Investment in R & D can help shift from toxic to less toxic substances providing the same or better function, without compromising the competitiveness of the EU chemical industry.

## Potential linkages



Health risks due to environmental conditions



## Population suffering from noise and from pollution



**Definition:** The indicator is defined as the **percentage of the population responding that they are affected either by noise** from neighbours, other street noise (traffic, businesses, factories, etc.) **or by pollution**, grime or other environmental problems caused by traffic or industry.

The indicator illustrates the negative effect of environmental problems and poor housing conditions on health.

### Indicator relevance

The EU sixth environmental action programme sets the aim of 'achieving levels of air quality that do not give rise to significant negative impacts on and risks to human health and the environment' and 'substantially reducing the number of people regularly affected by long-term average levels of noise, in particular from traffic which, according to scientific studies, cause detrimental effects on human health'.

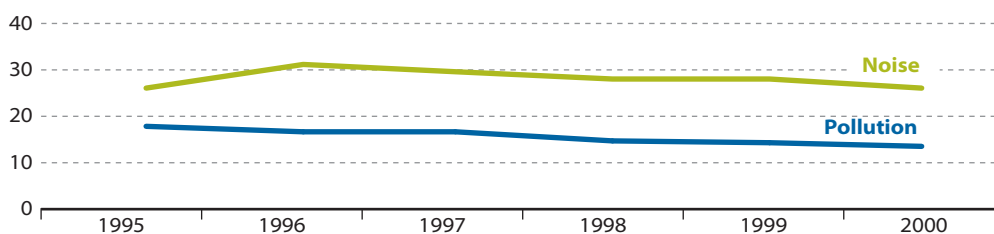


Figure 4.12. EU-15 proportion of population living in households considering that they suffer from noise and from pollution (%)

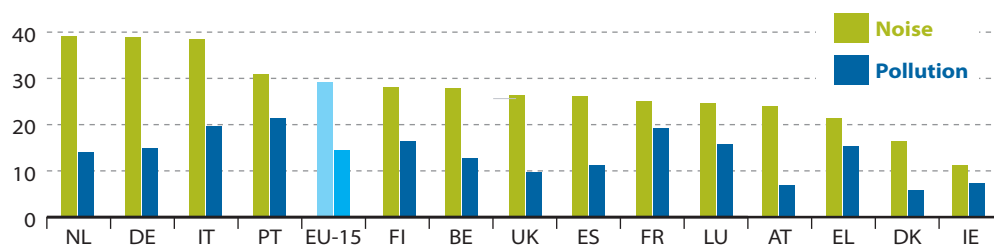


Figure 4.13. Proportion of population living in households considering that they suffer from noise and from pollution, by country (2000) (%)

NB: In Germany and Luxembourg, 1996 figures have been used for 2000.

Source: Eurostat.

There have been significant decreases in the numbers of persons living in households affected by pollution (average annual decline of 4.4 %) and by noise (average annual decline of 5 %) between 1996 and 2000. The implementation of more stringent Community legislation on emissions from industrial plants and motor vehicles, leading to less polluting and noisy road vehicles and limiting noise source levels, appears to be having a positive effect.

### Analysis

Nevertheless, around 12.6 % of EU-15 citizens, in other words, more than 47 million people, still report that they suffer from pollution caused by traffic or industry. Moreover, the high levels of exposure to noise (more than 25 %, which represents some 95 million people) remain a cause for concern.

To some extent, the reduction of negative health effects caused by poor housing conditions will contribute positively to economic development. The share of people affected by pollution from traffic or industry can be strongly influenced by atmospheric emissions such as those described in the themes 'Climate change and energy' and 'Transport'. In the latter theme, shifts in modal split (e.g. towards rail) could also strongly influence noise levels.

### Potential linkages





## Methodological notes

### Healthy life years

The indicator is calculated following the widely used Sullivan method. It is based on prevalence measures of the age-specific proportion of population with and without disabilities and on mortality data. Its interest lies in its simplicity, the availability of its basic data and its independence of the size and age structure of the population. Nevertheless, cultural differences in reporting disability can influence the indicator.

For 1995–2001, for the EU-15 Member States, the source was the European Community household panel (see Box 4.2), whose question on limitation in daily activities by any physical or mental health problem, illness or disability represents the basis for calculating the indicator. The data for the new Member States, when available, cannot be considered to be fully comparable either between themselves or with the EU-15, due to differences in the underlying data sources. From the reference year 2004 onwards, the EU-SILC will be used, in which the 'unhealthy' condition is defined by the limitation in

people's normal activities because of health problems for at least the previous six months.

Accuracy is good even if some general restrictions exist.

- Institutional households are not included in the ECHP itself. However, it is assumed that the population living in the private households covered by the ECHP is representative of the total population.
- In some cases, because of a lack of information, the life expectancy at the last age was taken from another year.

Results for the period 1995–2001 are comparable and the extrapolation over 2002 and 2003 ensures a similar comparability for the estimated values for these two years. Actually, the restrictions on the comparability across countries apply on the 'level' of the healthy life years but not on its evolution. Due to transition between end-ECHP and start-EU-SILC, there will be disruptions in series between 2003 and 2005, the extent of which to be examined once the data have become available.

### Box 4.2: The European Community household panel (ECHP)

The ECHP is a panel survey based on a standardised questionnaire that involves annual interviewing of a representative panel of households and individuals, covering a wide range of topics: income (including the various social benefits), health, education, housing, demographics and employment characteristics. The sample of people selected for the first year of the survey was followed up throughout the subsequent eight years of the survey, wherever they may have moved. Children born to sample women were included as sample persons and followed up.

The ECHP is considered to be the sole common source of comparable data currently available for the EU-15 Member States. However, the revised ECHP database incorporates data corrections for certain countries and methodological improvements (weightings and adjustment for non-response)

for all countries. These have had some impact upon the reported indicators for all years.

In principle, the target population covered by ECHP samples includes all private households throughout the national territory of each country. In all, the sample covers some 60 000 households comprising 130 000 adults aged 16 or over at 31 December of the previous year.

Further information on the characteristics of the survey and availability of data issued from it can be found on the Internet at <http://forum.europa.eu.int/irc/dsis/echpanel/info/data/information.html>

The ECHP will be replaced by the EU-SILC. The EU-SILC is based on Regulation (EC) No 1177/2003 of the European Parliament and of the Council concerning Community statistics on income and living conditions (EU-SILC).

### Overweight people

The data used here have been taken from the ECHP (see Box 4.2). In future the health interview survey (HIS) will be used. Body mass index (BMI) is calculated by dividing body weight in kilograms by the square of the body height in metres. BMI categories are defined according to WHO-EURO, 1996. If the result is between 18 and 20 the person is underweight, and is severely underweight when below 18. A person with a BMI between 27 and 30 is overweight and severely overweight with a BMI of 30 or more.

### Resistance to antibiotics

The data are taken from the European anti-microbial resistance surveillance system, created and funded by the European Commission. The EARSS collects comparable and

validated anti-microbial resistance data for public health purposes.

Isolates from mainly blood samples (93 %) are analysed by some 471 national laboratories from 26 European countries and results about susceptibility tests sent to the EARSS for processing into the database. Analysis of results at a national level from countries where only one laboratory participated (France, Hungary and Malta) are not presented, for confidentiality reasons and also because the results from one laboratory may not be a true representation of national performance. On average, around 62.4 % of the population of the countries covered by the indicator is considered for its calculation.

For penicillin, the figures refer to the number of isolates analysed by country in 2000 (or 2001 for Estonia, Hungary,



Poland, Slovakia, Croatia, or 2002 for Romania) and 2004 (or 2003 for Belgium, Denmark, Germany, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovenia). For erythromycin, the figures refer to 2001 for Estonia, Hungary, Poland, Slovakia, Croatia, and 2003 for Belgium, Denmark, Germany, Italy, Luxembourg, the Netherlands, Poland, Slovenia.

#### Cancer incidence rate

Data were provided to Eurostat by the project 'Comprehensive cancer monitoring in Europe', carried out by the European Network of Cancer Registries which is funded by the European Commission.

Standardised rates are adjusted rates that enable comparisons between countries and between the genders, using a 'standard' population that is structured by age in the 'region of Europe' as defined by the WHO.

The category 'all sites but skin' was calculated from the summation of the number of cases or deaths in the specific sites, together with a category 'all other sites except non-melanoma skin cancers'. Malignant neoplasm of colon, rectosigmoid junction, rectum and anus refers to code C18-C21 in the ICD-10 (international statistical classification of diseases and related health problems, WHO) and malignant neoplasm of trachea, bronchus and lung to code C33-C34 of ICD-10.

#### Present smokers

The data are taken from the ECHP (see Box 4.2) surveys carried out over the period 1994–2001. In future, new sources will be used such as data collection from health interview surveys (HIS), in particular the survey modules of the European health interview survey (EHIS) planned to start in 2007 to 2008.

#### Suicide death rate

Suicide mortality statistics are collected under the international classification of diseases and related health problems group, 'Suicide and intentional self harm' (ICD-10 codes X60-X84).

Procedures for recording a death as a suicide are not uniform and some of the variations in suicide across Europe may be due to differences in the process of death registration. Some countries (e.g. Luxembourg) require a suicide note in order to register a death as suicide, while in the United Kingdom an assessment of intent is required by a coroner. Cultural and social norms also play a role in death registration. For this reason when making country comparisons it would be interesting to take into account, alongside suicide, deaths from events of undetermined intent. (In some cases, e.g. of poisoning [especially drug overdose], asphyxiation, falling, drowning, traffic collisions, etc., it may not be possible to determine whether the death was intentional or accidental. Such deaths are reported as of undetermined intent.) Although of course not all of these should be considered as a suicide, many of them will be. Moreover, trends in suicide can be influenced by changes in attitudes towards the registration of deaths which occur over time within a country.

#### Serious accidents at work

The harmonised data on accidents at work are collected in the framework of the European statistics on accidents at

work (ESAW), on the basis of a methodology developed from 1990. The data refer to accidents at work resulting in more than three days' absence from work (serious accidents) and fatal accidents. A fatal accident is defined as an accident which leads to the death of a victim within one year of the accident. In order to avoid problems of comparability between countries with different reporting systems the data are given as an annual index (with base year 1998 = 100) of the incidence rate. The incidence rate of serious accidents at work is the number of accidents at work resulting in more than three days' absence per 100 000 persons in employment.

The national ESAW sources are the declarations of accidents at work, either to the public (social security) or private specific insurance for accidents at work, or to other relevant national authority (Labour Inspection, etc.) for countries having a 'universal' social security system.

#### Salmonellosis incidence rate

Data on salmonellosis incidence are collected from statutory and non-statutory systems of surveillance systems in each Member State. Age-standardised incidence rates are calculated to allow comparisons between countries since they take into account differences in population structure between countries in using a standard population.

The figures should be interpreted with care since it is likely that many food infections are unrecorded.

#### Production of toxic chemicals

The indicator is compiled for 168 toxic chemicals using production quantities collected pursuant to the 'Prodcom regulation' (Council Regulation (EEC) No 3924/91 on the establishment of a Community survey of industrial production). The toxicity classes have been assigned according to the classification and labelling system ('risk phrases' or R-Phrases) designated for the individual substances in Annex VI to the 'Dangerous substances directive' as amended (Commission Directive 2001/59/EC adapting to technical progress for the 28th time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances).

#### Population suffering from noise and from pollution

The indicator is based on data from the ECHP (see Box 4.2). From 1996 the ECHP survey questionnaire has included the following question: Q007: Do you have any of the following problems with your accommodation?

- Noise from neighbours: Yes, No
- Other street noise (traffic, businesses, factories, etc.): Yes, No
- Pollution, grime or other environmental problems caused by traffic or industry: Yes, No

The previous version of the questionnaire did not distinguish between noise from different sources. In practice, the responses to the noise questions are aggregated. If the answer to either or both of the questions is 'yes' then the aggregate is 'yes'.



# 5.

## Climate change and energy



### Policy background

There is scientific evidence that emissions of greenhouse gases (GHG) from human activities, such as the burning of coal, oil and gas, are causing an overall warming of the earth's atmosphere and that climate change is the most likely result, while different parts of the world will be affected differently. The effects are expected to include changes in agricultural patterns, land use, disease zones, water supplies, and an increased risk of natural disasters (e.g. heat waves, droughts, and flooding), with potentially major economic and social consequences<sup>46</sup>.

The Commission's communication to the Gothenburg European Council<sup>47</sup> identified climate change as one of the main threats to sustainable development and emphasised the need for increased use of 'clean' energy and clear action to reduce energy demand. An increased use of electricity produced from renewable energy sources and an increased use of cogeneration (simultaneous production of electricity and useable heat) geared towards reducing the consumption of fossil fuels constitute important parts of the European climate change programme<sup>48</sup>, which is a package of measures proposed to reduce greenhouse gas emissions and to comply with the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC).

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<sup>46</sup> 'Winning the battle against global climate change', COM(2005) 35.

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<sup>47</sup> 'A sustainable Europe for a better world, A European Union strategy for sustainable development', COM(2001) 264.

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<sup>48</sup> 'EU policies and measures to reduce greenhouse gas emissions: Towards a European climate change programme (ECCP)', COM(2000) 88.






















## Main changes

**Table 5.1.**  
Evaluation of changes in the climate change theme (since 2000)<sup>49</sup>



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

	EU-25	EU-15
<b>Greenhouse gas emissions</b>	:	
<b>Gross inland energy consumption</b>		
<b>Climate change</b>		
CO <sub>2</sub> intensity of energy consumption		
<b>Energy</b>		
Energy intensity of the economy		
Final energy consumption		
Gross electricity generation		
Renewable energy		
Consumption of biofuels		

With regard to general progress, the overall message is that both greenhouse gas emissions and energy consumption have increased since 2000. While the 1990s saw a decrease in the CO<sub>2</sub> intensity of energy use and in the energy intensity of the economy, this has clearly slowed down since 2000. The share of renewable energy for electricity production has decreased due to a stabilisation in renewable energy use relative to a growth in overall energy consumption. On the other hand, the use of biofuels in transport is increasing.

### Greenhouse gas emissions are uncurbed

From 1990 to 2000, significant reductions in GHG emissions were achieved, mainly as a result of fuel switching, in particular due to the replacement of coal-fired power stations with more efficient and less carbon-intensive gas-fired plants, combined with an increased use of cogeneration. In contrast, between 2000 and 2003, greenhouse gas emissions from the EU-15 have increased by 0.3 % per year on average, and by 0.6 % from the EU-25, mainly as a result of a marked increase in energy use, particularly for electricity and transport, combined with a slowdown in fuel switching to lower carbon sources in power stations.

Leaving aside the use of the Kyoto flexible mechanisms<sup>50</sup>, some countries, such as the United Kingdom, Germany, France, Sweden, Greece and most of the new Member States, are on track to achieving their Kyoto commitments, whilst others are not. Overall, the EU-15 average diverged significantly from the linear target path in 2003. As for total GHG emissions, energy-related CO<sub>2</sub> emissions decreased during the 1990s. However, since 2000 they have been increasing, albeit at a slightly lower rate than gross inland energy consumption, resulting in little change in CO<sub>2</sub> intensity (– 0.3 % per year).

### Energy consumption continues to grow

Gross inland energy consumption (GIC) grew by 1.4 % annually between 2000 and 2003, which is high compared with the average annual growth rate of only 0.6 % between 1990 and 2000. During recent years, the change in the fuel mix of total energy consumption has been in the right direction in terms of a reduction of emissions of greenhouse gases, although less so than in the previous decade, and this positive trend has been offset by rising total energy consumption. The increase in GIC mirrored the increase in final energy consumption (both

<sup>49</sup> There is no agreed EU-25 target for the reduction of greenhouse gas emissions, therefore changes for the EU-25 are not evaluated.

<sup>50</sup> See 'Methodological notes' at the end of this chapter.



growing at 1.4 % per year), mainly due to an increase in the households and services sector, and to a lesser extent in the transport sector.

Over the period 1995–2000, energy consumption grew at a slower rate than the economy. As a result, energy intensity decreased by 1.8 % per year on average. However, there has been no progress between 2000 and 2003, and energy intensity has increased at an average annual rate of 0.1 %.

From 2000 to 2003, the share of renewable electricity in gross electricity consumption in the EU-25 fell from 13.7 % to 12.8 %, due largely to an overall increase in gross electricity consumption (GEC). The share of renewable electricity in gross electricity consumption in the EU-25 was clearly below the target of 21 % for 2010, set in the 2003 Treaty of Accession <sup>51</sup>.

Liquid biofuels represent a small but rapidly increasing share of fuel consumption in transport, growing from 0.1 % in 1995 to 0.6 % in 2003 in the EU-25. However, it is too early to say whether the target of 5.75 % of final energy consumption by 2010, set in 2003, is likely to be met.

**The increase in the use of renewable energy is masked by the increase in overall energy use**

<sup>51</sup> The Treaty of Accession of the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia, 2003.

## Rationale for the selection of indicators

### Box 5.1: Sustainable development strategy: objectives related to climate change and energy

The Gothenburg Council in 2001 agreed the following targets:

- a reduction in greenhouse gas emissions (i.e. Kyoto targets) with visible progress by 2005;
- progress towards an indicative target for 2010 of 22 % for electricity generated from renewable sources.

The following Council commitments were subsequently made in Barcelona in 2002 and in Brussels in 2003:

- to enhance substantially energy efficiency by 2010;
- to increase the share of renewable energy with an EU-wide indicative target for renewable energy of 12 % of primary energy needs and 22 % of electricity needs by 2010 (in the 2003 Treaty of Accession the target for the enlarged EU is reduced to 21 %);
- to promote the 5.75 % target for the use of biofuels for transport purposes by 2010.

One of the objectives of the sustainable development strategy is to meet the Kyoto commitment (Box 5.1). In the first quantified emission limitation and reduction commitment period, from 2008 to 2012, the EU-15 has agreed to an 8 % reduction in its greenhouse gas emissions compared with the Kyoto base year. The first headline indicator for this theme is therefore 'total greenhouse gas emissions', in other words, the total GHG emissions in relation to the Kyoto targets.

A reduction of anthropogenic GHG emissions requires changes in the pattern of energy consumption, and in particular an increase in the use of renewables. A second headline indicator for the theme 'climate change and energy' is therefore 'gross inland energy consumption, by fuel'. Also known as total primary energy supply, GIC refers to the total amount of primary energy consumed to meet the final energy needs of the country. It also includes energy products that are used for non-energy purposes (e.g. natural gas and petroleum products used as feedstock for the petrochemical industry, and coke used in steelmaking).

The remaining indicators are split into two sub-themes, complementing the two headline indicators.

- **Climate change:** one indicator shows the contribution of different sectors of the economy to greenhouse gas emissions. A second indicator monitors the 'CO<sub>2</sub> intensity of energy use', which reflects changes in the fuel mix and the different carbon contents



of different fuels. A complementary response indicator on 'CO<sub>2</sub> removed by sinks' is envisaged for the future.

- **Energy:** 'final energy consumption by sector' monitors the energy used by the final consumer, describing the driving forces behind changes in GIC. The indicator 'energy intensity of the economy', is defined as the ratio of GIC and GDP, and reflects the degree of decoupling between energy consumption and economic growth.

Electricity generation is a major and growing consumer of fossil fuels. An important indicator, therefore, is 'gross electricity generation, by fuel used in power stations'. The 'share of electricity from renewable energy' monitors the uptake of renewable energy sources for electricity generation and is complemented by a breakdown by source. The indicator on 'consumption of biofuels' monitors the uptake of a specific renewable source of energy as a fuel for transport. Two additional indicators on 'combined heat and power generation'<sup>52</sup> and 'high-level radioactive waste and spent nuclear fuel awaiting permanent disposal' are not presented in this report because of data limitations. Future developments in the energy sub-theme include an indicator on 'external costs of energy use'.

In general, climate and the economic development of a country largely determine and influence the demand for energy and the allocation of public and private investments for further development of efficiency in energy production. Methods of resource exploitation in the EU and abroad as well as the means to mitigate pollution are discussed under the theme 'production and consumption patterns'.

<sup>52</sup> In conventional power stations, electricity generation is inherently inefficient, with energy losses in the form of heat as an unused by-product. Power plants with 'combined heat and power', or cogeneration, make use of this heat as a thermal energy source.

#### Further reading on climate change and energy in Europe:

*Annual European Community greenhouse gas inventory 1990–2003 and inventory report 2005.* Submission to the UNFCCC Secretariat. European Environment Agency, Technical Report, No 4/2005. [http://reports.eea.eu.int/technical\\_report\\_2005\\_4/en](http://reports.eea.eu.int/technical_report_2005_4/en)

*Climate change and a European low-carbon energy system.* European Environment Agency, EEA Report, No 1/2005. [http://reports.eea.eu.int/eea\\_report\\_2005\\_1/en](http://reports.eea.eu.int/eea_report_2005_1/en)

'Winning the battle against global climate change, communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions', COM(2005) 35

'The share of renewable energy in the EU', COM(2004) 366

'Communication from the Commission to the Council and the European Parliament — Final report on the Green Paper, "Towards a European strategy for the security of energy supply"', COM(2002) 321

'Commission Green Paper on energy efficiency or doing more with less', COM(2005) 265



Headline indicator

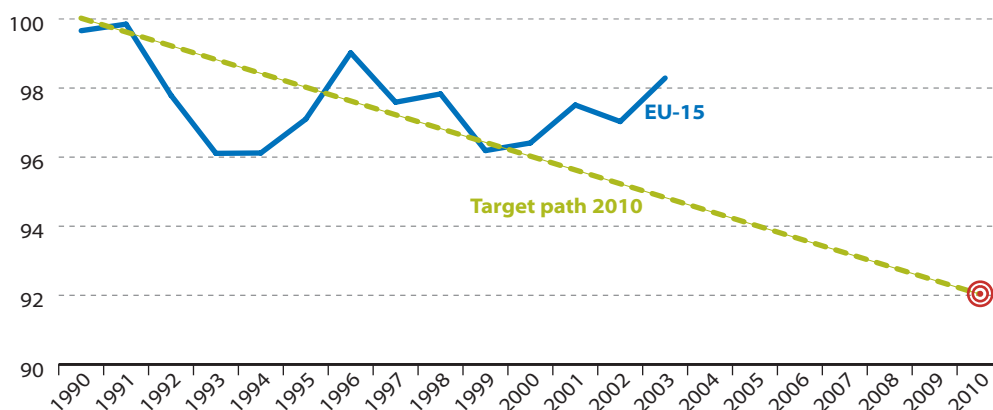


## Greenhouse gas emissions



**Definition:** This indicator shows trends in **total anthropogenic emissions of greenhouse gases (GHG)** regulated by the Kyoto Protocol (the 'Kyoto basket'): carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and the so-called F-gases (hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride (SF<sub>6</sub>)). Each gas is weighted by its global warming potential, and aggregated to give total GHG emissions in CO<sub>2</sub> equivalents. The indicator presents annual total emissions as a percentage of the base year emissions. Because of the uncertainties in the calculation methods, emissions and sinks due to land-use changes and forestry are excluded.

Under the Kyoto Protocol, the EU-15 has agreed to an 8 % reduction in its greenhouse gas emissions by 2008–12, compared with the base year emissions (Kyoto base year, see 'Methodological notes'). Individual targets for each of the EU-15 countries have been agreed under the EU burden sharing agreement<sup>53</sup>, which allows five countries (Greece, Ireland, Portugal, Spain and Sweden) to increase emissions, provided these are offset by reductions in the other Member States. The Kyoto Protocol became legally binding on its Parties worldwide on 16 February 2005.



NB: The dotted line shows the linear path of the reduction target for the first commitment period, 2008–12.

### Indicator relevance

<sup>53</sup> Council Decision 2002/358/EC concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder.

**Figure 5.1. EU-15 total GHG emissions and target according to Kyoto Protocol for 2008–12 (as percentage of base year emissions)**

Source: European Environment Agency, Eurostat.

From 1990 to 2000, emissions of GHG decreased on average by 0.3 % annually, mainly as a result of a switch from coal to gas for energy generation in the 1990s, combined with an increased use of cogeneration (see indicator on gross inland energy consumption). However, between 2000 and 2003, emissions increased again at an average rate of 0.6 % per year in the EU-15, mainly due to an increase in the use of coal to respond to an increasing demand for electricity, and an increase in energy use by the transport sector (see GHG emissions per sector and gross electricity generation by fuel used in power stations).

Overall, since the Kyoto base year, emissions have shown a decrease of 1.7 %, determined largely by considerable emission cuts by the EU's two greatest emitters: Germany (– 18.5 %), which is now close to its burden-sharing target and the United Kingdom (– 13.3 %) which has exceeded its 2010 target (Figure 5.2). Together these two countries account for about 40 % of total EU-15 GHG emissions<sup>54</sup>. The decrease in emissions in Germany was partly due to the changed economic situation in the area of the former Democratic Republic of Germany following

<sup>54</sup> Annual European Community greenhouse gas inventory 1990–2003 and inventory report 2005. Submission to the UNFCCC Secretariat. European Environment Agency, Technical Report No 4/2005.





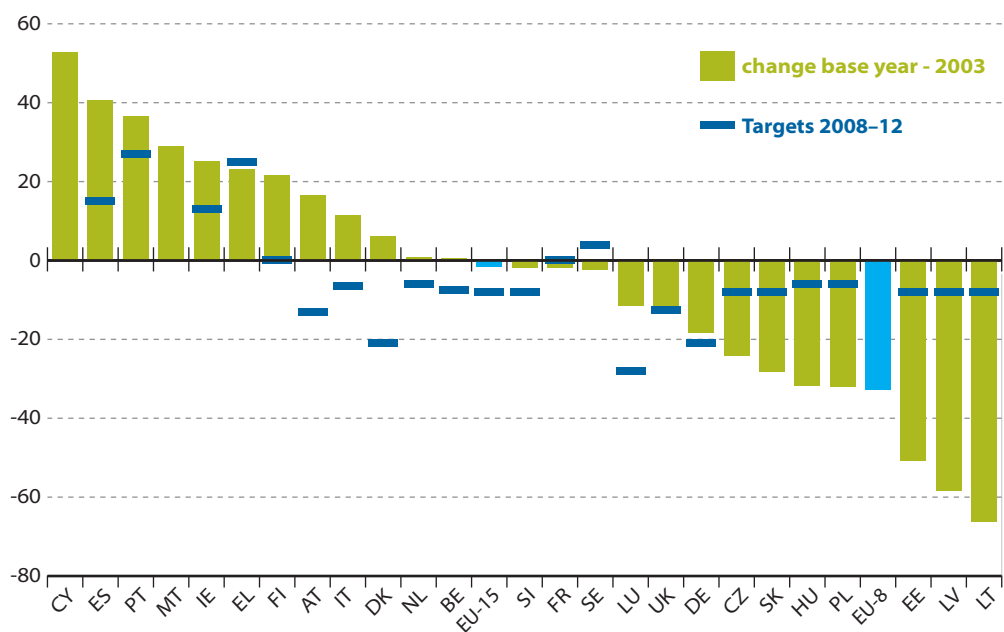
German unification (see 'Final energy consumption'). Over the same period, emissions in Italy, the third largest emitter, increased, as did emissions in Austria and Denmark, despite the fact that these three countries have reduction targets of 6.5 %, 13 % and 21 %, respectively. Finland, Greece, Ireland, Portugal and Spain have increased GHG emissions by more than 20 % over the same period.

As a result, many EU-15 countries are moving away from their agreed targets (Figure 5.2). By 2003, the EU-15 still had to reduce emissions by 6.3 percentage points in order to reach its target under the Kyoto Protocol. Some countries have recently implemented Kyoto flexible mechanisms, which may curb future emissions but is not reflected in the data up to 2003. Eight of the new Member States have set themselves a target under the Kyoto Protocol, so their emissions are aggregated to an EU-8 value in Figure 5.2 (see 'Methodological notes'). In 2003, these emissions were 32.8 % below those of the base year.

**Figure 5.2. Percentage change (2003) in GHG emissions since the base year, and agreed target for 2008–12**

Source: European Environment Agency, UNFCCC, Eurostat.

NB: The zero line represents the Kyoto base year. The yellow lines represent the individual country targets agreed for 2008–12. The columns represent the percentage changes in emissions since the Kyoto base year. Malta and Poland did not provide GHG emission estimates for 2003, therefore the data shown in this figure are European Environment Agency (EEA) estimates.



## Potential linkages

Interlinkages both in terms of causes and consequences of climate change are wide ranging. Emissions are closely related to the level of economic activity, transport patterns and energy mixes. The consequences of climate change affect global biodiversity, human health, numerous economic sectors as well as global poverty.

There is a general concern that measures aimed at reducing greenhouse gas emissions may have a negative impact on the economy in general, and unemployment in particular. There is also a concern, however, that if no action is taken, climate change would damage the economy, public health and natural resources (forests, soil, water and biodiversity), for instance by the repeated occurrence of extreme climate events (flooding, drought, heat waves and storms). Climate change has already led to measurable changes in almost all ecosystems, and large climate-induced changes in population distributions of many species as well as considerable numbers of extinctions are forecast to occur this century<sup>55</sup>.

There are powerful connections between this indicator and the indicators in the transport theme. In general, more transport of persons and goods results in higher GHG emissions. Equally powerful are the connections to the production and consumption theme, as energy is

<sup>55</sup> See, for example: 'Climate change in Australian tropical rainforests: an impending environmental catastrophe', Williams, S. E., Bolitho, E. E., and Fox, S. *Proceedings of the Royal Society London*, B 270, pp. 1887–1892 (2003); and 'Extinction risk from climate change', Thomas, C. D., et al., *Nature*, 427, pp. 145–148 (2004).



an important input to all production processes, and is used to move goods from the producer to the consumer.

As more and more of the goods consumed in the EU are produced and transported from outside the EU, there is a clear link to the theme of global partnership. Such 'outsourcing' can reduce the EU's internal emissions of GHGs, but does nothing to improve global emissions nor to avert significant climate change.

Investment in research and development can in the longer run influence this indicator through increased availability of more energy-efficient technologies, clean sources of energy, and methods of carbon sequestration.



Headline indicator



## Gross inland energy consumption

**Definition:** **Gross inland energy consumption (GIC)** is a measure of the energy inputs to the economy, calculated as total domestic energy production plus energy imports and changes in stocks minus energy exports (including fuel supplied to international marine bunkers). Because different fuels have different energy contents and are measured in various units, it is necessary to convert all fuels to a single meaningful unit (e.g. oil equivalents).



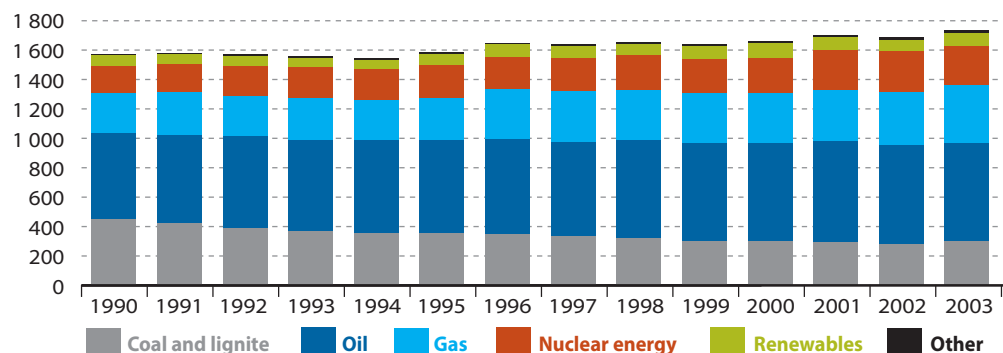
### Indicator relevance

Consumption of fossil fuels is the major source of CO<sub>2</sub> emissions, whilst the extraction of coal, oil and gas as well as leaks from gas pipelines are among the main sources of methane emissions. Therefore, the demand for energy represented here by GIC, is the main driving force behind GHG emissions, and most measures to reduce GHG emissions target energy consumption in one way or another. In the short term, reductions in GHG emissions can be achieved through switching from high-carbon sources, such as coal and lignite, to low-carbon sources, such as natural gas. In the longer term, reducing consumption of fossil fuels and increasing the use of renewable energy sources, as well as cogeneration<sup>56</sup>, are seen as the only sure ways to reduce emissions. In 2003, the Brussels European Council set the goal of reaching 12 % of renewable energy sources in gross inland energy consumption by 2010.

<sup>56</sup> Directive 2004/8/EC on the promotion of cogeneration based on a useful heat demand in the internal energy market.

**Figure 5.3.**  
EU-25 gross inland energy consumption by fuel (million tonnes of oil equivalent)

Source: Eurostat.



### Analysis

Total GIC in the EU-25 increased by 0.6 % per year on average between 1990 and 2000. Consumption of fossil fuels, in other words, coal, lignite, oil and natural gas, rose by 0.2 % per year over the same period. Changes in the fossil fuel mix have seen the share of coal and lignite declining continuously and being replaced by relatively cleaner natural gas.

Between 2000 and 2003, GIC in the EU-25 increased by 1.4 % on average annually, to reach a level of 1 726 million tonnes of oil equivalent. The use of fossil fuel increased by 1.2 % per year during the same time period, its share in 2003 being nearly 80 % of the total. There was, in particular, still a marked increase in natural gas consumption (+ 2.7 % annually, with gas accounting for nearly one-quarter of GIC in 2003), and an increase in coal and lignite consumption of 0.9 % per year, compared with an annual average decrease of 3.6 % between 1990 and 2000. Because of the overall increase in GIC however, the share of coal decreased slightly from 18.5 % in 2000 to 18.2 % in 2003. Renewable energy displayed a rapid growth in absolute terms (+ 3.6 % per year on average), but from a low starting point and the share in 2003 was still small (6 % of the total, compared with the 12 % target for 2010). There was also an average annual increase of 1.9 % in nuclear energy, to reach almost 15 % of total energy consumption in 2003. Overall, the change in the fuel mix of total energy consumption from 2000 to 2003 was positive in terms of emissions of greenhouse gases, although less so than the change that occurred between 1990 and 2000. However, rising total energy consumption counteracted some of these effects.



Historically, energy consumption has tended to grow with economic growth. Furthermore, increases in motorised transport lead to higher energy consumption. Innovative technologies and management systems can increase energy efficiency and improve the energy mix. This in turn will be affected by the level and quality of research and development expenditure. The GIC structure is shaped by several factors, including the structure of the electricity generating sector, the structural composition of economic production, the degree of economic and industrial development, and the endowment of indigenous resources and policy choices. In fact, it is the combined interaction between these factors which ultimately determines fuel choices and the resulting GHG emissions.

## Potential linkages

There is a strong link to the production and consumption patterns theme. Not only does domestic material consumption include fossil fuel consumption, but increases in the consumption of other raw materials generally lead to higher energy demand. The number of households directly affects electricity consumption by households, which is a significant part of GIC, and is increasing rapidly. However, an increase in the number of enterprises with an environmental management system is likely to lead to energy savings. Energy consumption produces emissions which contribute to a deterioration of air quality. The emissions of acidifying substances and ozone precursors, in particular, affect human health and lead to defoliation of forest trees.



Climate change



# Greenhouse gas emissions by sector

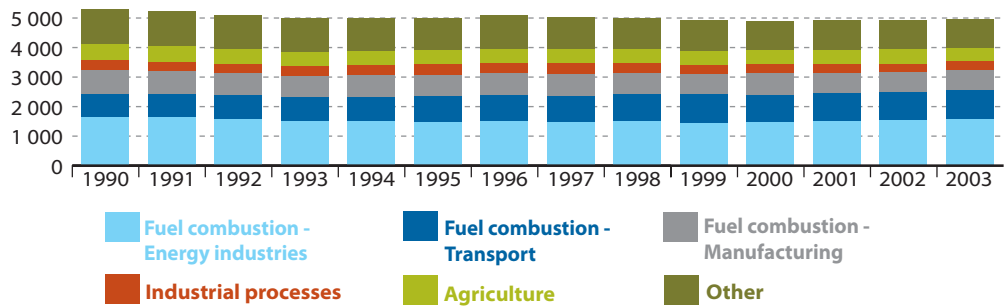
**Definition:** This indicator shows the contribution of the key sources of greenhouse gas emissions to total emissions, and how these are changing over time. A key source category is defined as an emission source or sector of the economy that has a significant influence on a country's GHG inventory in terms of the absolute level of emissions, the trend in emissions, or both. The different greenhouse gases are weighted by their global warming potential, and the results are expressed in CO<sub>2</sub> equivalents (see 'Methodological notes').



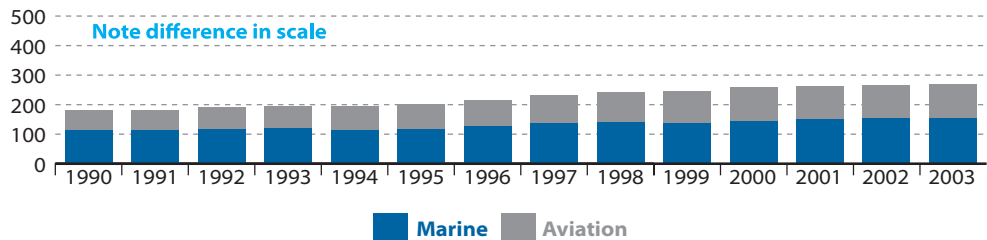
## Indicator relevance

All sectors of the economy contribute in different degrees to greenhouse gas emissions and a breakdown by sector is used to identify key sources, showing which are responding to the need to reduce emissions and which are still growing. This indicator is therefore a key to help policy-makers see the results of measures intended to reduce emissions, and to identify the sectors to be targeted for further measures.

**Figure 5.4. EU-25 GHG emissions: (a) by sector; and (b) by international bunkers (million tonnes CO<sub>2</sub> equivalents)**



Source: European Environment Agency, Eurostat.



## Analysis

Fuel combustion by the energy industries, transport and the manufacturing industries accounts for about two-thirds of total GHG emissions (31 %, 19 % and 14 % of the total, respectively). Energy efficiency increased during the 1990s and GHG emissions decreased. But in the most recent years, the emissions from the energy industries and transport have increased again (by 2.1 % and 1.4 %, on average, annually between 2000 and 2003) reflecting an increase of coal consumption in electricity power stations (see 'gross electricity generation by fuel used in power stations') and a general increase in energy needs for both energy industries (which includes electricity used by households under UNFCCC classification) and transport. Only in the manufacturing industries have GHG emissions by fuel combustion been reduced between 2000 and 2003 (- 1.1 % per year). Emissions from the sector 'others' (see 'Methodological notes'), accounting for 20 % of the total GHG emissions, is dominated by fuel combustion from households which is more or less stable depending on weather conditions. Agriculture accounts for 10 % of EU-25 GHG emissions, with an annual average reduction of 1.6 % between 2000 and 2003. This is mainly due to declining numbers of cattle and lower emissions from agricultural soils<sup>57</sup>.

<sup>57</sup> Annual European Community greenhouse gas inventory 1990-2003 and inventory report 2005. Submission to the UNFCCC Secretariat, European Environment Agency, Technical Report No 4/2005.



Emissions from international aviation and marine transport (bunkers) are not covered by the Kyoto Protocol, and are therefore not reported under the 'greenhouse gas emissions' indicator. They are equivalent to about 5 % of total GHG emissions, but have increased significantly from 1990 to 2000, with an average annual growth of 2.3 % for marine and 5.6 % for aviation. From 2000 to 2003, emissions from marine transport further increased by 2.9 % per year on average, while growth in those from aviation slowed down, due largely to fears following the terrorist attacks on the World Trade Centre in New York in 2001, to an average annual increase of 0.2 %. It should be noted that GHG emissions from aviation have additional impacts on climate which are not described by the concept of global warming potential (GWP) (see 'Methodological notes').

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Links with the production and consumption patterns are strong. For example, GHG from the energy industries include emissions from households, which are strongly influenced by their electricity consumption and the number of households. Agriculture is one of the main sources of  $N_2O$  and  $CH_4$ , and GHG emissions are therefore linked with nitrogen balances and livestock density. GHG emissions are also influenced by the amount of waste sent to landfill and transport growth.

## Potential linkages



Climate change



# CO<sub>2</sub> intensity of energy consumption

**Definition:** The indicator on CO<sub>2</sub> intensity of energy consumption compares CO<sub>2</sub> emissions from energy consumption with gross inland energy consumption (GIC).



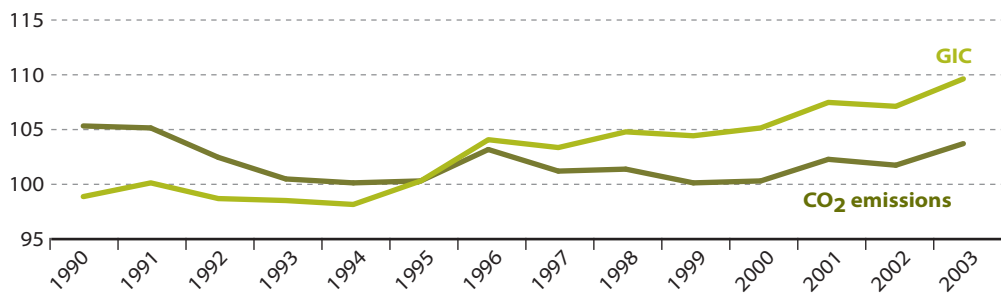
## Indicator relevance

<sup>58</sup> Annual European Community greenhouse gas inventory 1990–2003 and inventory report 2005. Submission to the UNFCCC Secretariat, European Environment Agency, Technical Report No 4/2005.

Carbon dioxide is by far the most important greenhouse gas, accounting for about 82 % of the global warming potential due to anthropogenic GHG emissions covered by the Kyoto Protocol<sup>58</sup>. The main source of CO<sub>2</sub> is the burning of fossil fuels, and this is targeted by most measures in order to reduce greenhouse gas emissions. Each different fossil fuel contains different amounts of carbon per unit of energy; high carbon-content fuels include lignite and coal, whilst natural gas is a relatively low-carbon fuel. Switching to low- or no-carbon fuels, in particular clean energy sources, is an effective way of reducing CO<sub>2</sub> emissions without reducing overall energy consumption.

**Figure 5.5. EU-25 CO<sub>2</sub> emissions from energy use versus GIC (index 1995 = 100)**

Source: European Environment Agency, Eurostat.



## Analysis

Figure 5.5 compares CO<sub>2</sub> emissions from ‘energy’ use (see ‘Methodological notes’) and GIC (see headline indicator for the energy sub-theme) to describe the evolution in CO<sub>2</sub> intensity of energy consumption. Between 1990 and 2000, the GIC rose by 0.6 % per year on average, while the energy-related CO<sub>2</sub> emissions in the EU-25 decreased by 0.5 %, showing the effect of fuel switching, particularly the switch from coal to gas for energy generation in the 1990s, combined with an increased use of cogeneration. This resulted in an annual average decrease in CO<sub>2</sub> intensity of 1.1 % during this period.

From 2000 to 2003, GIC increased more rapidly, with an average annual growth rate of 1.4 %, but CO<sub>2</sub> emissions also increased by 1.1 % per year, due to the increased use of high-carbon energy sources to follow increasing energy demand.

## Potential linkages

CO<sub>2</sub> emissions have so far been strongly linked to energy consumption and GDP, and are therefore influenced by economic development. CO<sub>2</sub> emissions are strongly influenced by changes in the fuel mix of gross inland energy consumption, and can be decreased through an increase in the share of renewable energy sources. Development of new low-carbon and renewable energy sources and innovative technologies increase energy efficiency and therefore reductions in CO<sub>2</sub> emissions could depend on R & D expenditure.



Energy



## Energy intensity of the economy



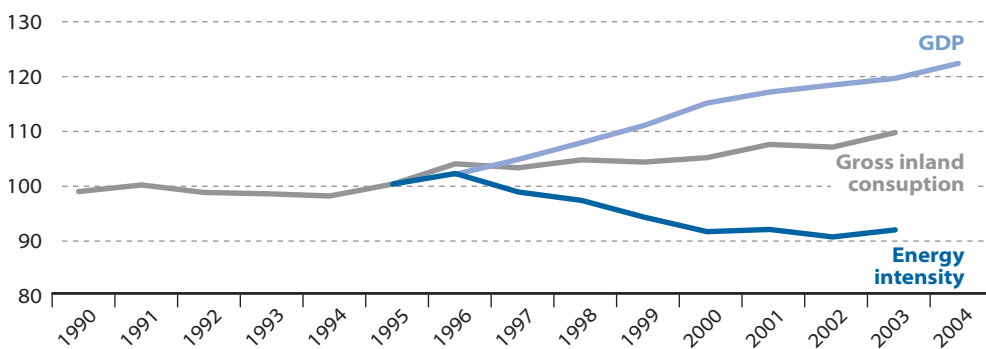
**Definition:** Total energy intensity is the ratio between the gross inland consumption of energy and the gross domestic product calculated for a calendar year. The GDP figures are taken at constant prices to avoid the impact of inflation.

Energy intensity is a measure of how much energy is used to produce one unit of economic output, and identifies to what extent there is a decoupling between energy consumption and economic growth. According to the OECD definition<sup>59</sup>, decoupling occurs when the growth rate of energy used is less than that of its economic driving force, in other words, GDP, over a given period. **Absolute** decoupling occurs when energy consumption is stable or decreasing while GDP is growing. Decoupling is **relative** when the growth in energy use is positive, but less than the growth of GDP. A change in total energy intensity can be the result of changes in energy efficiency or changes in energy demand resulting from other factors, such as weather conditions. An indicative target was set in 1998, when it was noted that, following recent trends in the decrease of energy intensity, ‘an additional annual reduction of energy intensity of 1 % ... must be regarded as an achievement’<sup>60</sup>.

### Indicator relevance

<sup>59</sup> Indicators to measure decoupling of environmental pressure from economic growth, OECD, 2002.

<sup>60</sup> ‘Energy efficiency in the European Community: Towards a strategy for the rational use of energy’, COM(98) 246.



**Figure 5.6. EU-25 energy intensity of the economy, GIC, and GDP at constant prices (index 1995 = 100)**

Source: Eurostat.

Between 1995 and 2000, gross inland energy consumption increased on average at 1 % per year in the EU-25, more slowly than the 2.8 % shown by GDP. As a result, energy intensity decreased by 1.8 % per year. From 2000 to 2003, however, the average annual growth rates were 1.4 % for energy consumption and only 1.3 % for GDP, resulting in an increase of energy intensity. Thus, following the period of relative decoupling between 1995 and 2000, recent years have seen a coupling between economic growth and energy consumption.

### Analysis

Energy efficiency is influenced by economic development. Innovative technologies can increase energy efficiency, which can also be affected by R & D expenditure.

### Potential linkages

As the EU moves towards a more services-oriented economy, fewer of the goods consumed in the EU are produced within its Member States, and more GDP growth will come from the services sector. Instead, goods are imported and transported from outside the EU, giving a clear link to the theme of global partnership. Such ‘outsourcing’ can reduce the EU’s energy intensity, but is unlikely to improve global energy efficiency.





## Energy



# Final energy consumption

**Definition:** The indicator is defined as ‘final energy consumption’ (FEC) and refers to the energy supplied to the final consumer for all energy uses. As such, it includes electricity delivered to the final consumer, but does not include the energy consumed in generating the electricity. For this reason, final energy consumption is always less than gross inland energy consumption<sup>61</sup>.

<sup>61</sup> Except for small countries that import all, or most of, their electricity.

### Indicator relevance

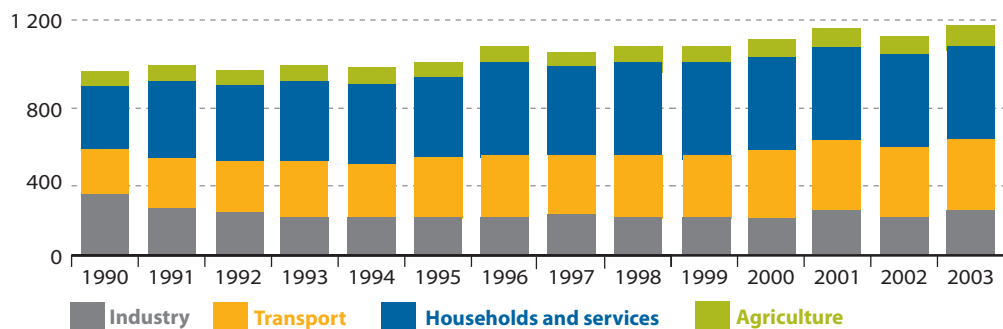
Demand from the final consumer for energy is the driving force behind GIC and the burning of fossil fuels. Consumer demand is really for the services which energy provides — warmth, mobility, cooking facilities, working machinery, entertainment, among others. Trends in FEC need to be monitored so as to identify areas of growth and to allow appropriate measures to be developed, so that society’s energy needs are met while reducing the negative impact on the environment. Changes in FEC can also give a first indication of how effective past measures have been.

The directive proposed in 2003 on energy end-use efficiency and energy services<sup>62</sup> sets targets for Member States to save 1 % per year of their average final energy consumption over a period of six years and as a result of efficiency measures, calculated over the most recent five years before the implementation of the proposal.

<sup>62</sup> Proposal for a directive on energy end-use efficiency and energy services, COM(2003) 739.

**Figure 5.7.**  
EU-25 final energy consumption by sector (million tonnes of oil equivalent)

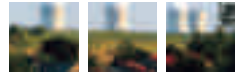
Source: Eurostat.



### Analysis

Between 1990 and 2000, FEC increased on average by 0.7 % per year, due predominantly to an increase in the transport sector (+ 2 % per year on average). A dip between 1991 and 1994 is particularly notable, and is partly due to the slowdown of the German economy following unification, leading to a decrease in energy consumption. This has knock-on effects on most other energy indicators, and on GHG emissions.

The rate of increase in FEC grew to 1.4 % per year between 2000 and 2003. This increase was mostly due to an increase in the households and services sector (+ 2.5 % per year), which accounted for 39 % of total FEC. The energy consumption of this sector is directly linked to weather conditions, given that a large part of its demand is driven by space heating or cooling. However, the recent trend cannot be solely explained by climatic conditions, and is also linked to an increase in electricity consumption per household, which is itself driven by an increase in household numbers (see these indicators in the production and consumption patterns theme). The increase from the transport sector slowed down to an average annual growth rate of 1.1 % from 2000 to 2003, but it still accounted for nearly one-third of the total FEC in 2003. Energy consumption in the industry sector increased slowly by 0.1 % per year between 2000 and 2003, representing 28 % of FEC in 2003. Demand from the agricultural sector remained comparatively small (2 % of FEC in 2003), decreasing by 1.1 % annually between 2000 and 2003 after remaining fairly stable between 1990 and 2000.



Final energy consumption is closely linked to transport growth; it is influenced in particular by the modal split, and the volume of freight and passenger transport. Final energy consumption by transport has a direct impact on emissions of air pollutants by transport activities. There is also an influence on public health because of emissions of particulate matter associated with burning of fossil fuels.

As the demand for energy services is unlikely to abate, more efficient means of transport, of keeping warm or cool, need to be developed and will require investment in R & D. The use of special labelling (EU 'flower' or similar) may be influential in changing consumption patterns leading to more energy-efficiency. An increase in the number of enterprises with an environmental management system is likely to lead to energy savings. The number of households directly affects electricity consumption by households, and therefore final energy consumption in households.

There is an indirect link to the extent of built-up area, as measures taken to restrict the expansion of cities will result in more densely packed housing, for example, terraced houses or apartments instead of detached homes. The former, if well insulated, will require less energy for heating purposes. Similarly, urban sprawl creates demand for cars, whereas in more densely packed areas, public transport is likely to be more readily available, and more convenient than using a car.

## Potential linkages



Energy



## Gross electricity generation

**Definition:** Total gross electricity generation covers **gross electricity generation in all types of power plants**. The electricity is measured at the outlet of power stations.



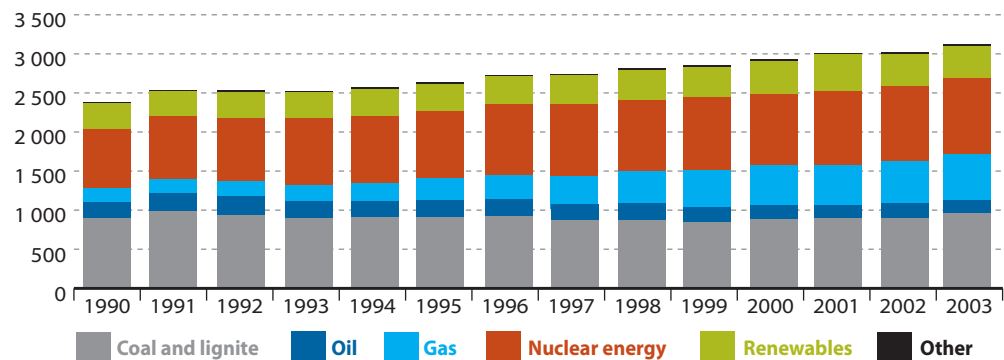
### Indicator relevance

Electricity generation accounts for about 45 % of the energy consumed in the EU-25<sup>63</sup> and demand for electricity is growing much faster than demand for other forms of energy. It is therefore essential to monitor trends in this sector. Conversion of fossil fuels to electricity in conventional power stations is inherently inefficient, with losses of the order of 65 %. In other words, for every kilowatt hour of electricity generated, two kilowatt hours of energy are lost. Combined heat and power plants (cogeneration of heat and electricity) can recuperate some of this lost heat and use it for space heating for nearby buildings or as process heat in industry. The use of a variety of energy sources is an important factor in the move towards a more sustainable economy.

<sup>63</sup> Eurostat energy statistics.

**Figure 5.8.**  
EU-25 gross electricity generation by fuel used in power stations (TWh)

Source: Eurostat.



NB: 2003 data are provisional.

### Analysis

In the EU-25, gross electricity generation increased by an average of 2.1 % per year between 2000 and 2003. This upward trend was dominated by an increased use of natural gas, with an average annual increase of 10.5 %. From 2000 to 2003, total electricity generation increased again by 2.1 % per year, with an annual increase from gas (+ 5.1 % per year), from coal and lignite (+ 2.6 % per year), from nuclear energy (+ 1.9 % per year), and a decrease from oil (- 2.8 % per year). Electricity generated from renewable energy has remained nearly unchanged since 2000 (+ 0.1 % per year). In 2003, gas accounted for about one-fifth of the total, nuclear energy and 'other fossil fuels' both about one-third of the total gross electricity generation.

### Potential linkages

The mix of fuels used in generating electricity directly influences greenhouse gas emissions. A higher proportion of low-carbon fuel will result in lower emissions, while a higher proportion of carbon-free, or carbon-neutral fuels will contribute to reducing emissions even further. Electricity generation is in turn influenced by production and consumption patterns, and in particular by electricity consumption by households, which itself is linked to the number of households. See also interlinkages under other energy indicators.



Energy



## Renewable energy



**Definition:** The indicator is defined as the **share of electricity from renewable energy sources** expressed as a **percentage of gross national electricity consumption (GEC)**. GEC comprises the total gross national electricity generation plus electricity imports, minus exports. A breakdown by type of renewable energy source is also given.

Electricity produced from renewable energy sources comprises the electricity generation from hydro plants (excluding pumped storage), wind, solar, geothermal and electricity from biomass/wastes.

Renewable fuels are either carbon free or considered as carbon neutral <sup>64</sup>, and are therefore important tools in the fight to reduce greenhouse gas emissions. The European Union has set an overall renewable electricity target of 22 % of gross electricity consumption by 2010 for the EU-15 <sup>65</sup> and 21 % for the enlarged Union <sup>66</sup>.

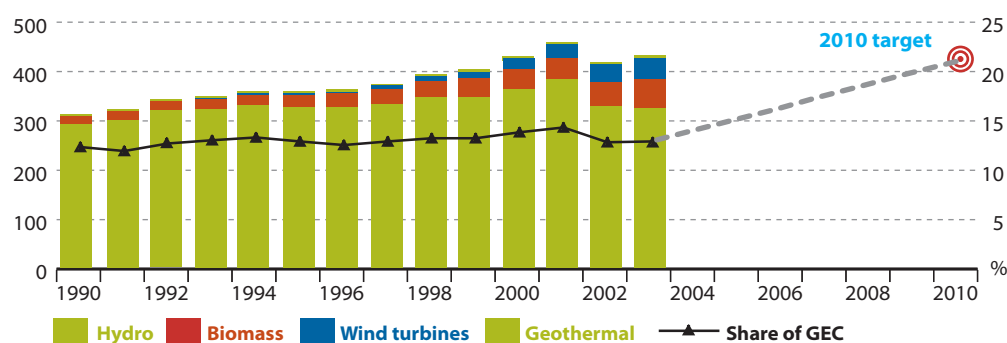
### Indicator relevance

<sup>64</sup> Biomass and biofuels emit CO<sub>2</sub> when burnt, but absorb CO<sub>2</sub> during growth, and are therefore said to be carbon neutral.

<sup>65</sup> Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market.

<sup>66</sup> Treaty of Accession to the European Union, 2003.

**Figure 5.9. EU-25 electricity generated from renewable energy sources (TWh and as a percentage share of GEC)**



Source: Eurostat.

NB: 2003 renewable energy breakdown figures and the figure for biomass in 2002 are provisional.

In 2003, renewable energy sources used to generate electricity were mainly hydropower (75 %), followed by biomass (13 %), and wind power (10 %) <sup>67</sup>. Geothermal power was negligible (1 %). The contribution of hydroelectricity depends on weather conditions and therefore fluctuates depending on the amount of rainfall during the year. For example, dry winters can leave hydroelectric dams short of water and unable to produce electricity at full capacity. Similarly, during dry summers, hydroelectric production might be constrained by agricultural needs for irrigation. In both cases, the shortfall is usually made up by burning additional fossil fuels. There are also major geographical and interannual variations in the incidence of wind and solar power. Overall, between 2000 and 2003, hydroelectricity declined by 3.8 % per year, while the use of biomass increased by 13.3 % per year, and wind energy almost doubled (25.8 % per year).

### Analysis

<sup>67</sup> Although hydropower is the main contributor to electricity produced from renewable energy sources, biomass is the main contributor from renewable energy sources to GIC (which includes biomass burning for thermal energy generation).



In Europe, it is considered that all potential large-scale hydroelectricity sites have been exploited, so growth must come from other sources. Although the use of these other sources has grown significantly over the past decade, they are still a very minor part of total gross electricity generation and growth can barely keep up with the increased demand for electricity. The result is that although total electricity produced from renewable energy sources did not decrease from 2000 to 2003 in the EU-25 (+ 0.1 % per year), the share of electricity generated from renewable energy sources in GEC fell from 13.7 % to 12.8 %, due to an overall increase in GEC. Further investment in renewable forms of energy will be needed if the EU-25 2010 target is to be met. In the EU-15, the share of renewables was 13.7 % in 2003, having decreased from 15.2 % in 2001, when the target of 22 % by 2010 was set (see additional data on the SDI website).

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### Potential linkages

Investment in research and development should increase electricity generated from renewable resources, through improved technologies. See also linkages under other energy indicators, especially final energy consumption and gross inland electricity consumption.



Energy



## Consumption of biofuels



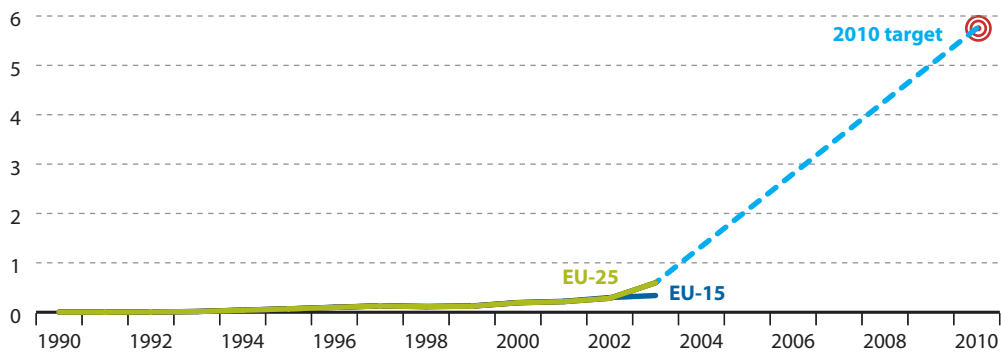
**Definition:** The indicator is defined as the **share of biofuels in total fuel consumption in transport**.

The transport sector accounts for more than 30 % of final energy consumption in the Community and its share is growing. Its carbon dioxide emissions are also growing, the main responsibility resting with road transport, which accounts for 84 % of transport-related CO<sub>2</sub> emissions<sup>68</sup>. This expansion will be greater in percentage terms in the countries having recently acceded to the European Union. Energy use in transport is growing faster than in any other sector of the economy. The EU is promoting the use of alternative fuels to reduce dependency on oil products in the transport sector, with the aim of increasing the use of biofuels from 0.6 % in 2003 to 5.75 % of all petrol and diesel for transport purposes by 2010, calculated on the basis of energy content<sup>69</sup>.

### Indicator relevance

<sup>68</sup> 'European transport policy for 2010: time to decide', COM(2001) 370.

<sup>69</sup> Directive 2003/30/EC of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport.



**Figure 5.10. Share of biofuels in total fuel consumption of transport (%)**

Source: Eurostat.

Biofuels represent a small but increasing share of fuel consumption in transport, increasing from 0.1 % in 1996 to 0.2 % in 2000 in the EU-25, and rising to 0.6 % in 2003. Poland, Germany, France and Spain are the largest consumers, but smaller amounts are consumed in Austria and the Czech Republic (see additional data on the SDI website). The share of biofuels in transport was below 1 % in 2003 for all Member States except for Poland which had a share of about 9 %. In spite of the rapid increase, major efforts are still needed, and active policies will need to be put in place in Member States to achieve the target for 2010<sup>70</sup>.

### Analysis

<sup>70</sup> 'The share of renewable energy in the EU', Commission staff working document, SEC(2004) 547.

A wider use of biofuels will reduce the environmental impact of transport, and in particular emissions of air pollutants and of greenhouse gas. It will also affect the economy, for example through diversifying production and jobs in agriculture, and through reducing the EU's energy dependency (and therefore EU imports from developing countries). Biofuels are mainly derived from biomass and waste, which implies a link with the agriculture and eco-efficiency sub-themes in production and consumption patterns.

### Potential linkages



## Methodological notes

### Greenhouse gas emissions

Greenhouse gas emissions in EU Member States are reported to the United Nations under the UNFCCC and its Kyoto Protocol, as well as to the European Commission under the mechanism for monitoring Community greenhouse gas emissions<sup>71</sup>. The Kyoto Protocol lays down that anthropogenic emissions of the six greenhouse gases are to be aggregated using their global warming potential (GWP), which ranges from 1 (CO<sub>2</sub>) to 23 900 (SF<sub>6</sub>). The GWP of methane is estimated to be 21, and for nitrous oxide it is 310. HFCs and PFCs comprise a large number of different gases that have different GWPs<sup>72</sup>. The indicator does not include ozone depleting substances with global warming properties covered by the Montreal Protocol (1997).

The five-year average emission during 2008 and 2012 is the basis for assessing compliance with the Kyoto target<sup>73</sup>. The new EU Member States and candidate countries have differing targets under the protocol. No targets exist for Cyprus, Malta and Turkey. Hungary and Poland have reduction targets of 6 % from the base year, while the others have reduction targets of 8 %. In general, the Kyoto base year is 1990 for the non-fluorinated gases (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O), and 1995 for the fluorinated gases (HFC, PFC and SF<sub>6</sub>). Exceptions are:

- Finland and France have 1990 as the base year also for the fluorinated gases;
- Poland has 1988, and Slovenia has 1986 as the base year for the non-fluorinated gases (and 1995 for fluorinated gases);
- Hungary has the average 1985–87 as the base year for all GHG gases;

The EU base year emissions are the sum of the base year emissions of the Member States.

The European Community and its Member States use the 'UNFCCC guidelines on reporting and review' (Document FCCC/CP/2002/8), and prepare inventory information in the common reporting format (CRF), and the 'national inventory report' that contains background information. The emissions of the different sources are reported in the Intergovernmental Panel for Climate Change (IPCC) nomenclature<sup>74</sup>. The definitions do not coincide with the NACE<sup>75</sup> nomenclature.

The source categories in the highest aggregated IPCC levels are the following:

1. Energy (1 A: fuel combustion activities, and 1 B: fugitive emissions from fuels);
2. Industrial processes;
3. Solvent and other product use;
4. Agriculture;
5. Land-use change and forestry;
6. Waste;
7. Other.

Emissions from fuel combustion for energy use in industry and in agriculture, as well as waste incineration with energy use are part of the IPCC category 1, 'Energy'. In principle, transport (IPCC category 1 A 3) is part of the energy sector but it is presented separately here. The source categories 3 ('Solvent and other product use'), 6 ('Waste') and 7 ('Other') are added with the non-resolved sectors of the fuel combustion and the fugitive emissions from fuel and presented here as 'Others'. The IPCC category 5 'Land-use change and forestry' is excluded.

Under the Kyoto Protocol, Member States can use flexible mechanisms<sup>76</sup> to help meet their targets. Several countries have intentions to use these instruments, but only a few are in an advanced stage of implementing Kyoto mechanisms.

Many EU-15 countries are moving away from their agreed targets, focusing on domestic emissions and excluding the use of the Kyoto flexible mechanisms which countries may use for achieving their Kyoto (burden sharing) target. Several countries have already allocated financial government resources for using these mechanisms, which is not yet reflected in the data, but may curb future emissions<sup>77</sup>.

Emissions from international aviation and marine fuel use (bunkers) are not covered by the Kyoto Protocol but reported under memo items. The concept of global warming on a 100-year horizon neglects important parts of the climate impact from aviation. Gases other than the Kyoto basket (e.g. NO<sub>x</sub>, SO<sub>x</sub>, water vapour) and particles have shorter atmospheric residence times and remain concentrated near flight routes but have an important contribution to the energy balance of

<sup>71</sup> Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

<sup>72</sup> IPCC (1996), 'Climate change 1995: The science of climate change', Intergovernmental Panel on Climate Change, J. T. Houghton, L. G. Meira Filho, B. A. Callander, N. Harris, A. Kattenberg, and K. Maskell (eds); Cambridge University Press, Cambridge, United Kingdom.

<sup>73</sup> Article 3, Council Decision 2002/358/EC concerning the approval, on behalf of the European Community, of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the joint fulfilment of commitments thereunder.

<sup>74</sup> IPCC (1997), 'Revised 1996 IPCC guidelines for national greenhouse gas inventories', J. T. Houghton, L. G. Meira Filho, B. Lim, K. Treanton, I. Mamaty, Y. Bonduki, D. J. Griggs and B. A. Callander (eds); IPCC/OECD/IEA, UK Meteorological Office, Bracknell.

<sup>75</sup> Statistical classification of economic activities in the European Community.

<sup>76</sup> Kyoto Protocol, Articles 6 and 12, Kyoto mechanisms: joint implementation (JI) and clean development mechanism (CDM).

<sup>77</sup> 'Greenhouse gas emission trends and projections in Europe 2004 — Progress by the EU and its Member States towards achieving their Kyoto Protocol targets', European Environment Agency, EEA Report No 5/2004.



the earth-atmosphere system (measured in watts per square metre). These emissions can lead to radiative forcing that is regionally located near the flight routes for some components (e.g. ozone and contrails) in contrast to emissions that are globally mixed (e.g. carbon dioxide and methane). The GWP as used here is based on a 100-year time horizon and the data are expressed in CO<sub>2</sub> equivalents neglecting gases other than the Kyoto basket. Therefore, the impact of aviation on climate measured in CO<sub>2</sub> equivalents underestimates the radiative forcing by a factor of two to four<sup>78</sup>.

### Gross inland energy consumption

Gross inland energy consumption represents the quantity of energy necessary to satisfy the inland consumption of the geographical entity under consideration, including energy consumed in the form of electricity, heating and transport. It is the sum of gross inland consumption of solid fuels, liquid fuels, gas, nuclear energy, renewable energies, and other fuels. The gross inland consumption of an individual energy carrier is calculated by adding primary production and recovered products of energy together with total imports and changes in stocks minus total exports and bunkers. It corresponds to the addition of consumption, distribution losses, transformation losses and statistical differences.

### CO<sub>2</sub> intensity of energy consumption

This indicator shows the trends in CO<sub>2</sub> emissions from the IPCC source category 1 ('Energy') and gross inland energy consumption. For further information, see the above notes.

### Energy intensity and final energy consumption

Annual energy statistics are collected through the joint Eurostat/IEA/UNECE questionnaires. Methodological information on the annual joint questionnaires and data compilation can be found in Eurostat's web page for metadata on energy statistics which is available on the Eurostat website ([http://europa.eu.int/estatref/info/sdds/en/sirene/energy\\_base.htm](http://europa.eu.int/estatref/info/sdds/en/sirene/energy_base.htm)).

Final energy consumption is the sum of the final energy consumption of:

- Industry: covering consumption in all industrial sectors with the exception of the energy sector. The quantities of fuel transformed in industry's own electrical power stations and the quantities of coal transformed into coke, and coke transformed into blast-furnace gas are not part of the overall industrial consumption but of the transformation sector.
- Transport: covering consumption in all types of transportation, that is, rail, road, air transport and inland navigation. Fuel supplied to international marine bunkers is considered to be similar to an export and is therefore not included under transport.
- Households, services and others: covering quantities consumed by private households, commerce, public administration, services, agriculture and fisheries.

### Gross electricity generation

Gross electricity production differs from the net electricity production by the electrical energy absorbed by the generating auxiliaries and the losses in the main generator transformers. Auto-producers, generating electricity wholly or partly for their own use as an activity which supports their primary activity, are included.

### Renewable energy

Not all renewable energy resources can be used to produce electricity. The renewable energy and associated technologies listed below are those which are considered to be economically viable or approaching economic viability.

- Hydro-power: potential and kinetic energy of water converted into electricity in hydroelectric plants.
- Geothermal energy: energy available as heat emitted from within the Earth's crust, usually in the form of hot water or steam.
- Solar energy: solar radiation exploited for hot water production and electricity generation. NB: Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is not included.
- Tide/Wave/Ocean energy: mechanical energy derived from tidal movement or wave motion and exploited for electricity generation.
- Wind energy: kinetic energy of wind exploited for electricity generation in wind turbines.
- Solid biomass: covers organic, non-fossil material of biological origin which may be used as fuel for heat production or electricity generation. It comprises: charcoal, wood, wood wastes, other solid wastes.
- Biogas: a gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass.
- Liquid biofuels: bio-ethanol, bio-diesel, bio-methanol, bio-dimethylether, bio-oil.
- Wastes: industrial wastes, municipal solid waste.

### Consumption of biofuels

According to Directive 2003/30/EC<sup>79</sup>, 'biofuels' means liquid or gaseous fuel for transport produced from biomass; and 'biomass' means the biodegradable fraction of products, wastes and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal solid waste.

The most important liquid biofuels are bio-ethanol (ethanol produced from biomass and/or biodegradable fraction of waste), bio-diesel (a diesel quality liquid fuel produced from vegetable or animal oil), bio-methanol (methanol produced from biomass), bio-dimethylether (a diesel quality fuel produced from biomass).

<sup>78</sup> IPCC (1999), 'Aviation and the global atmosphere', special report of the Intergovernmental Panel on Climate Change, Penner, J. E., Lister, D., Griggs, D. J., Dokken, D. J., McFarland, M.

<sup>79</sup> Directive 2003/30/EC of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport.





# 6.

## Production and consumption patterns



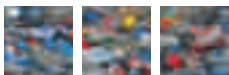
### Policy background

Production and consumption patterns are at the heart of sustainable development. Many environmental and health problems are connected to the production, use and disposal of goods used within a country. Moreover, if essential scarce resources are depleted before affordable replacements are found, this will pose a serious threat to economic development. These problems occur not only in the country where the goods are consumed, but also in the countries from which raw materials and finished goods are imported.

This was recognised at the World Summit on Sustainable Development in Johannesburg in 2002, which put changing unsustainable patterns of consumption and production as a priority, second only to poverty eradication. The Johannesburg plan of implementation, endorsed by the EU, states that ‘all countries should promote sustainable consumption and production patterns, with the developed countries taking the lead and with all countries benefiting from the process.’

Businesses, public administrations and consumers are all collectively responsible for the global social and environmental impacts of their decisions. Social, environmental and economic considerations should be integrated into all stages of the life-cycle of products, from extraction, processing, transporting, production and consumption through to disposal and recycling.

To lighten the burden of current production and consumption patterns on natural resources, a decoupling of resource use, as well as the associ-







ated environmental pressures from economic growth is necessary. This is one of the focal points of the EU sustainable development strategy, and one of the priorities of the sixth environmental action plan. It implies setting up strategies for better resource management and efficiency, aimed at developing more environmentally friendly technologies and products with a particular focus on the potential offered by renewable resources and recycling. It also requires changes in people's behaviour, switching consumer choice towards less environmentally harmful products and services. Such changes are expected to improve resource efficiency, eco-efficiency, and also economic efficiency more generally, as well as competitiveness through enhanced innovation.

**Table 6.1.**  
Evaluation of changes in the production and consumption patterns theme (from 2000) <sup>80</sup>
















<sup>80</sup> Changes have been evaluated from 2000, except for household number and size (1999–2001) and area under agri-environmental support (1998–2002).



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

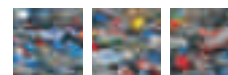
**Main changes**

	EU-25	EU-15
<b>Domestic material consumption</b>	:	
<b>Eco-efficiency</b>		
Emissions of acidifying substances and ozone precursors		
Municipal waste collected		
Municipal waste treatment		
<b>Consumption patterns</b>		
Electricity consumption by households		
<b>Agriculture</b>		
Area under EU agri-environmental support	:	
Livestock density	:	
Nitrogen surplus	:	:
Organic farming	:	
<b>Corporate social responsibility</b>		
Environmental management systems		
Eco-labels	:	

The messages from the evaluation of changes since 2000 in the theme production and consumption patterns are mixed, with no significant progress in domestic material consumption or municipal waste and treatment and unfavourable changes in household consumption of electricity. There are, however, encouraging signs in emissions of air pollutants, and in corporate responsibility, and some progress in the field of agriculture.

**There has been a relative decoupling between domestic material consumption and economic growth**

The domestic material consumption of the EU-15 economy has been nearly constant since the mid-1990s, while GDP has steadily increased. This means that at the macroeconomic level, there has been a relative decoupling between economic growth and resource use, an indication that overall efficiency of the use of resources has been increasing. There is still some progress to be made, however, to achieve absolute decoupling, in which economic growth would be accompanied by a decrease in domestic material consumption.



The enlarged Union has managed to reduce its overall emissions of air pollutants and looks on track to meet the targets for 2010, set in the national emissions ceiling directive<sup>81</sup>, although the situation varies across individual Member States. For the EU as a whole, emissions of both acidifying substances and ozone precursors have fallen in the past decade, and from 2000 to 2002 there have been further annual reductions of 2 % and 3.3 %, respectively.

Following an annual average increase of 2.9 % in the EU-25 during the period 1995–99, growth in the amount of municipal waste collected is slowing; with an average annual rate of 0.9 % since 2000. There are encouraging signs of a relative (but small) decoupling of total waste generated compared with GDP from 2000 to 2003, as GDP grew by 1.33 % on average during the same period. Progress has been insufficient in the EU-15, where municipal waste collection is still strongly coupled to GDP growth.

EU policy gives preference to waste prevention (i.e. avoiding waste generation), then to recovery (re-use, recycling, composting, and incineration with energy recovery and composting), incineration without energy recovery, and, as a last resort, landfill. The volume of landfilled waste has been declining since 1995, and particularly between 2000 and 2003 with an average annual decrease of 3 % in the EU-25. This has been counterbalanced by an annual increase of 3.1 % of incineration. However, landfill still accounts for more than 70 % of disposal methods. The amount of waste going to final disposal (landfill and incineration) decreased overall by 3.2 % in the EU-15 and 4.6 % in the EU-25 between 2000 and 2003. Further progress will need to be made to achieve the target of a reduction of 20 % between 2000 and 2010.

Between 2000 and 2003, electricity consumption by households grew more rapidly than GDP. This is partially due to an increased number of households, which has led to increased energy demand for home appliances. At the same time, electricity prices fell in real terms.

The share of agricultural area enrolled in agri-environmental schemes increased steadily in most Member States, with an overall increase in the EU-15 of 4.7 percentage points between 1998 and 2002, representing a positive response to the environmental integration in the common agricultural policy. The same trend is observed for areas occupied by organic farming, which rose from 2.9 % of total agricultural area in 1998 to 3.7 % in 2002. A further indication of the trend towards less intensive agriculture is the decrease in the livestock density index in the EU-15, by 1.3 % per year between 2000 and 2003. Nitrogen surplus decreased by an average annual rate of 1.7 % between 1990 and 2000, but there are no data to evaluate more recent trends.

Figures tend to indicate that more and more businesses are embracing corporate social responsibility (CSR), a concept aimed at the integration, on a voluntary basis, of social and environmental concerns into business operations. Environmental reporting by businesses has emerged in the last decade, giving rise to various environmental management schemes such as the eco-management and audit scheme (EMAS) and ISO 14001. There has been an increase in product labelling schemes such as the EU green flower, improving the choice of 'green products' available to consumers.

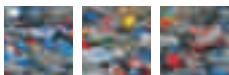
**There is some progress towards more eco-efficiency**

<sup>81</sup> Directive 2001/81/EC of the European Parliament and of the Council on national emission ceilings for certain atmospheric pollutants.

**Electricity consumption by households is increasing**

**There are some encouraging signs of a move towards a more environmentally friendly agriculture**

**Businesses show a higher sense of corporate social responsibility and the availability of 'green' products is improving**



## Rationale for the selection of indicators

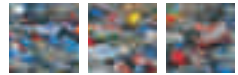
The selected indicators are mainly based on the objectives of the EU sustainable development strategy (in particular in terms of decoupling objectives) and in the Johannesburg plan of implementation (Box 6.1).

The headline (level I) indicator for this theme looks at domestic material consumption (DMC) which gives an estimate of the consumption of natural resources by the economy. When combined with GDP, it assesses the extent to which economic growth is associated with the demand for natural resources, and provides insights into the decoupling of the use of natural resources from the growth of the economy.

### Box 6.1: The Johannesburg implementation plan: objectives related to production and consumption patterns

The implementation plan recognises that 'fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development.' Furthermore, 'governments, relevant international organisations, the private sector and all major groups should play an active role in changing unsustainable consumption and production patterns.' Actions should include the following points:

- '... addressing, and where appropriate, delinking economic growth and environmental degradation through improving efficiency and sustainability in the use of resources and production processes and reducing resource degradation, pollution and waste';
- 'Increase investment in cleaner production and eco-efficiency in all countries ...';
- 'Integrate the issue of production and consumption patterns into sustainable development policies, programmes and strategies, including, where applicable, into poverty reduction strategies';
- 'Enhance corporate environmental and social responsibility and accountability';
- 'Encourage relevant authorities at all levels to take sustainable development considerations into account in decision-making, including on national and local development planning, investment in infrastructure, business development and public procurement';
- Implement '... the recommendations and conclusions adopted by the Commission on Sustainable Development concerning energy for sustainable development';
- 'Promote an integrated approach to policy-making at the national, regional and local levels for transport services and systems to promote sustainable development';
- 'Prevent and minimise waste and maximise re-use, recycling and use of environmentally friendly alternative materials ...';
- 'Renew the commitment, as advanced in Agenda 21, to sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development as well as for the protection of human health and the environment.



The remaining (level II and III) indicators are arranged in four sub-themes.

- **Eco-efficiency:** air pollutants and waste cause environment and health-related problems and volumes need to be reduced. The first eco-efficiency indicator presents emissions of acidifying substances and ozone precursors. The other indicators consider waste generation (collection) and disposal, via landfill or incineration. Given data limitations, no reliable indicators could be presented on the most problematic 'hazardous' waste category or on recycling.
- **Consumption patterns:** consumption patterns are reflected through levels of electricity consumption by EU households, as a result of modified lifestyles and household structure.
- **Agriculture:** two of the selected indicators provide an indication of the impact of policies to promote environmental integration in agriculture. The other two indicators, nitrogen surplus and livestock density address environmental pressures linked to intensive agricultural systems.
- **Corporate social responsibility:** social and environmental responsibility must be enhanced among all stakeholders of society to ensure that resources are used in a sustainable way. Environmental management systems and eco-labelling contribute to this goal.

The full SDI list also includes indicators in other themes that are essential to get a more comprehensive picture of consumption and production patterns in Europe (for example, 'total consumption expenditure', 'total employment rate', 'index of production of chemicals, by toxicity class', 'energy intensity of the economy', most indicators on transport).

#### Further reading on production and consumption patterns in Europe:

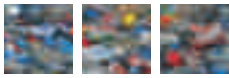
'Towards a thematic strategy on the sustainable use of natural resources', COM(2003) 572

'Towards a thematic strategy on the prevention and recycling of waste', COM(2003) 301

*Strategy for integrating the environmental dimension into the CAP adopted by the European Council*, Helsinki, December 1999

'Communication from the Commission concerning corporate social responsibility: A business contribution to sustainable development', COM(2002) 347

*Material use in the European Union, 1980–2000: Indicators and analysis*. 2000 edition, Eurostat working papers and studies. Theme 2, Economy and Finance, European Union, 2002



Headline indicator



## Domestic material consumption

**Definition:** Domestic material consumption (DMC) measures the total amount of material directly used in the economy. It is defined as all materials directly entering the national economy (used domestic extraction plus imports), minus the materials that are exported (see 'Methodological notes' for details of categories).



In economic terms, DMC reflects consumption by the residents of a national economy. Exports are deducted to distinguish the consumption driven by domestic demand from that driven by the export market. It is defined in the same way as other key physical indicators such as gross inland energy consumption, and is the consumption indicator most akin to GDP, in terms of equivalence with national accounts aggregates.

In environmental terms, DMC is a proxy for all the pressures associated with the use of materials within the economy of a country throughout their life cycle, irrespective of whether the pressures occurred in the country itself or in the country from which it was imported.

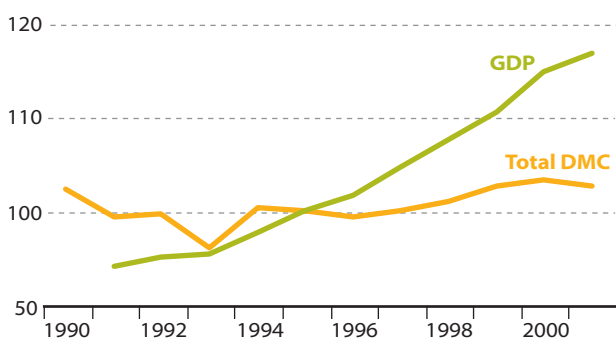
### Indicator relevance

The EU strategy for sustainable development emphasises the strategic objective of breaking the link between economic growth, the use of resources and the generation of waste. The sixth environment action programme (6EAP) also seeks 'to achieve a decoupling of resource use from economic growth, through significantly improved resource efficiency, dematerialisation of the economy and waste prevention'. As part of the 6EAP implementation, the European Commission is developing a thematic strategy on the sustainable use of natural resources<sup>82</sup>, which will identify priority areas for policy intervention.

<sup>82</sup> 'Towards a thematic strategy on the sustainable use of natural resources', COM(2003) 572.

DMC provides an assessment of the absolute level of use of scarce resources, and combined with GDP, it also provides insights into whether decoupling between the use of natural resource and growth of the economy is taking place.

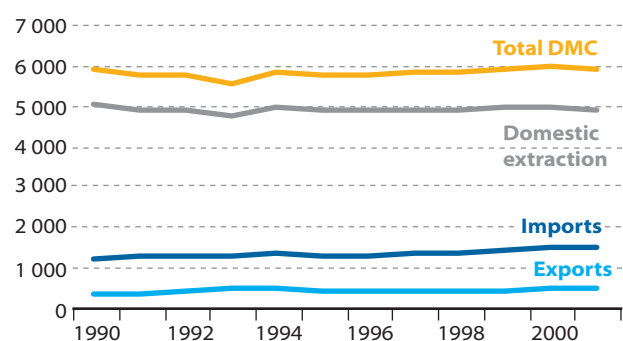
Figure 6.1. EU-15 DMC versus GDP at constant prices, index (1995=100)

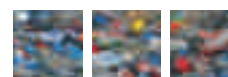


Source: Eurostat.

NB: The 2001 figures are estimates.

Figure 6.2. EU-15 DMC by component (million tonnes)



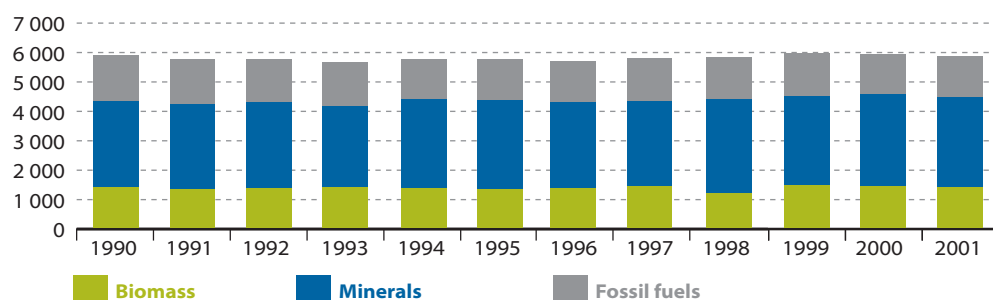


## Analysis

The interpretation of the relationship between GDP and DMC involves the use of concepts such as material productivity and decoupling. Material productivity is the ratio GDP/DMC. In recent years, the increase in GDP occurred with a comparatively stable DMC, indicating a positive trend in material productivity.

Decoupling is understood as dematerialisation, in other words, an economic growth linked to a reduced throughput of mass. It is also understood as delinking economic growth from environmental pressure. At the level of national or even supranational economies a distinction is often made between 'absolute' and 'relative' decoupling: relative decoupling implying a reduced throughput or environmental pressure per unit of GDP (similar to an increase in material productivity), and absolute decoupling indicating a declining throughput or environmental pressure over a growing GDP. The absolute amount of domestic material consumption remained fairly stable between 1990 and 2001 (5.9 billion tonnes in both years), while GDP grew constantly over that time, indicating a relative decoupling of material use from economic growth.

The total amount of materials extracted from the domestic territories of the EU-15 decreased slightly from 5 billion tonnes in 1990 to 4.8 billion tonnes in 2001. Imports have steadily increased from 1.2 billion tonnes in 1990 to 1.4 billion tonnes in 2001, when they accounted for 30 % of DMC. This increase implies that the environmental pressures associated with resource extraction are displaced from the EU to the exporting countries. The level of physical exports is significantly lower compared with imports. They amounted to 0.4 billion tonnes in 2001, meaning that EU physical imports exceeded physical exports by a factor of four.



**Figure 6.3. EU-15 DMC by material (million tonnes)**

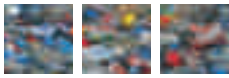
Source: Eurostat.

NB: 2001 figures are estimates.

The scarcity and environmental impact of all materials is not the same, and therefore it is useful to look at the composition of DMC. The breakdown of DMC by material in the EU-15 is characterised by a dominance of minerals (50 %), especially construction materials, followed by fossil fuels and biomass, both at about 25 % (2001 estimates).

The slight reduction of the domestic material consumption of fossil fuels between 1990 and 2000, from 1 531 to 1 400 million tonnes resulted from the substitution of low-energy coal by high-energy gas (although expressed in energy terms, energy consumption increased: see gross inland energy consumption by fuel). While consumption of biomass remained fairly constant, the DMC of minerals increased from 2 840 million tonnes in 1990 to nearly 3 000 million in 2001, offsetting the improvements in DMC in other areas, and preventing a move towards absolute decoupling.





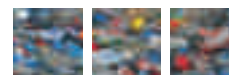
## Potential linkages

A decrease in DMC could reduce pressures on the environment, for example through a reduction of waste generation, and a reduction in greenhouse gas emissions. It could have positive implications for competitiveness, if there is a parallel increase in resource and economic productivity. The materials used within an economy need to be transported from the point of extraction to the manufacturing site and to the final consumer, implying a link between an increase in DMC and transport growth.

Economic growth would be expected to have an impact on DMC: for example, strong economic growth is often characterised by a buoyant building sector, including roads and infrastructure, which leads to increased demand for construction materials, and is reflected in the growth of minerals in DMC. However, as described in the analysis section, the current positive trend in relative decoupling implies that the additional pressure from economic growth on the environment has been reduced. An increase in the services sector could increase decoupling. Consumption in minerals would also increase with the number of households and built-up area. A decrease in livestock density would be expected to lead to a reduction in biomass consumption, as much of the biomass grown and imported in the EU is used to feed livestock. Fish catches would also have an impact on biomass consumption. Any improvement in re-use and recycling of waste should have a positive impact on DMC, as it reduces the need for virgin raw materials.

Investment in R & D projects that seek to improve resource efficiency by reducing the material inputs into the manufacturing sector would be expected to influence this indicator. However, because of the time lapse before new technologies are widely adopted, this influence may not be seen immediately.

An increase in DMC due to an increase in imports would also be reflected in indicators related to imports from developing countries. The indicator on CO<sub>2</sub> emissions per capita in EU and developing countries also provides an interesting illustration of the global impact of high material consumption in developed countries.



Eco-efficiency



## Emissions of acidifying substances and ozone precursors



**Definition:** These two indicators track trends in anthropogenic atmospheric emissions of:

- **acidifying substances** (oxides of sulphur (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>) and ammonia (NH<sub>3</sub>)) — these emissions are combined in terms of their acidifying effects, and expressed in terms of acid equivalents;
- **ozone precursors** (NO<sub>x</sub>, carbon monoxide, methane (CH<sub>4</sub>), and non-methane volatile organic compounds (NMVOC)), by sector. Ozone precursor emissions are combined in terms of their tropospheric ozone-forming potential, and expressed in NMVOC equivalents.

Acidifying substances and ozone precursors cause wide-ranging inter-related problems. Airborne acid emissions can be carried over long distances, and cause damage to ecosystems (e.g. soil, forests and water bodies), buildings and materials (corrosion).

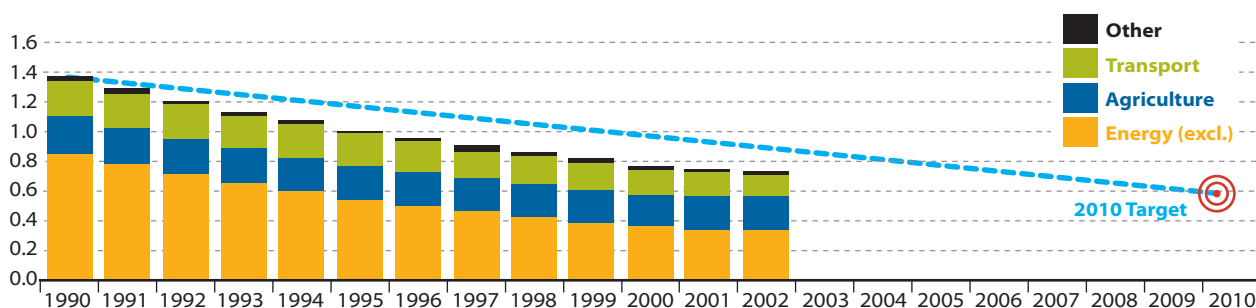
### Indicator relevance

In the lower troposphere, ozone is formed when oxides of nitrogen and volatile organic compounds react together in the presence of sunlight. Tropospheric ozone is harmful to human health as it affects the respiratory system, and causes damage to crops and forests, degrades materials and, especially with emissions of CH<sub>4</sub>, contributes to climate change. Emissions of these pollutants are covered by the 1999 Gothenburg Protocol under the United Nations Convention on Long-Range Transboundary Air Pollution (CLRTAP) to abate acidification, eutrophication and ground-level ozone, and by the EU national emission ceilings directive (NECD)<sup>83</sup>. National emission targets given in the NECD translate into a 56 % reduction from 1990 to 2010 for the EU-15, for emissions of acidifying substances: NO<sub>x</sub>, SO<sub>x</sub> and NH<sub>3</sub> (emission targets weighted by acidifying potential), and into a 54 % reduction for emissions of tropospheric ozone precursors: NO<sub>x</sub> and NMVOCs (emission targets weighted by ozone formation potential)<sup>84</sup>. These targets are generally slightly stricter than under the CLRTAP. For the new Member States the targets of the NECD are specified in the 2003 Treaty of Accession.

<sup>83</sup> Directive 2001/81/EC of the European Parliament and of the Council on national emission ceilings for certain atmospheric pollutants.

<sup>84</sup> See EEA core set of indicators CSI 001 and 002 (<http://themes.eea.eu.int/IMS/CSI>).

**Figure 6.4. EU-25 weighted emissions of acidifying substances (million tonnes acid equivalents)**



Source: European Environment Agency, Eurostat.

NB: 'Energy (excl.)' is the Energy sector without transport. See 'Methodological notes' for composition of categories.

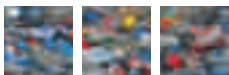
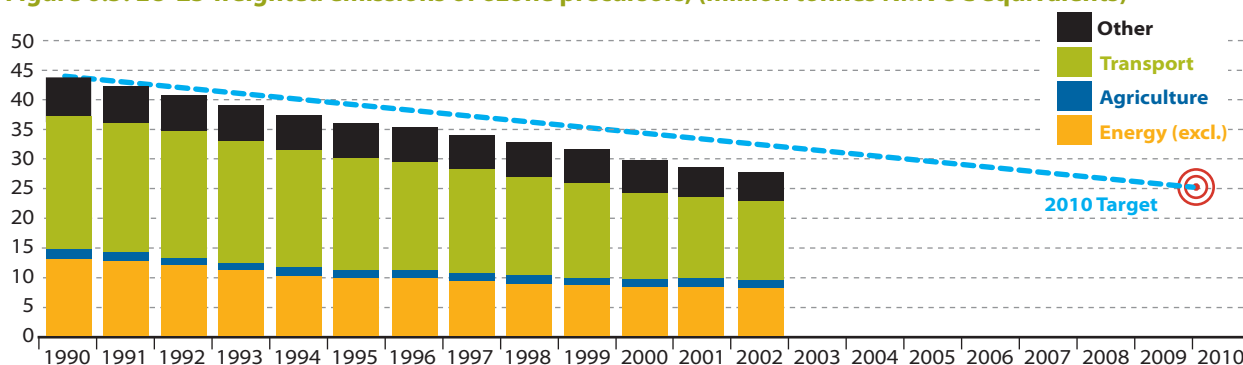


Figure 6.5. EU-25 weighted emissions of ozone precursors, (million tonnes NMVOC equivalents)



Source: European Environment Agency, Eurostat.

NB: 'Energy (excl.)' is the Energy sector without transport. See 'Methodological notes' for composition of categories.

## Analysis

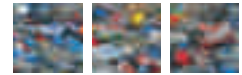
Emissions of acidifying pollutants in the EU-25 decreased by 5.8 % per year on average between 1990 and 2000, with a slowdown to an average annual decrease of 2.2 % between 2000 and 2002. The major emission source of acidifying pollutants is energy industries, followed by agriculture and transport. The most substantial decreases recorded in recent years were from the transport and energy sectors, mainly due to the switch from high to low sulphur fuels and to natural gas, as well as the introduction of catalytic converters on road vehicles and flue gas desulphurisation in power plants (EEA CSI 001).

Total ozone precursor emissions decreased in the EU by 3.7 % on average per year between 1990 and 2002. Most recently an average annual reduction of 3.3 % has been achieved between 2000 and 2002, with the highest contribution from the transport sector, as a result of the widespread use of catalytic converters. Given current trends, it seems likely that the EU as a whole would meet the 2010 aggregated emission targets, although this is not necessarily the case for every individual Member State.

## Potential linkages

These emissions have negative impacts on humans, ecosystems and the economy. They influence air pollution, forest health, and the status of water bodies, and soil acidification. They also contribute to climate change since methane and ozone precursors are also greenhouse gases. Given damages to the respiratory system, there is also a link with the public health theme.

Given the main contributing sectors, growth in transport, in the energy sector or in intensive agriculture will exert an influence on emissions of these pollutants.



Eco-efficiency



## Municipal waste collected



**Definition:** The indicator presents the **amount of waste collected by or on behalf of municipal authorities** and disposed of through the waste management system. The bulk of this waste stream is from households (unsorted, separately collected fractions of waste materials, and bulky waste), though ‘similar’ waste streams from commerce, offices, public institutions, businesses and municipal services are also included. Municipal waste is classified according to the following main categories: paper, paperboard and paper products, plastics, glass, metals, food waste, garden waste and similar materials, and other similar waste.

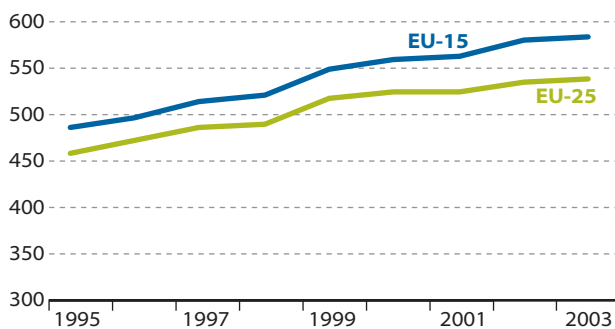
Promoting waste prevention and minimisation is a priority environmental objective at both European and international level, as waste generation is responsible for resource depletion and environmental pollution. The sustainable development strategy aims to ‘break the links between economic growth, the use of resources and the generation of waste’, which implies setting up waste management systems aimed at promoting waste prevention, re-use and recycling, sound disposal facilities enabling energy recovery and development of environmentally friendly alternative materials, as advocated in the forthcoming thematic strategy on waste <sup>85</sup>. The recently proposed integrated product policy (IPP) approach is an important contribution to waste minimisation as it seeks to minimise the environmental impact caused by products by looking at all phases (manufacturing, use or disposal) of a product’s life-cycle and taking action where it is most effective <sup>86</sup>. As nearly all waste is now collected, this indicator also gives an indication on the amount of municipal waste generated.

### Indicator relevance

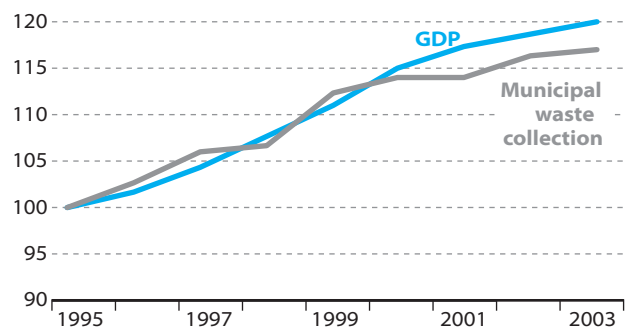
<sup>85</sup> ‘Towards a thematic strategy on the prevention and recycling of waste’, COM(2003) 301.

<sup>86</sup> ‘Integrated product policy, building on environmental life-cycle thinking’, COM(2003) 302.

**Figure 6.6. Municipal waste collected (kg per capita)**



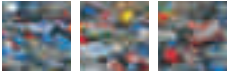
**Figure 6.7. EU-25 municipal waste collected GDP (index 1995 = 100)**



Source: Eurostat.

Waste collection per capita has grown continually from 1995 to 2003. There are encouraging signs, however, as growth has slowed down in the later years, with average annual growth rates of 1.37 % and 0.89 % respectively in the EU-15 and EU-25 between 2000 and 2003, compared with 2.82 % and 2.62 % between 1995 and 1999. Targets set in the fifth environmental action plan to stabilise waste generation at the 1985 levels (300 kg per capita) by 2000 have proven not to be achievable, and amounts are expected to rise further. Municipal waste collection has followed closely GDP growth, showing no apparent decoupling, although there are signs of a small amount of relative decoupling in later years, as GDP grew by 1.3 % per

### Analysis



year on average between 2000 and 2003, while waste collection grew by 0.9 % per year. This is not the case in the EU-15, where GDP grew by 1.4 % while waste collection grew by 1.3 % per year on average during the same period.

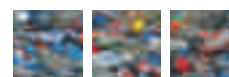
At 577 kg per capita in 2003, the old Member States accounted for around 8 % more than the enlarged Union in the collection of municipal waste per capita. Some new Member States have even experienced declining waste collection (see country breakdown on the SDI website).

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### Potential linkages

A reduction of waste generated would have positive implications for most themes, reducing pressure on the environment, and having a positive impact on the economy through fewer resources spent on waste disposal. Less waste generated would also imply less transport linked to disposal. By requiring valuable land space, waste management (see 'landfill' and 'incineration') also has an effect on spatial development issues (see 'built-up areas').

As long as there is no decoupling, municipal waste collection will be influenced by the growth rate of GDP per capita, as economic growth gives rise to more consumption. Consequently, it is also related to domestic material consumption. Moreover, technology is an important factor for better waste management, in particular for recycling; waste collection is thus likely to be linked with R & D expenditure.



Eco-efficiency



## Municipal waste treatment –

### Landfill and incineration



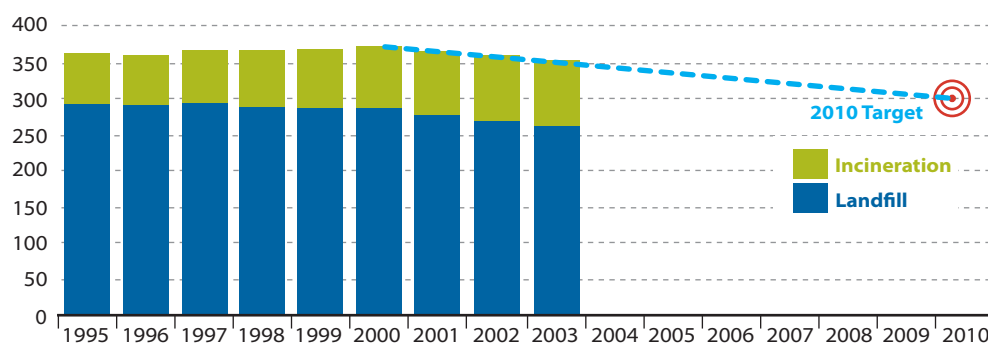
**Definition:** This indicator presents the share of municipal waste collected by or on behalf of municipal authorities and disposed of through landfill, or incinerated with or without energy recovery (see ‘Methodological notes’).

Waste landfill is the most common treatment and disposal method, because private costs are generally lower than recycling or incineration. The target set by the 6EAP concerns the minimisation of the overall amount of waste going to disposal. However, this implies mainly reducing landfill which is seen as the least environmentally friendly treatment method, leading to leaching of nutrients, heavy metals and other toxic compounds, emissions of greenhouse gases, loss of valuable land space, and increased heavy transport. This is harmful to air, soil and water and in turn to human beings, fauna and flora. The landfill directive<sup>87</sup> aims to promote the orientation of waste towards material recycling and biological treatment.

### Indicator relevance

If incineration offers a potential for recovery of energy and reduction of waste volumes, it also has drawbacks including the emission of toxic gases such as dioxins, production of ashes/residues which are then usually landfilled (but part of which can be recycled) and pollution of water from flue gas cleaning. Directive 2000/76/EC on the incineration of waste aims to reduce pollution caused by emissions into the air, soil, surface and groundwater, and thus lessen the risks which these pose to human health.

<sup>87</sup> Council Directive 1999/31/EC on the landfill of waste.

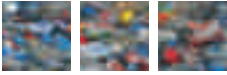


**Figure 6.8.** Municipal waste landfilled and incinerated (kg per capita)

Source: Eurostat.

The amount of waste going to landfill has been slowly declining from 1995 to 2000, with an average annual decrease of 0.55 % in the EU-25. From 2000 to 2003, the decline has been sharper, with an annual decrease of 3 % in the EU-25. This decline can be attributed to the implementation of landfill taxes in some countries, and the ban from landfill of certain waste types. The gap between the enlarged and old EU has narrowed, with almost identical levels observed in 2003, at 261 versus 259 kg per capita. These figures should nonetheless be interpreted with care as they hide a huge variety of national situations (see further data on the SDI website).

### Analysis



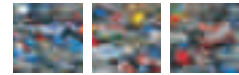
The decline in landfill has been counterbalanced by a growing resort to incineration. Between 2000 and 2003, the municipal waste incinerated per EU-25 inhabitant increased by 3.1 % per year on average. This is a slowdown compared with the much sharper growth experienced from 1995 to 2000 (4.32 % per year on average for the EU-25). Nonetheless, less than 30 % of municipal waste disposed of is being incinerated. Again, the EU figures should be treated with caution as they mask discrepancies at national level.

Together, landfill and incineration are the municipal waste going to final disposal, which has decreased overall by 4.6 % in the EU-25 between 2000 and 2003. This is encouraging for the target of a reduction of 20 % between 2000 and 2010, although further progress needs to be made.

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### Potential linkages

Landfill is a source of methane and a decrease in landfill could imply a decrease in emissions of greenhouse gases. Both landfill and incineration release air pollutants and affect the proportion of people suffering from noise and pollution. Both variables are likely to be influenced by domestic material consumption as increased consumption engenders more waste, although some of the ashes resulting from incineration may be re-used as secondary building material. Incineration is also linked with the energy indicators as incineration requires energy but also offers a potential for energy recovery. An increase in R & D expenditure could reduce emissions from incineration by contributing to the development of safer combustion techniques.



Consumption patterns



## Electricity consumption by households



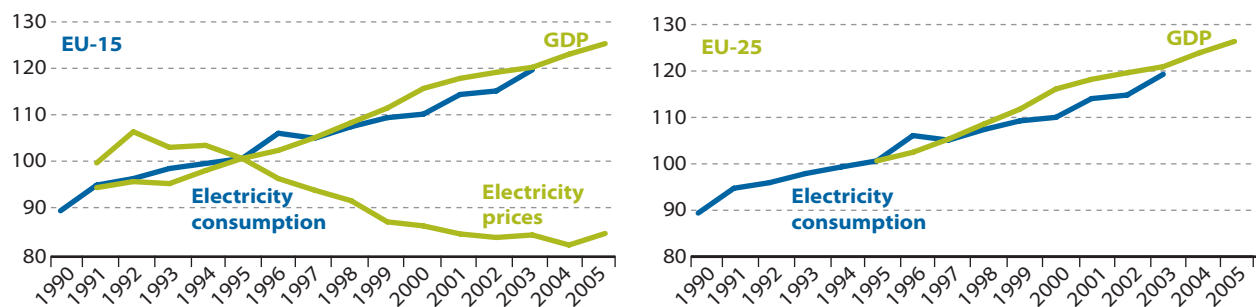
**Definition:** The indicator is defined as the consumption of electricity by households. It is compared with GDP and electricity prices at constant prices, charged to final domestic consumers (see 'Methodological notes').

This indicator highlights one of the main consumer growth areas, as households equip themselves with more electrical household goods and use them more often. Comparing data on household electricity consumption and on GDP also gives information on energy efficiency at household level.

### Indicator relevance

Electricity prices influence electricity consumption. The sustainable development strategy stipulates that 'getting prices right' so that they better reflect the true costs to society of different activities would provide a better incentive for consumers and producers in everyday decisions about which goods and services to make or buy. On the other hand, the 6EAP highlights the need for improved availability and quality of information to citizens on environment and for the preparation of practical tools allowing them to benchmark their individual or household environmental performance and giving information on how to improve it.

**Figure 6.9. (EU-15) and Figure 6.10. (EU-25) Households' electricity consumption versus electricity price and GDP (index 1995 = 100)**



Source: Eurostat.

NB: The 2002-03 figures on electricity consumption are provisional.

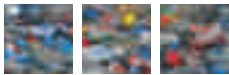
Electricity consumption by EU households has grown steadily as a result of a combination of economic growth which has engendered lifestyles demanding greater comfort and more home equipment, increasing numbers of households, and a cheaper electricity supply since 1993-94. These consumption patterns have more than offset the improved energy efficiency of many domestic appliances, and since 2000, electricity consumption has grown at a more rapid pace than GDP, with a mean annual growth rate of nine points between 2000 and 2003, while GDP only grew by 4.6 points. The trend is identical in both old and new Member States.

### Analysis

An increase in electricity consumption is potentially linked to growth in GDP, income and consumption expenditure as a higher income will enable higher consumption expenditure, thus giving rise to a higher electricity demand; from the same perspective, it may also be influenced by domestic material consumption. A slowing-down in electricity consumption growth might result from the availability of more 'green' products, such as eco-labelled products. Electricity consumption also directly contributes to final energy consumption.

### Potential linkages





### Consumption patterns



## Household composition

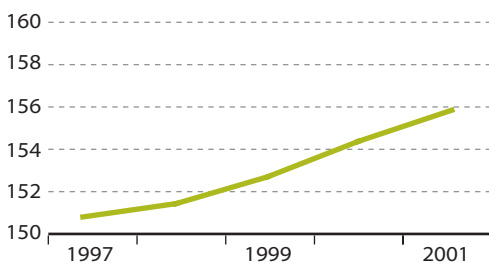
**Definition:** This indicator reports on the **number of private households**, and the **size of households**, expressed as the average number of people per household.



### Indicator relevance

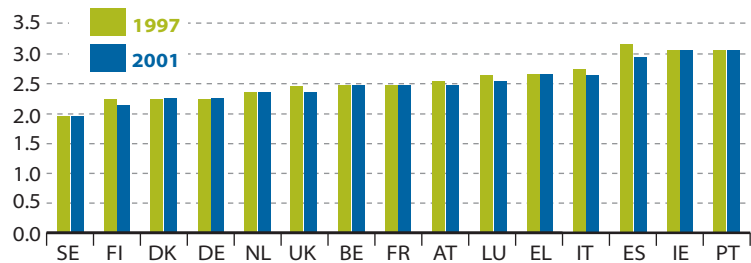
The composition of households, whether including couples or single adults, with or without dependent children, has changed in the last decades, with an impact in terms of the number of people per household and consequently the number of households. These characteristics affect a whole set of social, economic and environmental features determining households' consumption patterns in all domains.

**Figure 6.11.**  
EU-15 number of households (millions)



Source: Eurostat.

**Figure 6.12.**  
Size of households (number of people)



### Analysis

During the period from 1997 to 2001, almost five million additional households appeared in EU-15 society, reflecting an increase of 3.3 %, more than three million of which were created between 2000 and 2001 (+ 0.9 %). During the same period, the average size of households declined in six countries, with the highest decrease of 6.5 % in Spain, and remained stable in nine others. In 2001, countries with households of three people on average included Portugal and Ireland, while at the other end, the average size of households in Sweden was less than two people.

Complementary data show that, although still prevailing, the number of households with two adults and dependent children has declined, while the number of smaller households, whether single-person (with or without children), or two adults without children, has increased<sup>88</sup>. The higher number of smaller households is expected to increase consumption, since all households have a minimum need for basic appliances and for lighting (and to a more limited extent for heating), independently of their size.

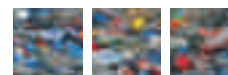
These changes are linked to modified lifestyles, and in particular fewer and later marriages, fewer children and having children later in life, and more marital breakdowns<sup>89</sup>.

<sup>88</sup> Eurostat, NewCronos database, statistics on population and social conditions.

<sup>89</sup> The social situation in the European Union 2004, Employment and Social Affairs DG and Eurostat joint annual report.

### Potential linkages

The number and size of households are susceptible to be influenced by demographic changes, for example through a change in the old-age dependency ratio, life expectancy and fertility rate. Household composition also influences domestic material consumption and electricity consumption, as more households create a higher demand for some goods and services. It has therefore an indirect impact on greenhouse gas and air emissions. The number and size of households also influences water demand, and has an impact on groundwater abstraction. The size of households also influences the risk of poverty, since it increases for single adults with or without dependent children.



Agriculture



## Area under agri-environmental support

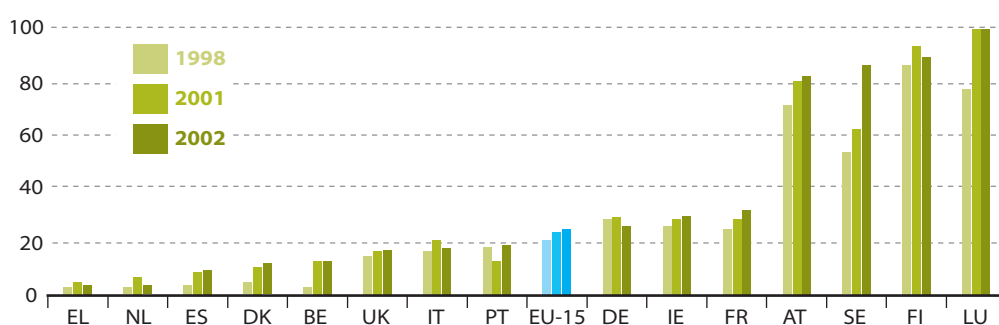


**Definition:** This indicator monitors trends in **agricultural land enrolled in agri-environmental measures** expressed as a **share of total utilised agricultural area (UAA)**. The data include agri-environmental contracts under Regulation (EEC) 2078/1992 and contracts signed in 2000–2002 under the current Regulation (EC) 1257/1999 (see ‘Methodological notes’).

Agri-environmental measures are designed to encourage farmers to protect and enhance the environment on their farmland. Farmers commit themselves, for a five-year minimum period, to adopt environmentally friendly farming techniques which go beyond good farming practice (GFP). Codes of GFP are defined by Member States in rural development programmes to minimise some of the potential negative environmental effects of agricultural activity by providing a minimum environmental baseline, and to ensure that agri-environmental measures deliver more environmental benefits. In return for their commitment, farmers receive financial assistance that compensates for additional costs, and the loss of income that occurs as a result of environmentally friendly farm management practices.

### Indicator relevance

Agri-environmental measures (AEMs) were introduced in the CAP during the mid-1980s as an optional policy instrument to support specific farming practices that help to protect the environment and maintain the countryside, in the context of the agricultural structures regulation (Regulation (EEC) No 797/85). The implementation of agri-environmental programmes became compulsory for Member States with the McSharry reform in 1992, as an ‘accompanying measure’ to the CAP (Council Regulation (EEC) 2078/92). Member States were required to introduce agri-environmental programmes ‘throughout their territory’. In 1999, the Agenda 2000 reform included agri-environmental measures as an obligatory part of rural development programmes (Council Regulation (EC) 1257/99) and increased the co-funding available for this policy instrument. Agri-environmental measures are also used to support the goals of the ‘nitrates directive’ (91/676/EEC), the reduction of climate gas emissions as foreseen under the Kyoto Protocol and other environmental policies targeting agriculture.

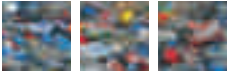


**Figure 6.13.** Share of utilised agricultural area enrolled in agri-environmental measures (%)

Source: Directorate-General for Agriculture and Rural Development.

The share of agri-environmental schemes in the total agricultural area increased from 20 % in 1998 to 24 % in 2002, which is 30.2 million hectares in 2000, compared with 25.2 million hectares in 1998 (see the SDI website). In 2002, this share varied considerably between Member States. In Finland, Luxembourg, Sweden and Austria, relatively large areas (more than 75 %) were enrolled in agri-environmental schemes, in contrast to Greece, Spain and the Netherlands (less than 10 %).

### Analysis

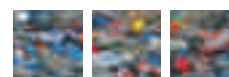


The share of agricultural land enrolled in agri-environmental measures increased in most Member States, particularly in Sweden (by 33 %), and Luxembourg (by 23 %). Between 2001 and 2002, the share decreased in a number of countries, including Greece, the Netherlands, Italy, Germany and Finland, due to the phasing-out of schemes under the former Regulation (EEC) No 2078/92.

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### **Potential linkages**

An increase in the area under agri-environmental support is likely to have a generally beneficial effect on the management of natural resources. A positive impact would be expected in particular on biodiversity, landscape conservation, as well as on water resources. A resulting reduction of methane emissions would have a positive effect on greenhouse gas emissions. An increase in the area under agri-environmental support might also have an impact on regional GDP.



Agriculture



## Livestock density



**Definition:** The **livestock density index** provides the number of livestock units (LSU) per hectare of utilised agricultural area (UAA). The LSU is a reference unit which facilitates the aggregation of livestock from various species and ages through the use of LSU coefficients, which are established by convention. The livestock species aggregated in the LSU total, for the purpose of this indicator, are: equidae, cattle, sheep, goats, pigs, poultry and rabbits.

Intensive livestock rearing, especially pig and poultry production, is a main source of farmyard manure, a key component of potential nutrient surpluses, with associated environmental impacts on aquatic systems. Extensive management of grasslands is an important goal of EU agri-environment programmes. Among the major land-use types, permanent grassland is generally considered one of the most important from a landscape and nature conservation perspective. The number of cattle and other livestock also has a significant influence on greenhouse gas and other emissions from agriculture and thus impacts on the potential of the EU to reach important environmental policy goals, such as those of the Kyoto Protocol or the national emissions ceilings directive (2001/81/EC).

### Indicator relevance

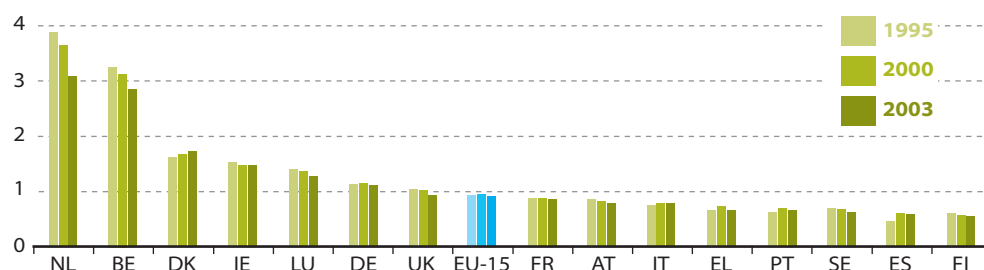


Figure 6.14. Livestock density index (LSU per hectare)

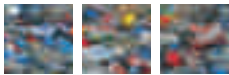
Source: Eurostat.

From 1995 to 2000, different levels and trends in livestock density can be observed, with a significant increase in Spain, while other countries such as Belgium and the Netherlands experienced a decrease. From 2000 to 2003, livestock density decreased or remained stable in most countries, the most dramatic changes being in the Netherlands (- 15.4 %), and Belgium (- 9.3 %), although both countries are still well above the other Member States. The exception is Denmark, where the index increased by 3.6 %. Livestock density is not uniform throughout a country, but tends to occur in 'hotspots' with high density, while other areas of a country have very low density. Therefore a generally low level, especially for a large country, can mask regions with very high livestock density. It is interesting, however, that overall, between 2000 and 2003, there was an average annual decrease in livestock density of 1.3 % in the EU-15.

### Analysis

An increase in livestock density is likely to contribute to increased nutrient loading in regions with concentrated intensive production, in other words, a negative impact on water resources. High livestock density usually also means that farmers need to supplement feed with cereals, which involves the use of fertilisers and pesticides. Moreover, animal feedstuffs are imported from third countries, and an increase in livestock density may therefore increase EU imports from developing countries. Livestock density can also have an incidence on biodiversity, and in particular on some bird species. It has an impact on climate change, as intensive systems tend to contribute more methane than extensive systems for the same number of cattle.

### Potential linkages



## Agriculture



# Nitrogen surplus

**Definition:** Nitrogen surplus is the **potential surplus of nitrogen on agricultural land**, calculated as the difference between nitrogen inputs to an agricultural system and nitrogen removed from the system per hectare of agricultural land. The nitrogen inputs taken into account in this balance are mineral fertilisers and organic manure applied to agricultural land, fixation by leguminous crops and clover, and wet and dry deposition from the atmosphere. Nitrogen outputs are the nitrogen content in harvested arable crops and crops used for fodder.

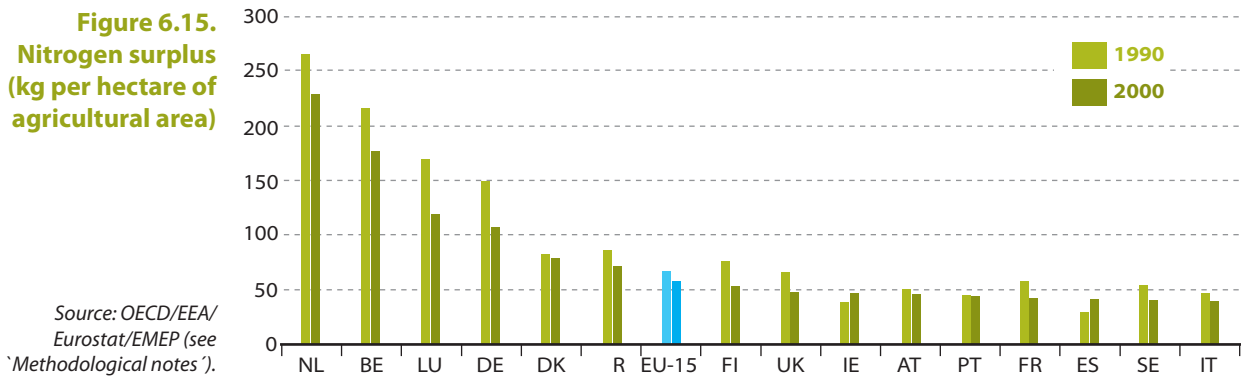


### Indicator relevance

The leakage and run-off of nutrients from agricultural soils is one of the persistent problems of modern agriculture. Overloading of water bodies with these nutrients results in a series of adverse effects such as groundwater pollution and eutrophication. Nitrogen surplus is a proxy indicator for non-point nitrate source from agriculture. A variety of policy measures aim to limit nitrogen losses to inland and marine water bodies. The nitrates directive (91/676/EC) has the general purpose of ‘reducing water pollution caused or induced by nitrates from agricultural sources and preventing further such pollution’ (Article 1). The water framework directive (2000/60/EC) requires all inland and coastal waters to reach ‘good ecological status’ by 2015, the latter being defined in terms of the quality of the biological community, hydrological characteristics and chemical characteristics.

The 6EAP encourages the full implementation of both the nitrates and water framework directives, in order to achieve levels of water quality that do not give rise to unacceptable impacts on, and risks to, human health and the environment.

**Figure 6.15.**  
Nitrogen surplus  
(kg per hectare of  
agricultural area)

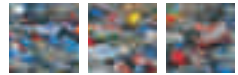


Source: OECD/EEA/  
Eurostat/EMEP (see  
'Methodological notes').

### Analysis

Nitrogen surplus in the EU-15 was 55 kg/ha in 2000, compared with 65 kg/ha in 1990, which is an annual average decrease of 1.7 %. There is a high geographical disparity across Member States, from 37 kg/ha in Italy to 226 kg/ha in the Netherlands. All national gross nitrogen balances show a decline in estimates of the gross nitrogen balance (kg/ha) between 1990 and 2000, apart from Ireland (+ 2 % per year on average) and Spain (+ 3.7 %). The general decline in nitrogen balance surpluses is due to a slight decrease in nitrogen input rates (– 1.0 %) and an increase of nitrogen output rates (10 %). A breakdown into the components of the nitrogen balance shows that inorganic nitrogen use is the primary source (74 kg/ha on average in the EU-15), while livestock manure is the second major source of nitrogen (57 kg/ha)<sup>90</sup>.

<sup>90</sup> IRENA indicator factsheet. Irena 18.1, Gross nitrogen balance (<http://webpubs.eea.eu.int/content/irena/Latestproducts.htm>).



National balances can mask important regional differences in the gross nitrogen balance that determine actual nutrient leaching risk at regional or local level. Individual Member States can thus have overall acceptable gross nitrogen balances at national level but still experience significant nitrogen leaching in certain regions, for example in areas with high livestock concentrations (see 'livestock density'). In 1997, the regions most affected by high nitrogen surpluses were North Rhine-Westphalia, Lower Saxony, Brittany and Catalonia <sup>92</sup>.

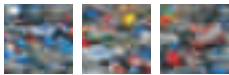
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<sup>91</sup> Eurostat, 2000, 'Nitrogen balances in agriculture', *Statistics in focus*, Environment and energy, Theme 8, 16/2000.

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An increase in nitrogen surplus will aggravate the aquatic loading of nutrients, affecting the quality of surface water and groundwater resources. Increased eutrophication will also affect biodiversity. Nitrogen surplus will increase with livestock density, and wet and dry atmospheric deposition, implying a link with emissions of acidifying substances.

## Potential linkages



## Agriculture



## Organic farming

**Definition:** The indicator is defined as the **share of total utilised agricultural area occupied by organic farming**. Farming is only considered to be organic at EU level if it complies with Council Regulation (EEC) No 2092/91. Organic farming involves holistic production management systems, for crops and livestock, emphasising the use of management practices in preference of the use of off-farm inputs. This is accomplished by using, where possible, cultural, biological and mechanical methods in preference to fertilisers and pesticides.



### Indicator relevance

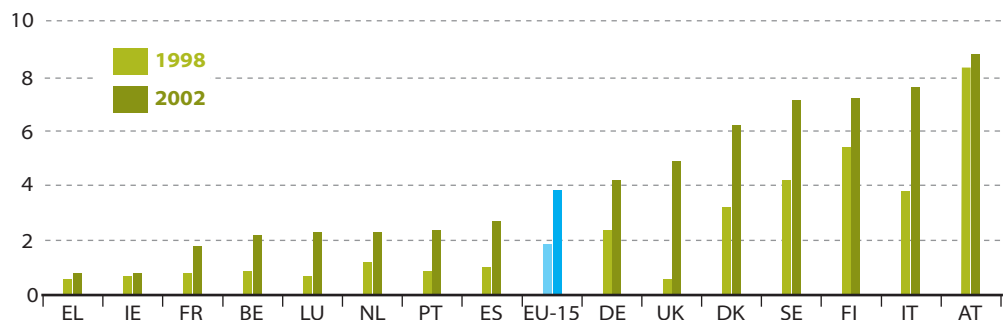
The conclusions of the European Council in Gothenburg stated that ‘the common agricultural policy and its future development should, among its objectives, contribute to achieving sustainable development by increasing its emphasis on encouraging healthy, high-quality products, environmentally sustainable production methods, including organic production, renewable raw material and the protection of biodiversity.’

The 6EAP reflected the same broad objectives: ‘Encourage more environmentally responsible farming, including, where appropriate, extensive production methods, integrated farming practices, organic farming and agro-biodiversity, in future reviews of the common agricultural policy, taking account of the need for a balanced approach to the multifunctional role of rural communities.’

In June 2004, the Commission presented its communication, the ‘European action plan for organic food and farming’<sup>92</sup>. The action plan sets out 21 actions in the areas of the organic food market, public policy and standards and inspection, but does not set any specific targets in relation to area or number of farmers.

<sup>92</sup> ‘European action plan for organic food and farming’, COM(2004) 415.

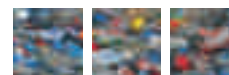
**Figure 6.16. Share of area occupied by organic farming in total utilised agricultural area (%)**



Source: Eurostat.

### Analysis

There was a rapid increase in organic farming from 1998 to 2002, representing an overall increase of the share in the total agricultural area from 2.9 to 3.7 % in the EU-15. The largest increases occurred in the United Kingdom and Italy, where the share of organic farming rose by 4.8 % and 3.8 %, respectively. In 2002, the countries with the largest share of area occupied by organic farming were Austria (8.7 %), and Italy (7.5 %), followed by Finland (7.1 %), and Sweden (7 %). At the opposite end, Greece and Ireland had the smallest shares (0.7 %).



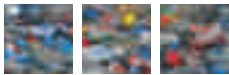
Area-based payments for organic farming are likely to have played a significant role in the general increase of the share of area occupied by organic farming. These were originally granted through the agri-environment schemes under Council Regulation (EEC) No 2078/92, and now continue under Council Regulation (EC) 1257/1999 regarding support for rural development. The growth in the market for organic produce has also been an important factor.

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An increase in organic farming contributes to reducing environmental loading on water resources and pressure on biodiversity. The consequent reduction of use of pesticides, herbicides and other chemicals will also contribute to improving public health.

**Potential linkages**





### Corporate social responsibility



## Environmental management systems

**Definition:** This indicator is defined as the **number of organisations having implemented voluntarily an environmental management system**, which can be either an eco-management and audit scheme (EMAS) or an ISO 14001 certification.



The EU EMAS is a management tool for companies and other organisations to evaluate, report on and improve their environmental performance. The scheme is regulated through Council Regulation (EEC) No 1836/93 of 29 June 1993 and has integrated ISO 14001 (international standard for environmental management systems) as its environmental management system component. ISO 14001 is primarily concerned with 'environmental management'. It aims at helping an organisation to establish a new or improve an existing environmental management system (EMS), in order to minimise harmful effects on the environment caused by its activities, and continually to improve its environmental performance.

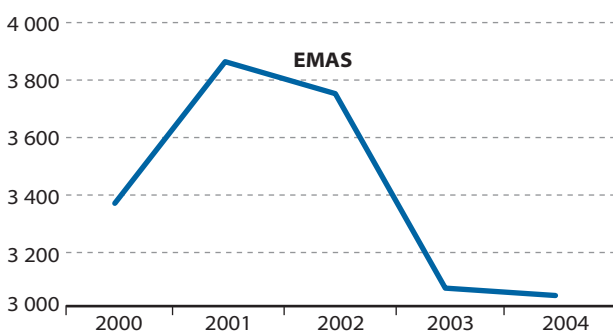
### Indicator relevance

With consumers' growing preference for socially and environmentally responsible products and services, and for more information about the conditions of production, more and more businesses feel that socially responsible management can have a positive impact at macroeconomic level. There may also be some recognition that a sound environment is a key condition for successful business activities in the long term.

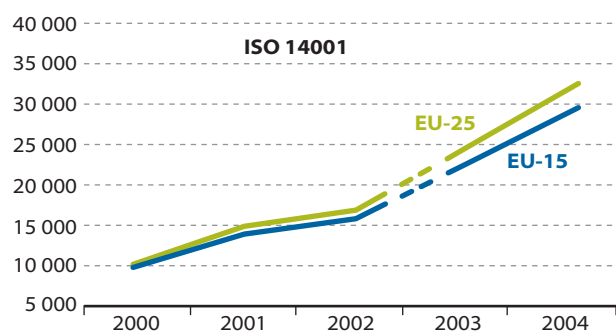
To enhance the business contribution to sustainable development, the Commission's communication to the Gothenburg Council recommended that all publicly quoted companies with at least 500 staff publish a 'triple bottom line' in their annual reports to shareholders that measures their performance against economic, environmental and social criteria. In addition, the Commission has adopted a new strategy on corporate social responsibility<sup>93</sup>. Environmental management systems are structured approaches to addressing the environmental bottom line. They are seen as tools for both strengthening green production and promoting green procurement, mainly through EMAS and ISO 14001, two important instruments for corporate social responsibility.

<sup>93</sup> 'Communication from the Commission concerning corporate social responsibility: A business contribution to sustainable development', COM(2002) 347.

**Figure 6.17. EU-15 EMAS registration (number of organisations)**

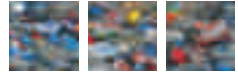


**Figure 6.18. ISO 14001 certifications (number of organisations)**



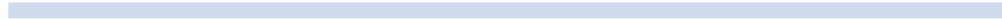
Source: European Commission (EMAS), German Federal Environment Agency (ISO 14001).

NB: No ISO 14001 figure is available for 2003.



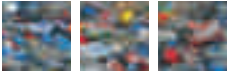
EMAS registrations in the EU-15 reached a peak in 2001, at 3 848 organisations, and then declined by 9 %, to 3 043 in 2004. On the contrary, ISO 14001 certifications have experienced a real boom with a threefold increase from 2000 to 2004, to reach levels around 10 times higher than for EMAS. This trend applies throughout the whole Union (see the SDI website). ISO 14001 is the most important environmental management system worldwide. Its international recognition and less stringent criteria explain its prominence over the European EMAS, though the higher value added of the latter is generally recognised. The decline in EMAS is mainly ascribable to the retreat of German companies, which had been both EMAS and ISO 14001 certified, to only keep the latter scheme as the benefits from EMAS were seen as too low in comparison with the costs for verification or publication, and to other constraints resulting from compliance with the regulation.

## Analysis



Environmental management systems are seen as key tools to fulfil environmental requirements and promote innovation, and are thought to increase the competitiveness of businesses. They can contribute to a reduction of environmental pressure from businesses.

## Potential linkages



### Corporate social responsibility



## Eco-labels



**Definition:** This indicator is defined as the **number of eco-labels or ‘EU flower’ awards** in EU Member States, by product group.

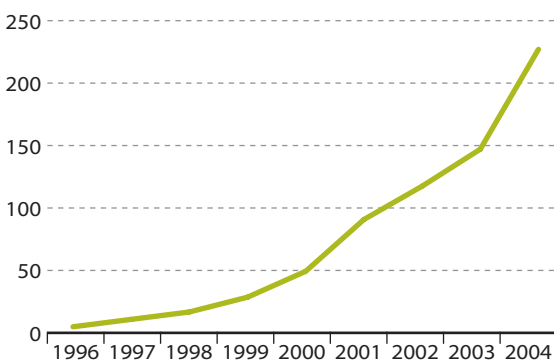
Criteria for the award of the flower exist for some 22 green product groups and more than 200 licences have been awarded for several hundred products. For the purpose of this indicator, products have been classified using categories derived from the EU statistical classification of products by activity (CPA): chemical products (paints and varnishes, all-purpose and sanitary cleaners, soil improvers, dishwashing and laundry detergents); textiles; footwear; paper and paperboard (tissue paper, copying paper); electrical and optical equipment (dishwashers, washing machines, refrigerators, vacuum cleaners, computers, televisions, lightbulbs); hotel and restaurant services (tourist accommodation services); ceramic tiles; furniture and other manufactured goods (furniture, bed mattresses).

### Indicator relevance

Environmental concerns, growing public pressure and regulatory measures are changing the way people do business worldwide. Consumers and shareholders are increasingly demanding environmentally friendly products and services that are delivered by socially responsible companies. It is becoming thus important for organisations to demonstrate that their whole product development strategies are sustainable.

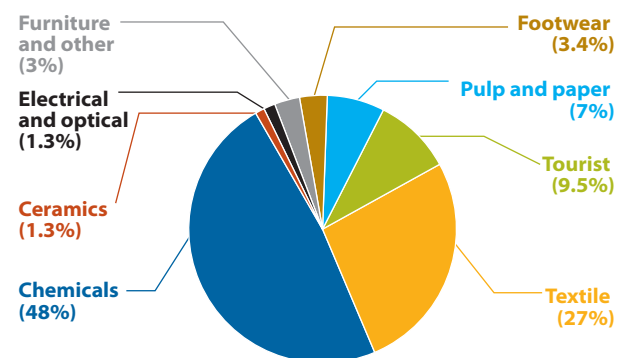
The EU eco-label is awarded to products of the highest environmental quality, showing compliance with specific criteria, after verification by an independent third party. Together with environmental management schemes (see previous indicator) it is a corporate social responsibility tool, contributing to sustainable development at both business and consumer level.

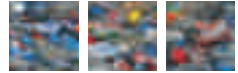
Figure 6.19. EU-15 flower awards, total number



Source: European Commission, Environmental DG, Eco-label helpdesk.

Figure 6.20. EU-25 flower awards, by category (March 2005)





The eco-label scheme has undergone a mean annual growth rate of 49.9 % since the first award in 1996, with an overall increase of 367 % between 2000 and 2005. In March 2005, some 229 flowers had been awarded in the EU-15, versus 232 in the EU-25, with the recent participation of the new countries in the scheme (see the SDI website).

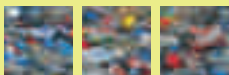
## Analysis

The chemical products category dominates, with 48 % of flower awards. Products in this category include mainly paints and detergents, which do not contain toxic or dangerous substances. Another important group is the textile category (27 %) which includes clothing, bed linen and other indoor textiles, during the production of which substances with harmful effects on the aquatic environment and air have been limited, and for which the risk of allergy has been reduced. Award criteria are constantly revised, as in the example of footwear, for which criteria have been revised so that eco-labelled shoes no longer have traces of arsenic, cadmium or lead.

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An increased environmental awareness amongst consumers is likely to impact both eco-labels, and sales of fair trade labelled products. An increase in R & D expenditure towards more environmentally friendly products may also have a positive influence on the number of eco-labels. An increase in eco-labels may also reduce environmental pressure from consumers.

## Potential linkages



## Methodological notes

### Domestic material consumption

Direct (used) material inputs are defined as all solid, liquid and gaseous materials<sup>94</sup> that enter the economy for further use in production and consumption processes. The two main categories are raw materials domestically extracted and imports. The sum of these two categories constitutes the direct material input (DMI). Deducting exports from DMI results in the domestic material consumption.

Material inputs of domestic origin are further classified into three main material groups:

- fossil fuels: hard coal, lignite, crude oil, natural gas, other;
- minerals (metal ores, other industrial minerals, construction materials);
- biomass (from agriculture reported by harvest statistics, from agriculture as a by-product of harvest, from grazing of agricultural animals, from forestry, from fishing, from hunting, from other activities).

Imports are classified according to their level of manufacturing into:

- raw materials
- semi-manufactured products
- finished products
- other products (mostly products of the nutrition industry)
- packaging material imported with products
- waste imported for final treatment and disposal.

At EU level, imports may be classified based on either the combined nomenclature (CN — the classification of foreign trade) or the more aggregated classification of products by activities (CPA). Each category of imports is further classified according to the basic material components of the commodities:

- fossil fuels (further subdivided by type of fuel);
- minerals (further subdivided by metals and non-metallic minerals);
- biomass (from agriculture, forestry, fishing or hunting).

A detailed proposal for classifying products by main material component based on the commodities classifications of foreign trade statistics is included in the Eurostat methodological guide on material flow accounts<sup>95</sup>. The more complex the material mix of a manufactured product, the more critical its attribution to a 'dominant' material category, and conversion tables may need to be set up for the detailed attribution of imports to material categories.

Exports are classified in the same way as imports. This allows to account for DMC per category of materials.

### Emissions of acidifying substances and ozone precursors

In the concept of acid equivalents, weighting factors are used to aggregate the emissions of acidifying substances and present a single figure for this in acid equivalents. They represent a simplified approach to a very complex process of chemical interactivity. Acid equivalents are estimated as follows: sulphur dioxide \* 1/32; nitrogen oxides \* 1/46 and ammonia \* 1/17 (de Leeuw, 2002<sup>96</sup>).

The emissions of ozone precursors can be aggregated using their ozone forming potential and can be expressed in volatile organic compounds without methane (NMVOC) equivalents. The following weighting factors are applied to estimate the emissions in NMVOC equivalents: nitrogen oxides = 1.22, volatile organic compounds without methane = 1, carbon monoxide = 0.11, methane = 0.014 (de Leeuw, 2002).

The conversion in terms of equivalents represents a rather simplified approach to a very complex process of chemical interactivity.

The 'total' includes all emissions without any disaggregating. The sector 'energy (excluding transport)' corresponds to the whole energy sector without transport. The 'other' category includes the sectors industrial processes, waste, other (non-energy), and 'not allocated'.

Data are derived from the European Environment Agency (EEA) core set of indicators (see Box 7.3), including indicators CSI 001 (emissions of acidifying substances) and CSI 002 (emissions of ozone precursors).

### Electricity consumption by households

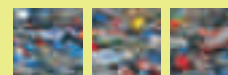
The data come from Eurostat energy statistics, which are collected through standardised questionnaires.

Prices of electricity and natural gas charged to industrial end-users are collected under Council Directive 90/377/EEC establishing a Community procedure to improve the transparency of energy prices. The data collection has been extended to also cover households on the basis of a 'gentlemen's agreement'. Electricity prices charged to final domestic consumers are defined as follows: annual consumption of 3 500 kWh of which 1 300 kWh is overnight (standard dwelling of 90 m<sup>2</sup>). Prices are given in euros (without taxes) per kWh corresponding to prices applicable on 1 January of each year.

<sup>94</sup> Water and air consumption are, apart from the water content of materials, not included. Quantitatively important 'memorandum items' for balancing air and water should be included in the input. For example, air is used during the fuel combustion process.

<sup>95</sup> *Economy-wide material flow accounts and derived indicators — A methodological guide*, 2000 edition, Eurostat Theme 2, Economy and finance.

<sup>96</sup> De Leeuw, 2002, 'A set of emission indicators for long-range transboundary air pollution', *Environmental Science and Policy*, 5, pp. 135–145.



## Household composition

The data come from the European labour force survey (see Box 1.3), a quarterly household sample survey carried out in the Member States of the European Union, candidate countries and EFTA countries. The LFS provides population estimates for the main labour market characteristics, as well as important socio-demographic characteristics, such as sex, age, education, households and regions of residence.

The survey's target population are all persons in private households aged 15 years or older. Private households are either: (1) a one-person household, in other words, a person who lives alone in a separate housing unit or who occupies, as a lodger, a separate room (or rooms) of a housing unit but does not join with any of the other occupants of the housing unit to form part of a multi-person household as defined below; (2) a multi-person household, which is a group of two or more persons who combine to occupy the whole part or part of a housing unit and to provide themselves with food and possibly other essentials for living. Members of the group may pool their incomes to a greater or lesser extent.

A 'dependent child' means a child of the household reference person (or of her/his spouse) aged less than 15. Due to data availability, the definition is based purely on parental relationship and age, and excludes any other dimensions (such as income dependency for instance).

Since all the data are expressed in absolute values for each quarter (i.e. number of persons) no weighting is used. Any missing national accounts quarters at the end of the series are estimated by applying a growth factor usually derived from the LFS (or administrative data for Luxembourg).

## Municipal waste collection and treatment

Waste statistics are collected through the 'waste' section of the joint Eurostat/OECD questionnaire. It is generally recognised that differences in methods of data production among countries plus the variances in interpretation of definitions and/or waste categories make comparison of data among countries rather difficult.

Landfill is defined as the deposit of waste into or onto land, including specially engineered landfill, and temporary storage of over one year on permanent sites. The definition covers both landfill in internal sites (i.e. where a generator of waste is carrying out its own waste disposal at the place of generation) and in external sites.

Incineration means thermal treatment of waste in an incineration plant as defined in Article 3(4) or a co-incineration plant as defined in Article 3(5) of the directive on the incineration of waste (Directive 2000/76/EC of 4 December 2000).

These indicators should be interpreted with care due to data limitations including the absence of a harmonised definition

of 'waste' and 'non-waste'. Moreover, only volumes are monitored while the nature and composition of the waste concerned should be considered also.

The recently adopted waste statistics regulation<sup>97</sup> is expected, when fully implemented, to significantly improve data availability and comparability on waste generation and treatment.

## Share of area under EU agri-environmental support

This indicator is part of the IRENA indicator set: IRENA 1 (Box 6.2).

The data come from the common indicators for monitoring of implementation of rural development plans (RDPs), (Council Regulation (EC) No 1257/1999 on support for rural development from the EAGGF), Directorate-General for Agriculture and Rural Development, 2001, 2002.

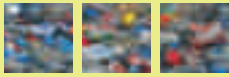
The tables of monitoring of rural development programmes record individual agri-environment agreements and the area covered by them. If a single beneficiary and holding has more than one agreement covering the same area (e.g. an agreement on organic farming and a separate agreement regarding landscape conservation features) there will be an element of double counting. Sweden, Finland, Belgium, Denmark, France, Italy, Austria, Portugal and the United Kingdom have provided an estimate of the physical share of the total UAA which is under agri-environment contract, without double counting. Issues of double counting have been avoided as much as possible by using these estimates to compile the indicator, but it may be that there is still some element of double counting for some other countries.

According to Regulation (EC) No 1257/1999, the main environmentally favourable measures supported are the following:

- ways of using agricultural land which are compatible with the protection and enhancement of the environment, landscape, natural resources, soil, water, and genetic diversity;
- extensification of farming and management of low-intensity pasture systems;
- conservation of high nature-value farmed environments under threat;
- upkeep of the landscape and historical features on agricultural land;
- use of environmental planning in farming.

Examples of agri-environment measures are: extensification of farming and particularly livestock; management of low-intensity pasture systems; integrated farm management and organic agriculture; preservation of landscape and historical features such as hedgerows or ditches; conservation of high-value habitats and their associated biodiversity.

<sup>97</sup> Regulation (EC) No 2150/2002 of the European Parliament and of the Council on waste statistics.



## Box 6.2: IRENA indicators

During each of its meetings, in Cardiff (June 1998), Vienna (December 1998) and Helsinki (December 1999), the European Council requested the Commission to report on the integration of environmental concerns into Community sectoral policies.

As a contribution to meeting this requirement for the agricultural sector, a set of indicators has been identified to monitor

such integration, in other words, agri-environmental indicators (COM(2000) 20), and this set, and the statistics and other information needed to realise the indicators, is the subject of a further Commission communication (COM(2001) 144).

The factsheets for the 35 IRENA indicators are available at: <http://webpubs.eea.eu.int/content/irena/Latestproducts.htm>

### Livestock density index

The indicator is based on data from the farm structure survey (FSS). Livestock numbers are converted into livestock units using the following coefficients:

Equidae	0.8
Bovine animals	
— under one year old	0.4
— one year or over but under two years	
— male	0.7
— female	0.7
— two years old and over	
— male	1.0
— heifers	0.8
— dairy cows	1.0
— other cows	0.8
Sheep, all ages	0.1
Goats, all ages	0.1
Pigs	
— piglets having a live weight under 20 kg, per 100 head	2.7
— breeding sows weighing 50 kg and over	0.5
— other pigs	0.3
Poultry	
— broilers, per 100 head	0.7
— laying hens, per 100 head	1.4
— other poultry (ducks, turkeys, geese, guinea-fowl), per 100 head	3.0
Rabbits, breeding females, per 100 head	2.0

LSU is a theoretical unit, and its limits should be taken into account in the interpretation of the index.

### Nitrogen surplus

This is part of the set of IRENA agri-environmental indicators: IRENA 18.1 (see Box 6.2). It is based on balances submitted to the OECD or by using EU-15-wide data sets. At present the data is reported at national level for 1990 and 2000.

A full explanation of the nitrogen balances is provided by the OECD/Eurostat nitrogen handbooks (OECD/Eurostat, 2003). Data were extracted from the spreadsheets provided by EU

Member States to the OECD. The Member States that have not provided data include the United Kingdom, Sweden, Belgium (Wallonia), Spain, Greece, and Luxembourg. The Swedish Board of Agriculture provided national and regional balances, with only a breakdown of balances for arable land. France provided national balances, but without including nutrients from atmospheric deposition.

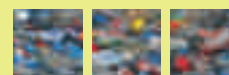
The following data sources were used for nitrogen balance calculations for Member States not providing information to the OECD: crop area (farm structure survey); livestock numbers (farm structure survey); livestock excretion rates (OECD or averaged coefficients from Member States); fertiliser rates (EFMA); nitrogen fixation (farm structure survey); atmospheric deposition (EMEP); yields (Eurostat's ZPA1 data set or average coefficients from Member States).

Coefficients for Spain and Greece are based on the average of coefficients used in Italy and Portugal. Coefficients for Denmark, the United Kingdom, Luxembourg, and Belgium are based on the average of coefficients used in Germany, the Netherlands and Belgium (Flanders). In addition, a balance was calculated for France, that includes nitrogen deposition from the atmosphere.

### Organic farming

The data come from the farm structure survey, which has collected data on organic farming at regular intervals and at regional level since the 2000 survey. The representativity of the intermediate surveys (2003, 2005 and 2007) for the organic farming variable is, however, not completely assured. The suggested indicator is the evolution in the share of the organic farming area (where possible divided into fully converted and in-conversion area) based on the results from the Directorate-General for Agriculture and Rural Development organic farming questionnaire in the total UAA in the Member States. The FSS data are used to calculate the indicator at regional level.

The organic farming regulation obliges Member States to submit yearly information on the number of organic operators and the area under organic farming. Since Member States in the early 1990s used varying formats when submitting organic data, the Directorate-General for Agriculture and Rural Development, in collaboration with Eurostat, drew up a questionnaire with harmonised tables and guidelines in order to facilitate comparison and aggregation at EU level. The present version of the yearly organic farming questionnaire asks for information on organic operators (producers, processors and importers),



crop areas/yields and their economic activity (NACE) at national level. A recent revision of the questionnaire included tables on livestock production and products.

#### Eco-management and audit scheme (EMAS)

The data come from the EMAS helpdesk of the Directorate-General for Environment. It is a compilation of the national registers of EMAS organisations held by the EMAS competent bodies. Competent bodies communicate on a regular basis changes, additions and deletions in their registers to the EMAS helpdesk, which is responsible for maintaining the EU register.

The scheme has been available for participation by companies since 1995 and was originally restricted to companies in industrial sectors. In the new Member States, registration according to EMAS started on 1 May 2004. Before, only a quasi-registered status was given to organisations due to the lack of government institutions.

The figures refer to the month of December except in 2004 (November).

#### ISO 14001

The data come from the German Federal Environment Agency.

The ISO 14001 standard is attributed by accredited certification bodies and environmental verifiers (organisation and individuals). Some environmental verifiers can be accredited for both EMAS and ISO 14001. The two schemes are sometimes introduced and certified or validated at the same time.

Worldwide, the registration and central collection of data on organisations certified to ISO 14001 is common practice.

A survey is conducted twice a year by the German Federal Environment Agency among accreditors to get updated figures from registers of certified organisations (including address, date of certification, registration number, scope of validity, etc.).

The standard has been in operation since 1996. The figures refer to November 2000, to October 2001 and 2004, and to January 2002.

#### Eco-labels

The figures come from the European Commission Eco-label helpdesk, managed by the Environment DG.

The Community eco-label is administered by the European Eco-labelling Board (EUEB) and receives the support of the European Commission, all EU Member States and the EEA except Liechtenstein. The Eco-labelling Board includes representatives such as industry, environment protection groups and consumer organisations.

The existing scheme has been in operation since 1993 (see Council Regulation (EEC) No 880/92, as amended by Regulation (EC) No 1980/2000). Data presented in the graph on time evolution refer to September of each year, except for 2004 (December).

Although criteria exist, no awards have been granted yet for the following products:

- washing machines
- personal computers
- portable computers
- televisions.





# 7.

## Management of natural resources



### Policy background

Human development is based on the use of natural resources. A sense of stewardship is necessary to manage the stocks of natural resources carefully, with a view to guaranteeing their availability for the needs of future generations. Natural resources provide essential life support functions such as food and habitats, carbon and water storage, as well as essential raw materials. Although small changes in the quantity or quality of most stocks of natural resources pose little immediate threat, these changes should not damage the capacity of the environment to continue providing all essential ecosystem services.

The Gothenburg Council concluded that to achieve sustainable development, 'the relationship between economic growth, consumption of natural resources and the generation of waste must change', further emphasising that 'strong economic performance must go hand in hand with sustainable use of natural resources and levels of waste, maintaining biodiversity, preserving ecosystems and avoiding desertification'. The EU sixth environment action programme reiterated the need for 'ensuring that the consumption of resources and their associated impacts do not exceed the carrying capacity of the environment and breaking the linkage between economic growth and resource use'.



<sup>98</sup> Ecosystems and human well-being: Synthesis, Millennium ecosystem assessment, 2005, Island Press, Washington DC.





However, as made clear in a recent report of the millennium ecosystem assessment <sup>98</sup>, pressure on the natural environment has already led to very significant losses in virtually all types of ecosystems and the services they offer to human society. Biodiversity loss epitomises the many threats that human activities pose to the different environmental media: air, land and water.




## Main changes

**Table 7.1.**  
**Evaluation of changes in the management of natural resources theme (from 2000) <sup>99</sup>**



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

EU	
Farmland birds	
Fish catches	
<b>Marine ecosystems</b>	
Fishing fleet	
<b>Freshwater resources</b>	
Groundwater abstraction	:
Waste water treatment systems	:
<b>Land use</b>	
Built-up area	:
Defoliation	

The headline indicators for this theme demonstrate that pressures on natural resources remain of concern. Biodiversity and the marine ecosystem are not yet showing signs of recovery. For a significant part of the indicators, an assessment at EU level is not possible due to insufficient geographical coverage.

### Biodiversity is not yet showing signs of recovery

Bird populations appear to have stabilised during the 1990s, although at a somewhat lower level than in the previous decades <sup>100</sup>. The index of farmland bird population trends decreased by 3.8 points between 2000 and 2003, although it is too soon to know whether this represents a longer term trend towards a continuing decrease of bird populations.

### Fish stocks continue to be depleted

A considerable proportion of the catch in EU-managed waters is made from stocks that are already below their safe biological limits. This is particularly noticeable for stocks of highly valued species (white fish). Fishing at the present rate seriously impairs the ability of these stocks to regenerate themselves and risks their collapse. Despite measures to reduce the fishing fleet — the engine power of the fishing fleet having decreased by 11 % between 2000 and 2004 — there is as yet no sign of slackening. Trends are especially worrisome for demersal fish such as cod and hake. Recent changes to the common fisheries policy may improve the situation.

<sup>99</sup> For the majority of indicators for which assessment is possible, the distinction between the EU-15 and EU-25 is not relevant. See individual indicators for more detail.

### Uneven progress in freshwater resources

While access to clean water in abundant quantities is often taken for granted in most parts of Europe, freshwater is a precious natural resource under pressure in terms of both quality and quantity. Several Member States have reduced their pressure on groundwater resources, particularly some of the new Member States. However, the level of abstraction in some



Mediterranean countries, sometimes beyond sustainable levels, is a cause for concern. The data coverage is not sufficient to provide an overall assessment at EU level.

Compliance with the urban waste water treatment directive has had a positive influence on waste water treatment, and there has been further progress since 2000, especially in some new Member States. However, in a number of EU countries the proportion of the population connected to a waste water treatment system is still below 50 %.

Built-up areas have increased in nearly all EU countries for which data are available over the last 10 years. Forests, agricultural areas and some of the last plots of natural lands are being lost to urbanisation or transport infrastructure and re-use of built-up land is insufficient to accommodate the demand for infrastructure. The data coverage is, however, insufficient to provide an overall assessment at EU level.

The average defoliation rate in the EU-25 has increased overall by 2 % per year on average between 2000 and 2004, with a high geographical disparity across Europe.

<sup>100</sup> Gregory, R. D., van Strien, A., Vorisek, P., Gmelig Meyling, A. W., Noble, D. G., Foppen, R. P. B., and Gibbons, D. W., 'Developing indicators for European birds', *Phil. Trans. R. Soc. B* (2005), 360, pp. 269-288.

**Built-up area continues to grow at the expense of agricultural and natural land**

## Rationale for the selection of indicators

The EU sustainable development strategy outlines a set of long-term objectives and targets for natural resources and land-use management (see Box 7.1). These objectives were taken up again in the 6EAP, which establishes further environmental priorities, focusing mainly on nature, biodiversity and management of natural resources (see Box 7.2). Other international commitments to be considered include the 2002 Johannesburg plan of implementation, which includes the aim of reducing the loss of biodiversity. The indicators in this theme were selected to measure progress towards the sustainable development strategy policy goals.

### Box 7.1: Sustainable development strategy: objectives related to natural resources

The communication from the European Commission to the Gothenburg Council included the following headline objectives for the management of natural resources:

- break the links between economic growth, the use of resources and the generation of waste;
- protect and restore habitats and natural systems and halt the loss of biodiversity by 2010;
- improve fisheries management to reverse the decline in

stocks and ensure sustainable fisheries and healthy marine ecosystems, both in the EU and globally.

In addition, it includes the following objective for land-use management:

- promote more balanced regional development by reducing disparities in economic activity and maintaining the viability of rural and urban communities, as recommended by the European spatial development perspective.

Birds are a highly visible subset of biodiversity reacting quickly to changes in the food chain or habitats, and providing early signs if something is upsetting the natural balance of biodiversity in an area. The first headline indicator, 'population trends of farmland birds', is used as a proxy for a general biodiversity index which is not yet available.

A second headline indicator shows the percentage of fish caught in EU-managed waters that are taken from stocks that have been assessed as already outside safe biological limits, and thus provides a direct measure of the level of pressure on at-risk fish populations.



### Box 7.2: 6EAP: objectives related to nature and biodiversity

The 6EAP identifies four priority environmental areas which need to be tackled: climate change (see 'Climate change and energy' chapter); nature and biodiversity; environment and health and quality of life (see 'Public health' chapter); natural resources and waste (see 'Production and consumption' chapter).

Concerning nature and biodiversity, the specific objective is: 'to protect and restore the functioning of natural systems and halt the loss of biodiversity in the European Union and globally. To protect soils against erosion and pollution ...' The 6EAP further identifies specific areas for action:

- the threat from pollution;
- use of land — including the protection and management of areas of special importance (Natura 2000) and managing

the countryside (agriculture and landscapes);

- protection and sustainable development of forests;
- protection of the soil;
- marine environment.

Seven thematic strategies are part of the actions foreseen within the 6EAP, to tackle seven key environmental issues, which require a holistic approach because of their complexity, the diversity of actors concerned and the need to find multiple and innovative solutions. The seven thematic strategies relate to: soil protection; protection and conservation of the marine environment; sustainable use of pesticides; air pollution; urban environment; sustainable use and management of resources; waste recycling.

Further indicators are split into four sub-themes, providing additional information on biodiversity and the marine ecosystem, and addressing issues related to the essential resources of water and land.

- **Biodiversity:** Future developments include indicators to measure the effectiveness of the EU response to threats to biodiversity, such as 'sufficiency of Member States proposals for protected sites under the EU habitats directive'.
- **Marine ecosystems:** A pressure indicator on effective fishing capacity and quotas is not yet available. Other indicators for future development are an additional state indicator on trends of spawning biomass of selected fish stocks and a policy-related response indicator on structural support to fisheries and percentage allocated to promoting environmentally friendly fishing practices.
- **Freshwater resources:** Concerns for water resources cover both quantity and quality. Quantitative issues are monitored through an indicator on groundwater abstraction, while pollution issues are covered by an indicator on population connected to waste water systems. Further water quality indicators such as emissions of organic matter as biochemical oxygen demand to rivers and an index of toxic chemical risk to aquatic environment are under development.
- **Land-use management:** The indicator on built-up area is a proxy for land-use change by category, for which the currently available data are inadequate. This is complemented by an indicator on forest trees damaged by defoliation. Other desirable indicators on critical loads of acidifying substances and nitrogen in sensitive areas, land area at risk of soil erosion and soil contamination, and fragmentation of habitats due to transport are not currently available.

It is therefore apparent that in this theme, although all priority areas are covered to some extent (the first two sub-themes through headline indicators), a number of issues cannot be adequately monitored yet due to a lack of data and robust methodological approaches. Proxy indicators have been adopted wherever feasible.



## Further reading on management of natural resources in Europe

A European biodiversity strategy, 1998, 'Communication from the Commission to the Council and the European Parliament,' COM(98) 42

'The future of the common fisheries policy,' COM(2001) 135

'Communication to the Council and European Parliament on biodiversity action plans,' COM(2001) 162

'Towards a thematic strategy on the sustainable use of natural resources. Communication from the Commission to the Council and the European Parliament,' COM(2003) 572

*A selection of environmental pressure indicators for the EU and acceding countries.* 2003 edition, Eurostat, Panorama of the European Union, Theme 8, Environment and energy

*EEA Signals 2004. A European Environment Agency update on selected issues.* European Environment Agency.



Headline indicator



## Farmland birds

**Definition:** The indicator is an aggregated index of population trend estimates of a selected group of breeding bird species dependent on agricultural land for nesting or feeding. Indices are calculated for each species independently and are weighted equally when combined in the aggregate index using a geometric mean. Aggregated EU indices are calculated using population-weighted factors for each country and species.



### Indicator relevance

The EU has stated its commitment to ‘halting the loss of biodiversity by 2010’ in the EU sustainable development strategy, the legally binding sixth environment action programme, as well as in the EU biodiversity strategy and its four biodiversity action plans, and the habitats <sup>101</sup> and birds directives <sup>102</sup>.

<sup>101</sup> Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

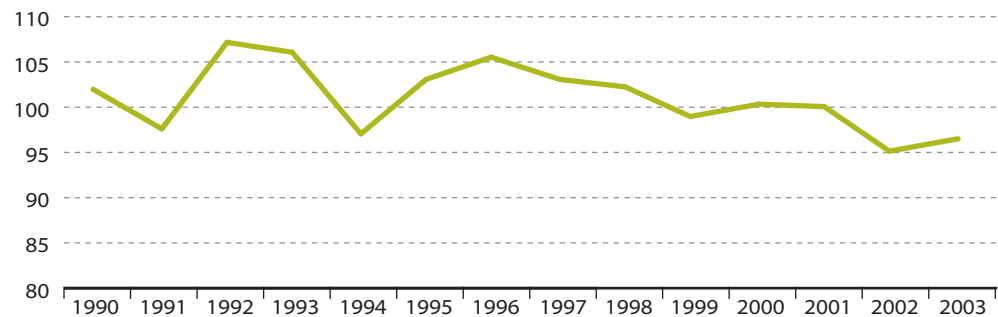
<sup>102</sup> Council Directive 79/409/EEC on the conservation of wild birds.

The EU has also committed itself to ‘reducing the loss of biodiversity’ at the World Summit on Sustainable Development in Johannesburg and in the context of the Rio Convention on Biological Diversity. The Rio Convention defines ‘biological diversity’, or biodiversity, as ‘the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems’.

Although far from encompassing the entirety of biodiversity across the EU, this indicator provides a measure of the state of a number of species within one broad category of ecosystem, farmland. Since the selected species of birds are strongly dependant on farmland to survive, the indicator can be considered to reflect the biodiversity of this ecosystem in general and more specifically to reflect habitat loss and the sustainability of farming practices.

**Figure 7.1.**  
Population trends of selected farmland bird species (index 2000 = 100)

Source: EBCC/RSPB/  
BirdLife/Statistics  
Netherlands.



NB: The EU aggregate figure is an estimate based on 16 Member States from the EU-25.

### Analysis

The index is an indicator of biodiversity and reflects the aggregate change in the populations of the selected species. An increase means that there are more species whose populations have increased than have decreased: it does not necessarily mean that the overall population has increased.

Populations of wild birds fluctuate from year to year due to complex interactions with climate, other species and other environmental factors. These fluctuations mean that the emphasis should be placed on trends over a number of years rather than changes from one year to the next. Declines are driven by changes in agricultural methods and specialisation. The key factors are hedgerow loss, land drainage, increased mechanisation, increased fertiliser and pesticide



use, reduction of spring cultivation, simplification of crop rotations, changes in crop use, and loss of farm diversity.

The index level has been relatively stable over the 1990s, but at a significantly lower level than seen in the data available for a smaller set of countries in the early 1980s (see Gregory et al., 2005)<sup>103</sup>. The index further decreased by 3.8 points between 2000 and 2003, although it is too soon to know whether this represents a longer term trend towards a continuing decrease of bird populations.

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<sup>103</sup> Gregory, R. D., van Strien, A., Vorisek, P., Gmelig Meyling, A. W., Noble, D. G., Foppen, R. P. B., and Gibbons, D. W., 'Developing indicators for European birds', *Phil. Trans. R. Soc. B* (2005), 360, pp. 269–288.

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An increase in the farmland bird species index should reflect an improvement in a wide range of environmental parameters. From an economic point of view, an increase in biodiversity should maintain or even increase the natural bases for sectors like agriculture, forestry or tourism. In general, it is a sign that the life-support functions of ecosystems are recovering.

## Potential linkages

The implications of a decrease in biodiversity are incompletely understood. It is generally recognised that a decline in biodiversity has a significant economic cost through a reduction of services provided to society, but it is unclear whether it would have an influence on, for example, GDP growth. Agricultural aspects are likely to have an influence, whether negative (livestock density, nitrogen surplus) or positive (area under agri-environmental support, organic farming). Other pressures such as emissions of air pollutants, toxic chemicals or an increase in built-up area may also influence biodiversity negatively. Greenhouse gas emissions may also have an indirect influence through habitat loss or disruption of the food chain due to climate change.





Headline indicator



## Fish catches

**Definition:** This indicator shows the **percentage of fish caught in EU-managed waters that are taken from stocks that have been assessed to be outside safe biological limits (SBL)**. In general terms, it is considered that a stock is within safe biological limits if its current biomass is above the precautionary level advocated by the International Council for the Exploration of the Sea (ICES), which in essence ensures a high probability that the stock will be able to replenish itself. The sea areas considered cover the North-East Atlantic (North Sea and Baltic Sea, Bay of Biscay and the Iberian Peninsula), and exclude the Mediterranean Sea.



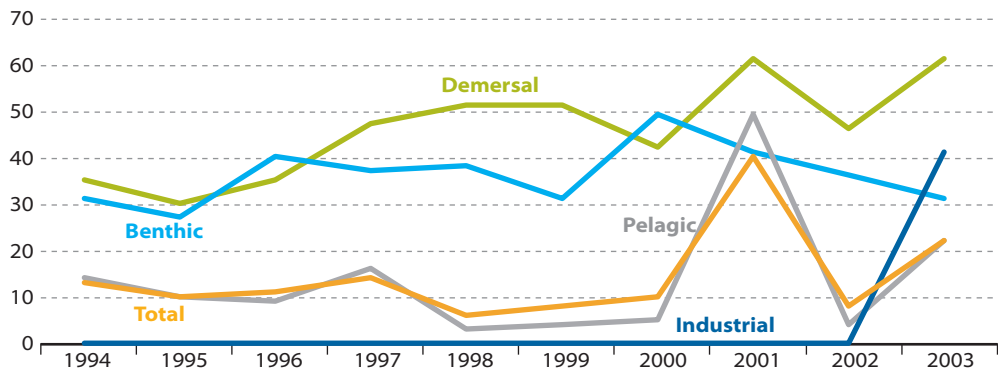
The indicator is provided for the total catch as well as being split into four specific categories: benthic fish, which live permanently on the sea bed and include skate and other flatfishes; demersal fish, which live close to the sea bed and include cod and haddock; pelagic fish, which live in the open sea and include herring, mackerel, blue whiting and tuna; industrial fish, which are used for reduction into fish meal and oil and include sand eel, Norway pout and sprat.

### Indicator relevance

Sustainable fisheries are one of the key objectives of the sustainable development strategy. The Gothenburg Council stressed that the review of the common fisheries policy in 2002 should, on the basis of a broad political debate, address the overall fishing pressure by adapting the EU fishing effort to the level of available resources, taking into account the social impact and the need to avoid over-fishing. The revision of the CFP in December 2002 gave a special emphasis to these needs and subsequent legislative work is tailored primarily to achieving these objectives.

**Figure 7.2.**  
Share of fish catches taken from stocks outside safe biological limits (%)

Source: European Commission, Directorate-General for Fisheries and Maritime Affairs.



### Analysis

Prior to 2000, the proportion of the total catch from stocks outside SBL fluctuated around 10 %. Deviations were found in 2001 and 2003 due to changes in the status of certain species whose catches are very high and therefore have a strong influence in the final figures. These are blue whiting (pelagic stock) in 2001, mackerel (pelagic) in 2003 and sand eel (industrial stock) in 2003.

An analysis by category shows that catches of demersal stocks (such as cod, haddock and hake) have shown a steady deterioration. It is believed that the CFP reform has not yet had an opportunity to see its results reflected in the indicator, since management action subsequent to



the reform, which started in 2003, will not be reflected in stock status until 2004. On the other hand, the situation for benthic stocks seems to have improved steadily since 2000. Pelagic stocks are generally in fairly good shape but blue whiting and mackerel are thought to be so close to SBL that exceptionally in one year or another they may fall outside SBL.

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Fish catches show, on the one hand, the status of fish stocks and, on the other hand, the effectiveness of management action, since reducing catches by appropriate management of stocks outside safe biological limits would be reflected in the indicator. Stock status, which is determined by the population dynamics of fish stocks, is not linearly related to the economy of the sector. Improving stock status can only be obtained by an immediate reduction of the economy of the sector, both in terms of investment and returns, and the economic gains will only be reflected in the long run. It is also known that environmental factors such as pollution (chemicals, heavy metals, oil, nutrients, etc.), rising ocean temperatures and changes in salinity (due to climate change) influence the viability of fish stocks.

## Potential linkages



Marine ecosystems



## Fishing fleet



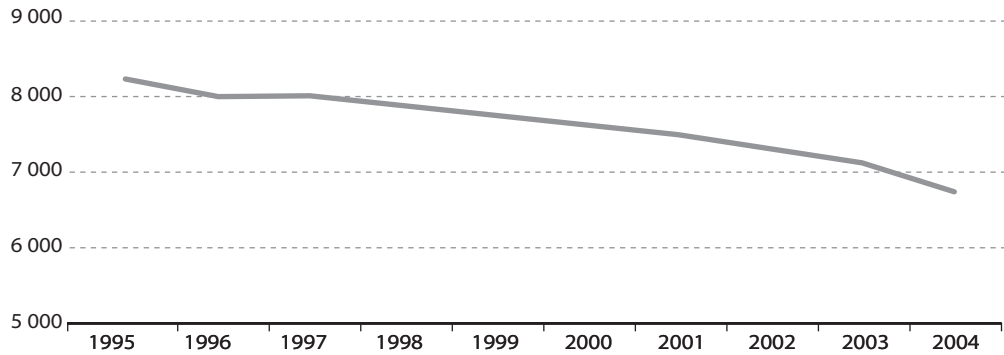
**Definition:** This indicator is defined as the **total engine power of the fishing fleet**.

### Indicator relevance

The Gothenburg Council specifically stressed the need to address the overall fishing pressure by adapting the EU fishing effort to the level of available resources, taking into account the social impact and the need to avoid over-fishing.

**Figure 7.3. EU-15 engine power of fishing fleet (megawatts)**

Source: Eurostat.



### Analysis

The indicator provides an indication of fishing capacity by looking at the trend in total engine power of the fishing vessels registered in the EU-15. From 2000 to 2004, the power of the fleet has diminished at an average rate of 3 % per year. This is twice the average annual rate seen over the period 1995 to 2000. The recent enlargement of the EU has added more than half a million kilowatts (or about 7.7 %) to the EU fleet (see additional data on the SDI website).

### Potential linkages

An increase in the power of fishing fleets would be expected to have an impact on the status of fish stocks through an increase in fishing pressure, although the relationship is likely to be non-linear. Policy instruments are likely to have a strong impact on this indicator.



Freshwater resources



## Groundwater abstraction



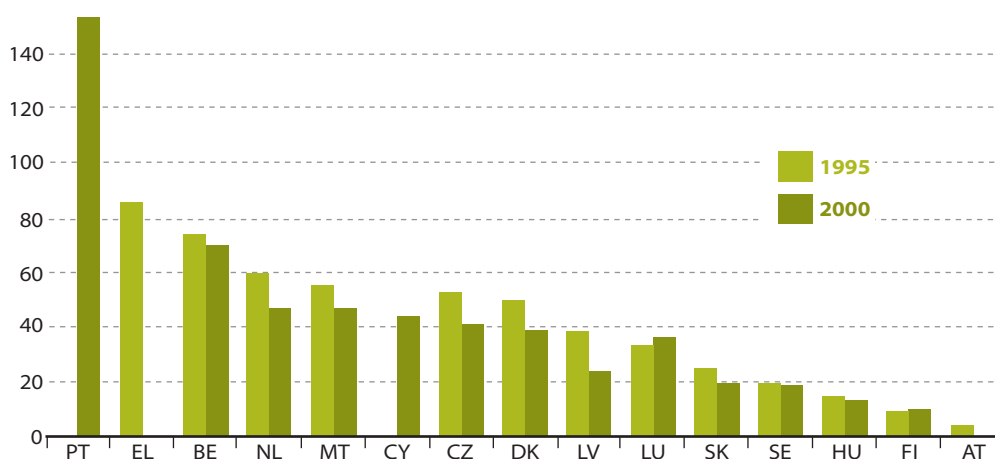
**Definition:** Annual sums of **abstracted groundwater** are presented as a **percentage of the resources available for abstraction over the long term** (at least 20 years). The available resources are calculated from the groundwater recharge less the long-term annual average rate of flow required to achieve ecological quality objectives for associated surface water. The groundwater recharge is the total volume of water added from the outside to the saturated zone of an aquifer, and it is calculated from precipitation, evapotranspiration and the net surface water flow balance.

This indicator provides an assessment of pressure on groundwater resources, solely in terms of quantity. Current consumption patterns and infrastructure conditions are putting increasing demand on water, as on other natural resources. The sustainable use of water would make it possible to maintain the levels of groundwater tables and would therefore contribute to the viability of dependent ecosystems, such as wetlands, and economic activities, such as agriculture. Since groundwater is a renewable resource, the basic rule of using only the average annual surplus while keeping the recharge capacity at least constant should be applied.

Although it is not directly mentioned as a priority in the documents establishing the sustainable development strategy, water protection and sensible use is crucial to achieving sustainable development. The sixth environment action programme requires Member States to ensure that the rates of extraction from water resources are sustainable over the long term. It stresses the importance of the water framework directive<sup>104</sup>, which aims to achieve coherent and sustainable water management, both in terms of quality and quantities. Moreover, the Johannesburg plan of implementation calls for the adoption of prevention and protection measures to promote sustainable water use and to address water shortages.

### Indicator relevance

<sup>104</sup> Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy.



**Figure 7.4.**  
Groundwater abstraction as a percentage of available groundwater resources (%)

Source: Eurostat.

NB: The 1995 value for the Netherlands refers to 1996. 2000 figures refer to 1998 for Portugal and Belgium; 1999 for Finland and Luxembourg; and 2001 for the Netherlands.



**Analysis** Abstraction as a percentage of available water resources decreased between 1995 and 2000 in more than two-thirds of the EU countries for which data are available, partly as a result of water management schemes including water restriction measures to prevent summer droughts, and as a consequence of a declining industrial production and increased re-use/recycling. In the new Member States, the privatisation of the water management systems has sometimes been accompanied by a shift to unit pricing, which may partly explain the more careful consumption patterns.

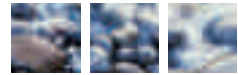
However, levels of abstraction in Portugal and Greece are a cause for concern. Increased domestic use is linked to a growing population as well as changing lifestyles and an increase in tourism which puts a higher pressure on water resources. Agriculture is also a major water consumer in the Mediterranean region.

Given that abstraction is largely driven by weather conditions which may vary widely from one year to another, the indicator should be interpreted with care.

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**Potential linkages** Water is a social good — essential for human health, for drinking and cooking, for hygiene, and therefore closely linked to public health. It is also an economic good — a basic requirement in industry, whether for cooling, for cleaning or for incorporation in the final product; in agriculture, for growing food and for healthy livestock; in electricity generation, for hydro-electricity and for cooling; and it is a prerequisite for a healthy tourism industry. It is therefore closely linked to economic development, especially at the regional level.

Climate change can also be expected to result in more frequent periods of drought. Excessive groundwater abstraction will lower the water table and reduce the water supply to forests and other plants — affecting forest health and biodiversity.



Freshwater resources



## Waste water treatment systems



**Definition:** This indicator is defined as the percentage of the population connected to an urban waste water treatment plant, or to a collecting system with independent treatment (see 'Methodological notes').

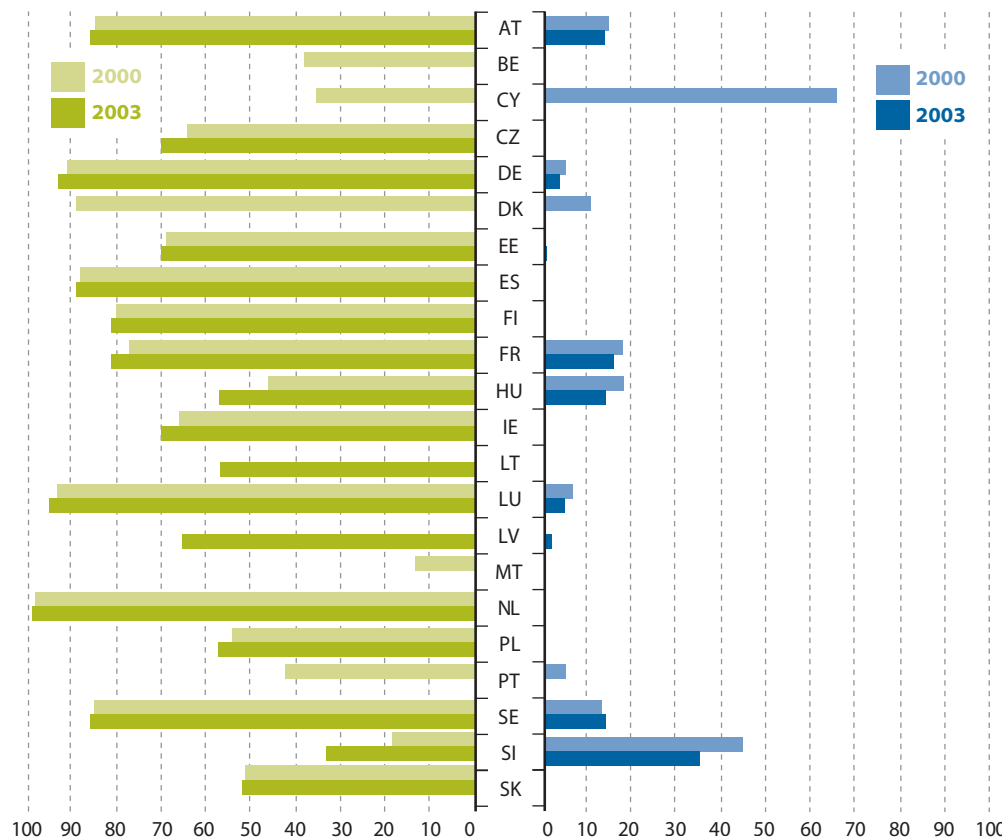
This indicator monitors the degree of treatment of waste water. The discharge of non-treated waste water is largely responsible for the pollution of surface water and some coastal areas. Detrimental consequences of waste water discharges may include eutrophication, bacterial pollution and contamination by heavy metals and other toxic substances. There are impacts on riverine plants, fish, amphibia and other aquatic organisms as well as on birds and mammals which swim in or drink from these waters. Pollution also reduces the utility of the surface water for industrial purposes, even cooling, thus putting additional strain on groundwater resources. Eventually the pollution ends up in the sea, and continues to affect the delicate balance of life there.

The urban waste water treatment directive <sup>105</sup>, as amended <sup>106</sup>, sets deadlines for applying waste water treatment before discharge. The basic requirement is secondary treatment level. However, treatment has to be more stringent (secondary plus tertiary treatment) for discharges into sensitive areas, identified by Member States.

### Indicator relevance

<sup>105</sup> Council Directive 91/271/EEC concerning urban waste water treatment.

<sup>106</sup> Commission Directive 98/15/EC amending Council Directive 91/271/EEC with respect to certain requirements established in Annex I thereof.



**Figure 7.5.** Population connected to urban waste water treatment systems, or to a collecting system with independent treatment (%)

Source: Eurostat.

NB: 2000 figures refer to 1998 for Belgium, France, Denmark, Germany, Portugal; and 1999 for Ireland, and Luxembourg. 2002 figures refer to 2001 for Germany and France and 2003 for Luxembourg.



## Analysis

Compliance with the urban waste water treatment directive has had a positive influence on the indicator (see complete time-series on the SDI website). There has been further progress since 2000, especially in some new Member States. However, while in several EU-15 countries, particularly in the Nordic countries, the total or near-total population is connected to a treatment system, the percentage of connections is still very low in a number of EU countries, such as Malta, Belgium, and Portugal which are still below 50 %. It is interesting to note a shift from independent to urban waste water treatment systems, which are generally deemed to be more effective. The latest Commission report on the implementation of the directive<sup>107</sup> reveals progress. However, in 2002, 58 % of urban waste water was still discharged into sensitive areas without receiving sufficient treatment.

<sup>107</sup> Implementation of Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment, as amended by Commission Directive 98/15/EC of 27 February 1998, COM(2004) 248.

## Potential linkages

Improvements in waste water treatment contribute to the quality of water-related ecosystems in many respects and therefore contribute to the improvement of dependent economic activities, such as fisheries. There should also be a positive contribution to public health. In economic terms, waste water treatment needs large investments and current expenditure.

The amounts of waste water generated at local level are likely to be related to the intensity of spatial development, and a link would therefore be expected with built-up area. However, since it is more difficult to collect waste water from a widely dispersed rural population than from a highly urbanised population, the relationship may be complex. There may also be a link with GDP and net national income, as more resources are invested in new treatment systems. Tourism, agriculture and fisheries are sectors that can be expected to gain from cleaner water.



Land use



## Built-up area



**Definition:** The indicator is defined as the **percentage of built-up land in total land area**.

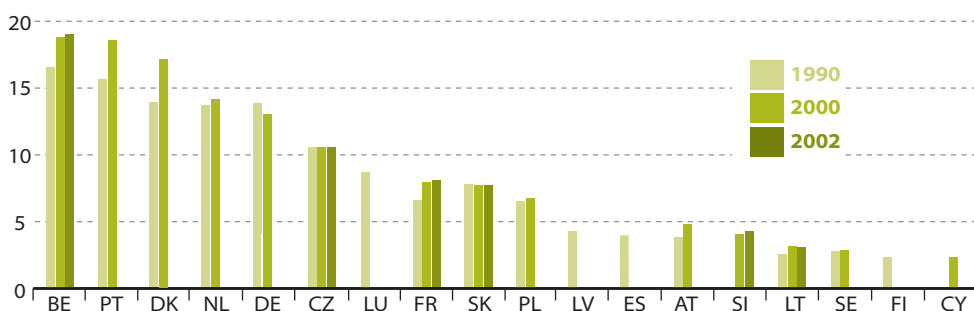
The pressures exerted by development on land resources are almost always irreversible and include the sealing of land and fragmentation of habitats. Sealing of land prevents the replenishment of aquifers, increases the pressure on the rainwater removal system and in some cases contributes to flooding as well as endangering biodiversity. These effects are worse when the built-up area is large, as is the case for urban areas. Moreover, sealed land is usually found in valleys, replacing biodiverse wetlands and sealing the most fertile soils. Fragmentation of habitats is associated with extensive linear structures such as roads and railway lines, and puts pressure on biodiversity by limiting the range available for breeding or finding food.

The sustainable development strategy identified the need for action to improve the transport system and land-use management and emphasised the need to maintain the viability of rural and urban communities as recommended by the European spatial development perspective<sup>108</sup> (ESDP). The ESDP aims to meet the challenges resulting from technological, political, social and economic changes, in order to achieve a balanced and sustainable development on the territory of the EU. Derelict industrial sites are regarded as potential for housing development which would avoid further urban sprawl in large cities.

The sixth environment action programme also calls for a strategic approach that should encourage sustainable use and management of land and sea. Moreover, it encourages best practice with respect to sustainable land-use planning, which takes account of specific regional circumstances with particular emphasis on the integrated coastal zone management programme.

### Indicator relevance

<sup>108</sup> ESDP — European spatial development perspective: Towards balanced and sustainable development of the territory of the European Union, 1999, European Commission.



**Figure 7.6.**  
Built-up areas as a percentage of total land area

Source: Eurostat.

NB: 2002 data are provisional. The 1995 figure for Portugal, and the 2000 figure for Sweden are also provisional. The 1990 figure for Germany includes West Germany and West Berlin only.

From 1990 to 2000, the extent of built-up areas increased in all countries for which data are available, except Slovakia and the Czech Republic. The decrease in Germany is linked with the unification process. The percentage of built-up areas increased further in 2002 in Slovenia, France and Belgium according to data available, while remaining stable in Slovakia and the Czech Republic, and decreasing slightly in Lithuania.

### Analysis





The extent of built-up areas relative to the total land area depends on population density which itself is driven by socioeconomic, environmental, climatic and geographic conditions. The main purpose for built-up areas is urbanisation, followed by transport infrastructure and industrial premises, as demand for goods and services increases with population and the number and size of households. Tourism also has a significant influence in countries such as Portugal.

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### Potential linkages

Domestic material consumption, municipal waste generation and household size are likely to lead to an increase in built-up area, through an increase in quarries and mines, land used for landfilling and incineration, and residential land. Heavily built-up areas give rise to increased environmental pressures of all kinds, affecting most variables in this theme.



Land use



## Defoliation

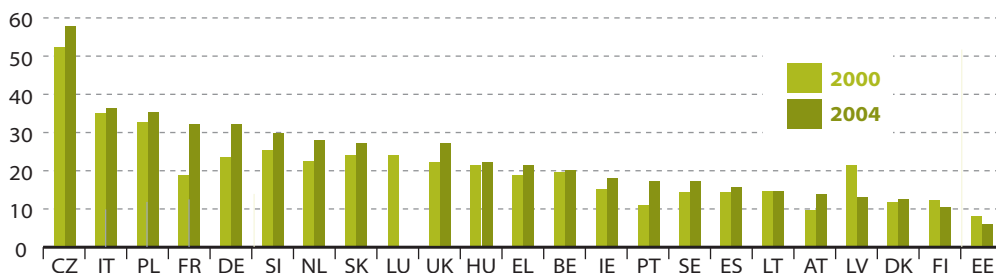


**Definition:** This indicator is defined as the **percentage of trees on forest and other wooded land in the defoliation classes moderate, severe and dead**. Defoliation is needle or leaf loss in the assessable crown as compared with a reference tree.

In the EU, natural and semi-natural forests are biodiverse habitats, home to many different species. Forests are important for water catchment, carbon storage, soil conservation and water management. Forests are also important economic assets.

The sustainable development strategy emphasises the need to ‘protect and restore habitats and natural systems.’ The 6EAP targets include the ‘protection and sustainable development of forests.’ Moreover, the Johannesburg plan of implementation states that ‘sustainable forest management of both natural and planted forests and for timber and non-timber products is essential to achieving sustainable development as well as a critical means to eradicate poverty, significantly reduce deforestation, halt the loss of forest biodiversity and land and resource degradation and improve food security and access to safe drinking water and affordable energy; in addition, it highlights the multiple benefits of both natural and planted forests and trees and contributes to the well-being of the planet and humanity.’

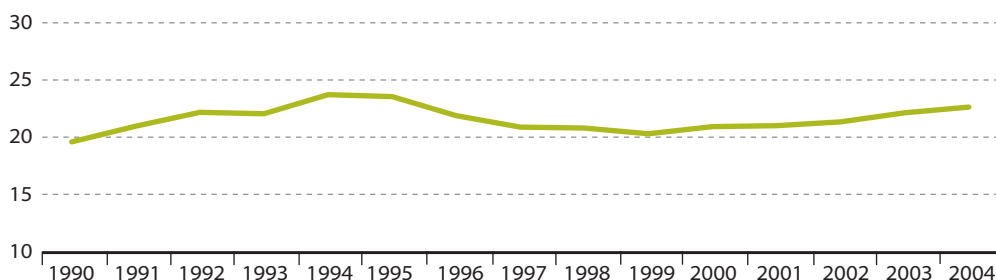
### Indicator relevance



**Figure 7.7.**  
Forest trees damaged by defoliation (%)

Source: ICP-Forests.

NB: 2004 figures refer to 2002 for Greece.



**Figure 7.8.**  
EU-25 evolution of forest trees damaged by defoliation (%)

Source: ICP-Forests.

Defoliation is influenced by a combination of climatic factors (especially drought), soil conditions, atmospheric pollution and forest pathogens. The importance of each factor can vary, depending on climatic regions and species, and from year to year. Defoliation has increased between 1990 and 2000 in a number of countries, particularly those with low defoliation damage in 1990, such as Spain, Ireland and France, whereas other countries have seen a significant

### Analysis



<sup>109</sup> 'The condition of forests in Europe', 2004 Executive Report, Convention on Long-Range Transboundary Air Pollution, International cooperative programme on assessment and monitoring of air pollution effects on forests (ICP-Forests), United Nations Economic Commission for Europe.

decrease, particularly those with high defoliation to start with (e.g. Denmark, Latvia, Portugal) (see additional data on the SDI website). Between 2000 and 2003, there was an increase in defoliation in most countries (Figure 7.7), with the most dramatic increase in France (+ 73.2 %). The highest defoliation rates in 2004 were found in the Czech Republic, Italy and Poland. At the EU level, there was an increase in the first part of the 1990s, followed by a decrease back to 1990 levels. The EU-25 mean defoliation rate increased again by 1.7 points between 2000 and 2004 — an average annual increase of 2 % (Figure 7.8). Although there are a variety of factors influencing defoliation, the extreme heat and drought in large parts of Europe during late summer 2003 are suspected to have been a contributing factor <sup>109</sup>.

### Potential linkages

Severe defoliation is a sign of unhealthy trees and can result in economic losses due to reduced forest growth and harvest income. Unhealthy trees are more likely to be blown down in a storm or to burn in forest fires, again reducing timber growth and income. A large number of trees blown down in one year can depress wood prices by providing an oversupply of wood on the market. Reduced growth also means less carbon storage, leaving more carbon dioxide in the atmosphere. The ability of unhealthy trees to store water or retain soil is also impaired and this can have unwelcome social and economic consequences, such as floods, subsidence and landslides. Groundwater abstraction can lower the water table, and limit the supply of water to tree roots, which affects the health of the trees. Emissions of air pollutants are one of the factors affecting forest health.



## Methodological notes

### Farmland birds

The data are collected by volunteer observers within the pan-European common bird monitoring scheme (PECBM: a joint project of the European Bird Census Council, the Royal Society for the Protection of Birds, BirdLife International, and Statistics Netherlands) and compiled by Statistics Netherlands.

Survey details and methods vary by country and region but the methodology applied is based on statistical expertise and efforts are under way to increase the level of harmonisation. Counts take place during the breeding

season (spring to autumn) when the populations are stable. Between two and 12 visits to each site would be typical during the course of one year. It is common that this sort of field survey results in missing counts for some sites. Such missing data are estimated using a tool developed by Statistics Netherlands using Poisson regression that takes into account over-dispersion and serial correlation.

The indicator is an aggregated index of population trend estimates of a selected group of 19 breeding bird species dependent on agricultural land for nesting or feeding. The EU index is based on trend data from 16 EU Member States, with time-series as indicated in Table 7.2.

Country	Indices/raw data	Period
Austria	Indices	1998–2003
Belgium (Brussels)	Indices	1992–2003
Czech Republic	Raw data	1982–2003
Denmark	Indices	1976–2003
Finland	Indices	1983–2003
France	Indices	1989–2003
Germany		
— West	Indices	1989–2003
— East		1991–2003
Hungary	Indices	1999–2003
Ireland	Indices	1998–2003
Italy	Indices	2000–2003
Latvia	Indices	1995–2003
Netherlands	Indices	1990–2003
Poland	Indices	2000–2003
Spain	Raw data	1996–2003
Sweden	Indices	1975–2003
United Kingdom	Indices	1966–2003

**Table 7.2:**  
Countries who  
provided data for  
the farmland birds  
index

Indices are calculated for each species independently and are weighted equally when combined in the aggregate index using a geometric mean. Aggregated EU indices are calculated using population-dependent weighting factors for each country and species.

The following farmland bird species are included: *Alda arvensis*, *Burhinus oedicephalus*, *Carduelis carduelis*, *Columba palumbus*, *Emberiza citrinella*, *Falco tinnunculus*, *Galerida cristata*, *Hirundo rustica*, *Lanius collurio*, *Lanius senator*, *Limosa limosa*, *Miliaria calandra*, *Motacilla flava*, *Passer montanus*, *Saxicola rubetra*, *Streptopelia turtur*, *Sturnus vulgaris*, *Sylvia communis*, *Vanellus vanellus*.

### Fish catches

Figures given are the percentage of the total fish catches taken from stocks which are considered to be outside safe biological limits (SBL). Catches have been estimated by the

International Council for the Exploration of the Sea (ICES). A stock is considered to be outside SBL (or overfished) when its size has fallen below sustainable levels, in other words, when its size does not guarantee replenishment by reproduction (or more precisely when its spawning stock biomass (SSB) estimated at the beginning of 2002 (SSB2002) is lower than the SSB corresponding to the precautionary approach level, as recommended by ICES (SSBpa)). In cases where these estimates are missing other types of indication may be used instead.

The data cover only the fishing areas of the North-East Atlantic which are managed autonomously or jointly by the EU. They include catches by third countries in these areas. However, for example, stocks managed by Norway and Russia are excluded. As the data for the indicator are based on the catches by stock, no comparisons by country are possible and no EU aggregate is possible. Data are for the



North-East Atlantic (North Sea and Baltic Sea, Bay of Biscay and the Iberian Peninsular) but exclude the Mediterranean.

Time coverage is the annual assessment report by the Advisory Committee on Fishery Management (ACFM) of ICES. Further details on the way ICES formulates advice in precautionary terms can be obtained from the ICES website (<http://www.ices.dk>).

The following stocks (and corresponding main species) are considered:

- Benthic: *Nephrops*, prawns, flatfish, anglerfish;
- Demersal: roundfish such as cod, haddock, whiting, hake, etc.;
- Industrial (production of meal and oil): sprat, sand eel, Norway pout;

- Pelagic: herring, anchovy, sardine, horse mackerel (North Sea and southern stocks), redfish.

The classification used is intended to reflect both the biology of the species and the type of fishery realised. To some extent, this breakdown serves also purposes of economic analysis, since it brings together types of fish of comparable commercial value, although important differences still occur within each type.

#### Fishing fleet

Fishing fleet data are derived from Eurostat's statistical register of fishing vessels which, for EU Member States, is updated once annually from the administrative file of fishing vessels managed by the Directorate-General for Fisheries and Maritime Affairs.

### Box 7.3: EEA core set of indicators

The European Environment Agency has developed a core set of indicators (CSI) with the aim to provide a manageable and stable basis for indicator reporting. Thirty-seven indicators were selected, covering the following areas: air quality, ozone depletion, climate change, biodiversity, terrestrial, water, waste, agriculture, energy, fisheries, transport. The selection criteria included: policy relevance (supporting EU policies priority issues); monitoring progress toward quantified targets;

ready available and routinely collected data for EEA countries within a specified timescale, at reasonable cost-benefit ratio.

The CSI is published on the EEA website (<http://themes.eea.eu.int/IMS/CSI>). Each environmental issue or socioeconomic sector has a description of the environmental aspects covered in the topic and the main related European policies.

#### Groundwater abstraction/waste water treatment systems

The data are taken from the joint Eurostat/OECD biannual questionnaire on inland waters.

Urban waste water treatment includes primary, secondary and tertiary treatment. Connection is normally via a sewer pipe system but can equally be ensured by trucks transporting the sewage from storage tanks to the treatment plants.

Independent waste water collection systems with independent treatment refer to various types of small independent systems (examples are septic tanks, reedbed systems or miniaturised biological treatment plants) that are primarily used in sparsely populated rural areas and typically are designed to treat between one and 50 population equivalents.

Waste water treatment can be defined as follows.

- Primary treatment  
Treatment of (urban) waste water by a physical and/or chemical process involving settlement of suspended solids, or other process in which the biochemical oxygen demand (BOD) of the incoming waste water is reduced by at least 20 % before discharge and the total suspended solids of the incoming waste water are reduced by at least 50 %.
- Secondary treatment  
Treatment of (urban) waste water by a process generally involving biological treatment with a secondary settlement or other process, resulting in a BOD removal of at least 70 % and a COD removal of at least 75 %.
- Tertiary treatment

Treatment, supplementary to the secondary treatment, of nitrogen (nitrification-denitrification) and/or phosphorus and/or any other pollutant which affects the quality or a specific use of the water, such as microbiological pollution, colour, and so on. This is the best available technology.

#### Built-up area

The data are taken from the joint Eurostat/OECD biennial questionnaire on land use.

Built-up and related land is defined in the questionnaire as residential land; industrial land; quarries, pits and mines; commercial land; land used by public services; land of mixed use; land used for transport and communications; land used for technical infrastructure; recreational and other open land. Scattered farm buildings, yards and annexes are excluded.

However, the definitions and methods used for collection of data on built-up land vary from one country to another. Similarly the frequency of the collection of these data is not harmonised between countries. In fact, as land use is often the responsibility of local authorities, the definitions, and so on, may even differ within a country. The result is that it is very difficult to compare the data for the different Member States due to fundamental problems in the underlying data. There are no data available for Estonia, Greece, Ireland, Italy, Hungary, Malta and the United Kingdom.

In 2001 Eurostat launched a harmonised survey of land use, based on a standardised manual of concepts on land cover and land use. Although intended primarily for data on agricultural land use, the survey will cover all uses of land. However, it will be several years before a time-series allowing analysis of the increase in built-up land is available.



## Defoliation

In 1985 the international cooperative programme on assessment and monitoring of air pollution effects on forests (ICP-Forests) was established within the framework of the Convention on Long-Range Transboundary Air Pollution of the United Nations Economic Commission for Europe. In 1986 the Member States of the European Union agreed to the

European Union scheme on the protection of forests against atmospheric pollution (Regulation (EEC) No 3528/86) and contributed to the implementation of clean air policies at European level. The participating countries decided to obtain information on the forest condition through a common monitoring scheme.

Defoliation classes refer to levels of degradation as in Table 7.3.

**Table 7.3:**  
**ICP-Forests**  
**defoliation classes**

Defoliation class	Needle/leaf loss (%)	Degree of defoliation
Class 0	up to 10	none
Class 1	>10–25	slight (warning stage)
Class 2	>25–60	moderate
Class 3	>60–<100	severe
Class 4	100	dead

The extensive monitoring of a systematic sampling network includes the annual assessment of crown condition of the trees, their nutrition and the forest soil condition on an extensive scale. This monitoring intensity stage is designated as 'level I' and was created in 1986 with the crown condition assessment. The principal goal is to obtain information on the development of the crown condition on a European scale

in connection with possible causes including air pollution. The extensive monitoring network comprises approximately 5 700 permanent plots throughout Europe arranged in a 16 x 16 km grid. See <http://www.icp-forests.org/>

There was no survey in Luxembourg, Malta and Greece in 2004. Figures for Greece exclude maquis.



# 8.

## Transport



### Policy background

Transport is of fundamental importance to human society, providing mobility and facilitating industry and trade. About 6 % of the EU population work directly for the transport services sector <sup>110</sup>, with additional transport-related jobs in other sectors, such as vehicle manufacturing and infrastructure construction. Value added by the transport sector amounts to some 6 % of GDP, whilst about 14 % of household spending is on transport. There are also large amounts of public and private investment in transport infrastructure. The sector is thus of considerable economic importance.

However, not all operators believe they are working in a truly equitable market. And not all regions or households have equal access to the benefits of transport. Nor is transport only beneficial. Tens of thousands die on the roads each year in Europe, as well as in other transport accidents. There are also many environmental impacts, including land take and fragmentation of natural habitats, climate change, noise, and air, soil and water pollution. In addition, ever-increasing delays and congestion on roads, railways and at airports are of continuing concern.

The essential economic and social benefits, which are so difficult to balance against the high social and environmental costs, make transport a crucial sector for sustainable development, as recognised in the EU sustainable development strategy. Furthermore, many of the social and environmental costs of transport are not confined to those who are

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<sup>110</sup> The figures quoted in this paragraph are based on Eurostat data.









<sup>111</sup> “The future development of the common transport policy — A global approach to the construction of a Community framework for sustainable mobility”, COM(92) 494.

<sup>112</sup> “Towards fair and efficient pricing in transport — Policy options for internalising the external costs of transport in the European Union”, COM(95) 691.

<sup>113</sup> “European transport policy for 2010: time to decide”, COM(2001) 370.



















**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

responsible for them, but paid by society as a whole. How to reconcile these conflicting costs and benefits, and how to introduce more equity into transport markets, were already subjects of the 1992 White Paper on the future development of the common transport policy <sup>111</sup>. The thesis that the imbalances and inefficiencies of EU transport systems could be corrected by appropriate pricing structures was developed further in the 1995 Green Paper on transport <sup>112</sup>. In 2001, the Commission issued a further White Paper <sup>113</sup> which sets out a comprehensive strategy, including over 60 specific measures, to break the link between transport growth and economic growth and to restore the balance between the modes.

## Main changes

**Table 8.1. Evaluation of changes in the transport theme (from 2000)**

	EU-25	EU-15
<b>Energy consumption of transport</b>		
<b>Transport growth</b>		
Car share of inland passenger transport		
Road share of inland freight transport		
Volume of freight transport		
<b>Social and environmental impact of transport</b>		
Emissions of ozone precursors from transport		
Emissions of NO <sub>x</sub> from road vehicles		
Greenhouse gas emissions from transport		
People killed in road accidents		

In general the trends in transport growth are unyielding and resistant to change, with some good signs regarding the environmental and social impacts of transport. As GDP has grown, the energy consumption of transport has continued to increase, reflecting increases in traffic and leading to increases in emissions of greenhouse gases. The share of the car in passenger transport and of road in freight transport are slowly, albeit relentlessly, increasing, and freight transport remains strongly coupled to economic growth. On the other hand, emissions of some noxious pollutants, such as those responsible for summer smog, are continuing to decrease, and the numbers killed in road accidents are also continuing to fall.

**The energy demand of transport is growing in line with GDP**

Up to now, transport has always been closely linked to economic development and as long as the economy grows we expect to see demand for transport grow. As transport grows, it demands more energy. This demand has not been offset by the significant improvements in engine efficiency and vehicle design over the last 35 years. Nevertheless, since 2000 the average annual growth rate of the energy consumption of transport stands at 1.1 %, slightly less than the 1.3 % average for GDP over the same period.

**Road transport and the car dominate**

In 2002, road transport accounted for 76 % of inland freight transport (in terms of tonne-km) and cars for 85 % of inland passenger transport (in terms of passenger-km). These shares have steadily increased over the years and have not yet shown any signs of saturation. They are significantly higher than the target of stabilising at the level of 1998. Growth in the volume of freight transport remains very closely linked to growth in GDP.



The technical standards required of new vehicles have been progressively tightened. However, the rate at which these new standards are absorbed into the vehicle fleet is dependent on the lifetime of different vehicle types and it can take many years before the full benefits of new legislation are realised. The introduction of catalytic converters in the early 1990s and subsequent improvements continues to have a beneficial effect in reducing pollutant emissions.

**Pollutant emissions are decreasing, but greenhouse gas emissions are increasing**

In contrast to the situation for some noxious emissions, greenhouse gas emissions from transport continue to increase, more or less in line with traffic growth and energy consumption.

A large part of the deaths resulting from road traffic accidents could be avoided. Despite the increase in road traffic, there has been a steady reduction in the numbers killed in accidents. Progress is slow, but it still looks possible to meet the proposed target of halving the number of deaths by 2010, relative to 2000. However, a disproportionate number of young adults die relative to other age groups.

**Our roads are becoming safer, but young adults are particularly at risk**

## Rationale for the selection of indicators

### Box 8.1: Sustainable development strategy: objectives related to transport

The communication from the Commission to the Gothenburg Council included the following headline objectives to improve the transport system:

- decouple transport growth significantly from growth in gross domestic product in order to reduce congestion and other negative side-effects of transport;
- bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998 (the most recent year for which data are available).

In June 2001, the conclusions of the Gothenburg Council stated that 'A sustainable transport policy should tackle rising volumes of traffic and levels of congestion, noise and pollution and encourage the use of environment-friendly modes of transport as well as the full internalisation of social and environmental costs. Action is needed to bring about a significant decoupling of transport growth and GDP growth, in particular by a shift from road to rail, water and public passenger transport'.

The indicators selected for this theme reflect the objectives set out in the sustainable development strategy (Box 8.1), addressing transport growth and its relation to economic development, the share of road, the 'negative side-effects' such as emissions of greenhouse gases and pollutants as well as road safety, and of costs and price instruments.

The headline indicator compares the development of the energy consumed by transport with growth in GDP in order to assess the degree of decoupling. The development of the energy consumed by each mode is also discussed along with this indicator.

The other indicators are divided into three sub-themes.

- **Transport growth** is described here in terms of three of the structural indicators (see Box 1.2) used to monitor the transport-related goals of the Lisbon strategy. These track the dependence on cars, the dominance of road in freight transport, and the link between growth in freight transport and GDP. A further indicator from this section, on energy consumption by mode of transport, is covered in this publication along with the headline indicator.
- **Transport prices**, which are an essential policy tool for influencing choice and behaviour, and therefore the pattern of transport and its positive and negative impacts, are unfortunately missing from this publication due to the absence of data. Indicators need to be developed which would cover the external costs of transport, freight transport prices, and infrastructure investment.



- **Social and environmental impact of transport** covers emissions of the ozone precursors responsible for summer smog, nitrogen oxides from cars and greenhouse gases, along with fatalities from road traffic accidents. The impact of noise and emissions on households is covered in the chapter on public health, although transport cannot be isolated as a specific cause.

### Box 8.2: TERM — EU transport and environment reporting mechanism

Following initial work within the Commission, the joint Transport and Environment Council of June 1998 invited the Commission 'in conjunction with the European Environment Agency ... to develop a comprehensive set of indicators of the sustainability of transport and tools for evaluating external costs, building on useful work already done, and to report on them regularly to the Council'.

Since then the Commission services and the European Environment Agency have jointly developed a framework and set of indicators which have been regularly published. The TERM indicators were selected and grouped to address seven key questions.

1. Is the environmental performance of the transport sector improving?
2. Are we getting better at managing transport demand and at improving the modal split?

3. Are spatial and transport planning becoming better coordinated so as to match transport demand to the need for access?
4. Are we optimising the use of existing transport infrastructure capacity and moving towards a better balanced intermodal transport system?
5. Are we moving towards a fairer and more efficient pricing system, which ensures that external costs are internalised?
6. How rapidly are cleaner technologies being implemented and how efficiently are vehicles being used?
7. How effectively are environmental management and monitoring tools being used to support policy- and decision-making?

Further information may be found at: [http://themes.eea.eu.int/Sectors\\_and\\_activities/transport/indicators](http://themes.eea.eu.int/Sectors_and_activities/transport/indicators)

#### Further reading on transport in Europe:

White Paper, 'European transport policy for 2010: time to decide', European Commission (2001), COM(2001) 370

*Panorama of transport — Statistical overview of transport in the EU — Data 1970–2001* — Parts 1 and 2, Eurostat (2004)

*Saving 20 000 lives on our roads — A shared responsibility*, European Commission (2003)

*Ten key transport and environment issues for policy-makers. TERM 2004: Indicators tracking transport and environment integration in the European Union*, European Environment Agency (2004)



Headline Indicator



## Energy consumption of transport



**Definition:** This indicator compares the **growth of the energy consumption of transport** with that of GDP at constant prices.

The energy consumed by all types of transport (road, rail, inland navigation and aviation) is covered, including by households and public administrations, with the exception of maritime and pipeline transport. The GDP data are at constant prices, that is, they have been adjusted to take account of inflation.

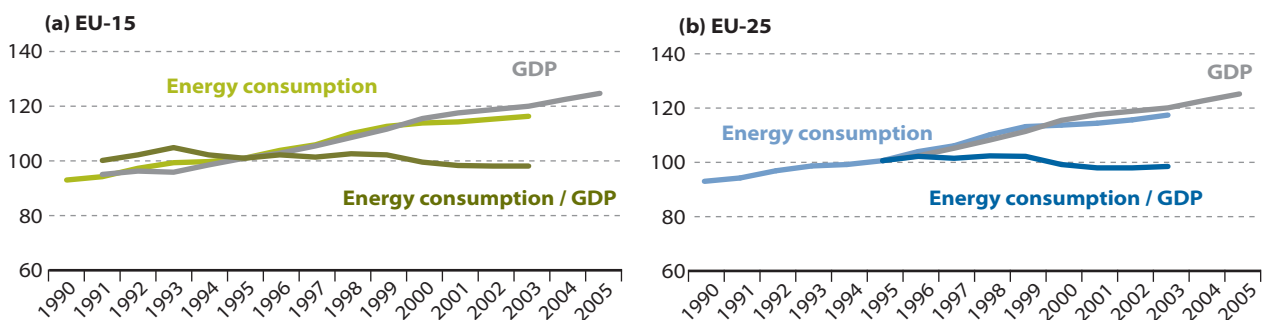
Transport demand is closely linked to economic growth. Strong economic growth provides more spending power, which may be spent on goods and travel. Economic growth also demands more production. And this all adds up to more transport. However, not all economic growth is equally dependent on transport growth. Growth in service industries, for example, requires little additional production. There are also behavioural and lifestyle trends, such as car-sharing, video-conferencing and teleworking, which may weaken the link. And in terms of traffic volumes, some means of transport are more efficient than others.

### Indicator relevance

Given that existing transport patterns are inherently associated with negative side-effects, it would be desirable for strong economic growth to be achieved with weaker growth in transport. This is the background to the Gothenburg Council conclusion that 'action is needed to bring about a significant decoupling of transport growth and GDP growth'. To monitor this objective the ideal would be to compare traffic volumes with GDP. However, complete and consistent statistics on traffic volumes are not available and the current indicator considers growth in energy consumption as a proxy of growth in traffic.

Transport demand and energy consumption are closely linked. More transport, whether measured in terms of passengers or tonnes of freight carried, or in terms of vehicle movements, generally consumes more energy. The specific energy consumption depends on which means of transport is being used and the particularities of the vehicle and journey in question. The indicator would be responsive to shifts from road and aviation to rail and inland navigation, and from car to bus and rail. Energy consumption is therefore a plausible proxy for transport demand.

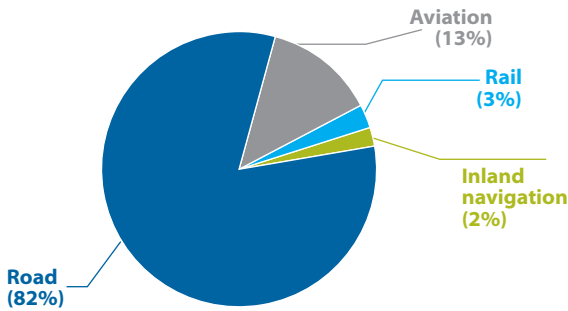
**Figure 8.1.**  
Energy consumption of transport and GDP in: (a) the EU-15; and (b) the EU-25 (index 1995 = 100)



Source: Eurostat.

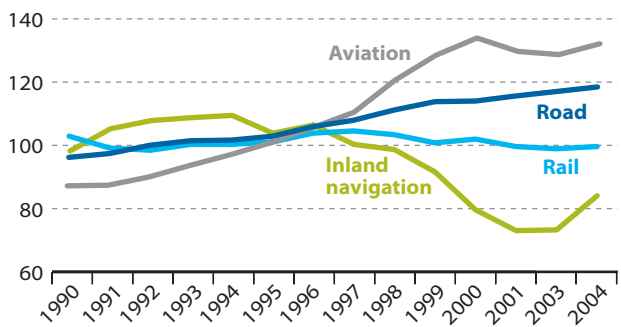


**Figure 8.2. EU-25 energy consumption by transport mode, 2003 (percentage split)**

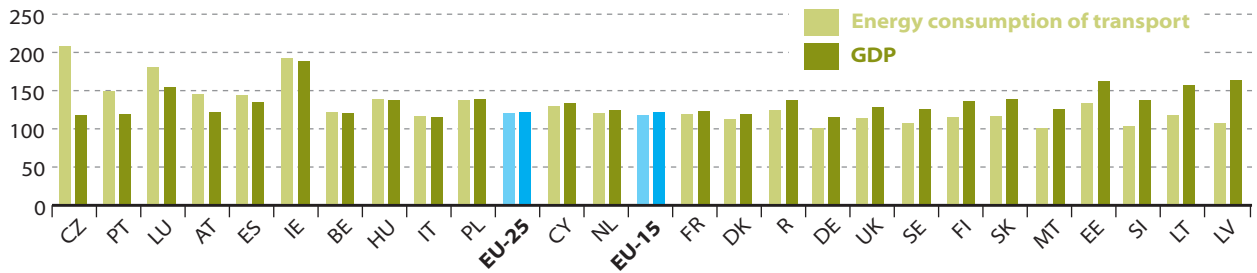


Source: Eurostat.

**Figure 8.3. EU-25 energy consumption by transport mode (index 1995 = 100)**



**Figure 8.4. Energy consumption of transport and GDP in 2003 by country (index 1995 = 100)**



Source: Eurostat.

## Analysis

Between 1995 and 2000, transport energy consumption grew at a somewhat higher rate than GDP (Figure 8.1). Since 2000 the growth in both has slowed down, but, even if that of transport has slowed relatively faster (1.1 % increase between 2000 and 2003, compared with 1.3 % for GDP), it is insufficient to demonstrate decoupling. There is no apparent difference between the pattern of evolution in the EU-15 (Figure 8.1.a) and that in the EU-25 (Figure 8.1.b).

Comparing the different modes (Figures 8.2 and 8.3), road very clearly dominates, although aviation is also a significant and fast-growing energy consumer. Rail and inland navigation, as well as having smaller market shares of transport, are both more energy-efficient than road and aviation.

The downward trend of inland navigation (Figure 8.3), which started in the mid-1990s, has recently turned around and the energy consumption of this mode is now climbing. That of rail has remained relatively constant both before and after 2000. Aviation, which grew at an ever faster rate through the 1990s, is picking up again after the dramatic slowdown following the terrorist attack on the World Trade Centre in New York in 2001. Road, the dominant consumer of energy, continues to increase steadily.

Figure 8.4 shows the energy consumption of transport and GDP in 2003, relative to the position in 1995, for different countries. This provides an indication of the geographic extent



of decoupling. Those countries where GDP stands well above energy consumption display decoupling. These are all new Member States: Latvia, Lithuania, Slovenia, Estonia, Malta and Slovakia. More modest signs are seen in Finland, Sweden, the United Kingdom, Germany and Greece. At the other end of the scale the Czech Republic, in particular, shows very high growth in the energy consumption of transport compared with that of GDP. Portugal, Luxembourg and Austria display more moderate tendencies in this direction.

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Energy consumption of transport can be seen as a proxy of transport demand. In the case of emissions of ozone-precursors and  $\text{NO}_x$ , the upward trend in energy consumption, and therefore transport, has been very successfully offset by emission-reduction measures. Nevertheless, there is still a link, and through that, there is a link to public health (population exposed to air pollution by particulate matter) and to forest health, under the theme on natural resources. Energy consumption by transport is one of the main components of gross inland consumption of energy and final energy consumption, and also influences the energy intensity of the economy. The energy consumption of transport also contributes to greenhouse gas emissions. Since transport is especially reliant on oil products, which have high  $\text{CO}_2$  coefficients, it also has a strong influence on  $\text{CO}_2$  intensity of energy consumption.

## Potential linkages

As long as there is no decoupling, energy consumption by transport is closely linked to economic growth. It is also of interest to consider the potential linkage to domestic material consumption. Although the quantities of materials used have changed relatively little over the years, the energy consumption involved in moving this material around has greatly increased. Given that energy efficiencies have improved, this implies greater distances and more trips, which puts pressure on land resources for more roads and associated infrastructure, and is therefore linked to the indicator on built-up area. Given that demand for transport services is unlikely to fall, continued improvements in the efficiency of transport vehicles will be needed to decouple energy consumption by transport from economic growth. This will require expenditure on research and development. Reducing transport could also contribute to reducing the rate of increase of built-up land and landscape fragmentation and therefore reduce the pressure on biodiversity.



Transport growth



## Car share of inland passenger transport

**Definition:** This indicator is defined as the **percentage share of transport by passenger car in total inland passenger transport**, expressed in passenger-kilometres. Inland passenger transport includes transport by passenger cars, buses and coaches, and trains.



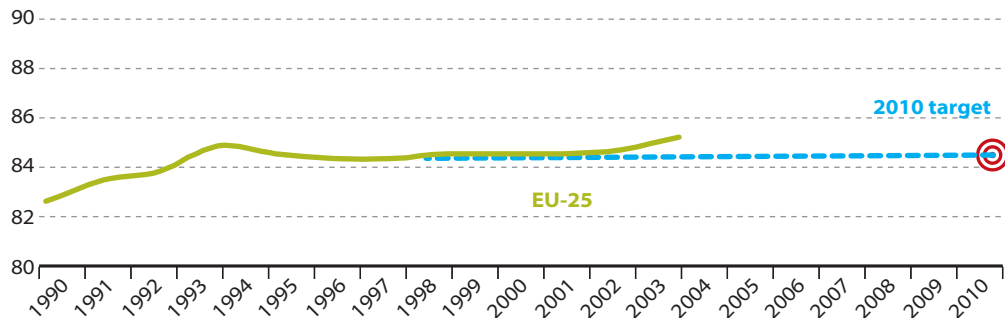
### Indicator relevance

The 2001 White Paper states, in referring to the continued growth in demand for transport, ‘for passenger transport, the determining factor is the spectacular growth in car use. The number of cars has tripled in the last 30 years, at an increase of three million cars each year. Although the level of car ownership is likely to stabilise in most countries of the European Union, this will not be the case in the candidate countries, where car ownership is seen as a symbol of freedom. By the year 2010, the enlarged Union will see its car fleet increase substantially’.

In its communication to the Gothenburg Council, the Commission proposed as a headline objective to ‘bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998’.

**Figure 8.5. EU-15 car share of inland passenger transport (% of passenger-km)**

Source: Eurostat.



### Analysis

The share of passenger-kilometres by car in total inland passenger transport has continued to grow slowly in the EU-15. Despite large fluctuations, the average annual growth rate of 0.2 % since 2000 is the same as the average over the period 1991 to 2000. Although the EU-15 was on target up to 2001, the increase in 2002, and the future expected increases in the car fleet are likely to make the target difficult to reach in future years.

### Potential linkages

Cars produce more emissions per passenger-kilometre than either buses or trains and an increase in the car share of passenger transport can therefore harm health, as well as natural resources (defoliation is an example). An increasing dependence on the private car, when it replaces cycling and walking, and to a lesser extent public transport, can lead to a lack of exercise and a number of health problems, such as obesity. See other linkages under the headline indicator.



Transport growth



## Road share of inland freight transport



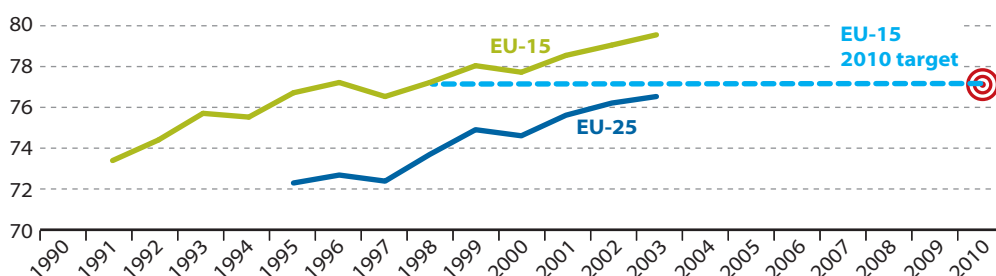
**Definition:** This indicator is defined as the percentage **share of road in total inland freight transport**, expressed in tonne-kilometres. It is based on transport by road, rail and inland waterways.

In its communication to the Gothenburg Council, the Commission proposed as a headline objective to ‘bring about a shift in transport use from road to rail, water and public passenger transport so that the share of road transport in 2010 is no greater than in 1998 (the most recent year for which data are available)’.

### Indicator relevance

According to the 2001 White Paper, growth in goods transport ‘is due to a large extent to changes in the European economy and its system of production. In the last 20 years, we have moved from a ‘stock’ economy to a ‘flow’ economy. This phenomenon has been emphasised by the relocation of some industries — particularly for goods with a high labour input — which are trying to reduce production costs, even though the production site is hundreds or even thousands of kilometres away from the final assembly plant or away from users. The abolition of frontiers within the Community has resulted in the establishment of a ‘just-in-time’ or ‘revolving stock’ production system.’

The White Paper argued for a more rational use of each mode and warns that the strong economic growth expected in the new Member States will greatly increase transport flows and road haulage in particular.



**Figure 8.6. Road share of inland freight transport (% of tonne-km)**

Source: Eurostat.

The share of road in total inland freight transport has continued to increase in both the EU-25 and EU-15 at an average rate of 0.8 % per year since 2000. This represents an increase over the average annual growth rate for the period 1995 to 2000 (0.6 % for the EU-25, and 0.3 % for the EU-15). This development is moving away from the EU-15 target. The EU-15 share stood at 79.4 % in 2003, representing 2.3 percentage points more than the 2010 target level.

### Analysis

Although the new Member States have transport systems which in the past heavily encouraged the use of rail, the distribution between modes has tipped sharply in favour of road transport. Nevertheless, road still represents a much lower share on average than in the EU-15, and this could be of immense benefit to the enlarged Union.

Road transport is less energy-efficient and produces more emissions per tonne-kilometre than either rail or inland waterways transport. An increase in the road share of freight transport therefore increases energy consumption, as well as greenhouse gases and other emissions. See also other linkages under the headline indicator.

### Potential linkages





Transport growth



## Volume of freight transport

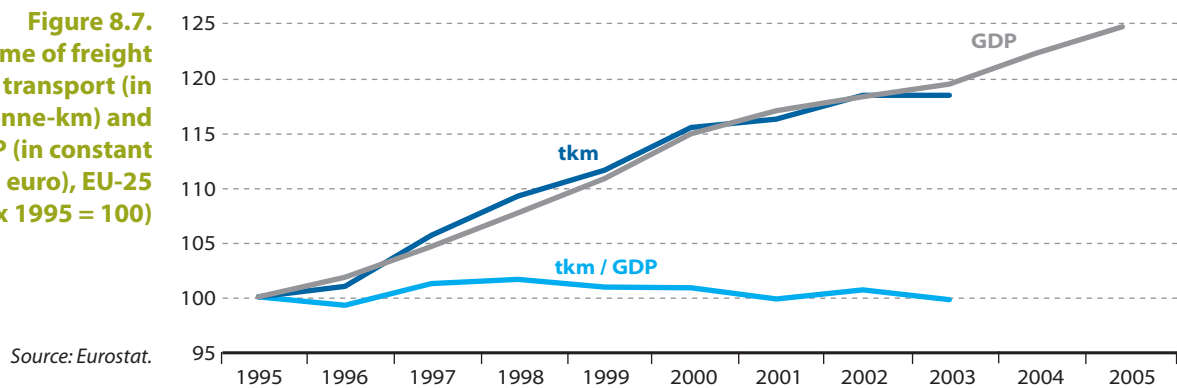
**Definition:** This indicator is defined as the **ratio between the volume of freight transport measured in tonne-kilometres** (inland modes) and GDP at constant 1995 prices. 'Inland modes' cover transport by road, rail and inland waterways.



### Indicator relevance

The Gothenburg Council conclusions call for the decoupling of transport growth and GDP growth. This indicator focuses on that close link which needs to be weakened between transport and economic growth.

**Figure 8.7.**  
Volume of freight transport (in tonne-km) and GDP (in constant 1995 euro), EU-25 (index 1995 = 100)



### Analysis

Freight transport grew at an annual average rate of 2.9 % over the period from 1995 to 2000. This is very slightly higher than the 2.8 % average annual growth rate of GDP. However, since 2000 transport growth has slowed to an average rate of 0.9 % per year, whereas GDP has grown slightly faster, at 1.3 % per year on average. Nevertheless, it is apparent in Figure 8.7 above that no significant decoupling has taken place.

### Potential linkages

An increase in the volume of freight transport increases energy consumption, as well as greenhouse gases and other emissions. An increase in domestic material consumption, as well as EU import from developing countries is likely to increase the volume of freight transport. See also other linkages under the headline indicator.



Social and environmental impact of transport

## Emissions of ozone precursors from transport



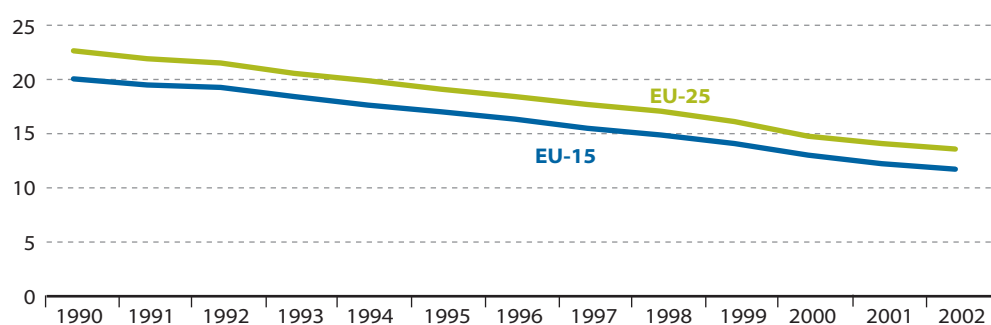
**Definition:** This indicator is defined as the **emissions of nitrogen oxides, volatile organic compounds, carbon monoxide and methane from transport**. It is expressed as the sum of their tropospheric ozone-forming potential.

Ozone is a highly reactive gas causing or provoking respiratory problems in man and animals. It is also toxic to plants and can lead to leaf damage and defoliation. Tropospheric or ground-level ozone is a 'secondary' pollutant. It forms when sufficient concentrations of precursor gases come into contact in the presence of sunlight. High concentrations of ozone result in the phenomenon known as summer smog. Tropospheric ozone is also a greenhouse gas. Reducing 'negative side-effects of transport' is an important element of the sustainable development strategy.

### Indicator relevance

The precursors are principally volatile organic compounds, oxides of nitrogen, carbon monoxide and methane. With the exception of methane, these precursors are all produced in significant quantities by uncontrolled internal combustion engines.

One of the fundamental principles of the 1979 UNECE Convention on Long-Range Transboundary Air Pollution is 'to protect man and his environment against air pollution and endeavour to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution'. A number of protocols to the convention impose reduction targets on particular pollutants, but none of these impose targets specifically for transport.



**Figure 8.8.**  
Emissions of  
ozone precursors  
from transport  
(million tonnes  
tropospheric  
ozone-forming  
potential)

Source: European  
Environment Agency.

Over the period 1990 to 2000, emissions from ozone precursors fell at an average rate of about 4.3 % per year in both the EU-15 and EU-25. These reductions resulted from the introduction of emission control measures, principally catalytic converters for cars but also including other measures, such as speed limits during hot periods in order to reduce emissions of  $\text{NO}_x$ , and improvements in fuel quality. The continuing downward trend is a result of a progressively stronger regime of emission control, combined with the gradual penetration over a dozen or more years of any new technology introduced.

### Analysis



Since 2000 the rate of reduction has become faster in the EU-15 than in the EU-25. The 10 new Member States contributed only a relatively small amount (about 11.5 %) to these emissions in 1990. This share has been steadily growing and reached 13.9 % of the total in 2002, probably due to the exceptionally rapid growth of road vehicle fleets in many of these countries over the last decade.

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### Potential linkages

More cars and more freight transport leads to more emissions of ozone precursors. Because ozone is a greenhouse gas, emissions of ozone precursors also contribute to greenhouse gas emissions and climate change. Given the consequences of ground level ozone on health and the environment, it is also likely to influence healthy life expectancy, defoliation, and biodiversity. An increase in emissions of ozone precursors is also likely to increase the proportion of the population suffering from pollution. See also linkages under the headline indicator.



Social and environmental impact of transport

## Emissions of NO<sub>x</sub> from road vehicles

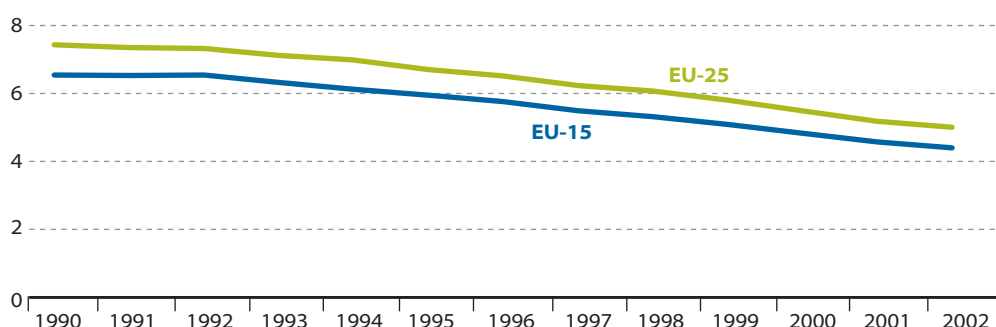


**Definition:** This indicator is defined as the **quantity of nitrogen oxides**, in terms of NO<sub>2</sub> equivalents, **emitted from road transport**.

At the high temperatures and pressures inside internal combustion engines, the nitrogen of the air combines with oxygen to form various oxides of nitrogen (NO<sub>x</sub>). These substances provoke respiratory problems in humans and animals and are damaging to plants. They also contribute to the formation of photochemical smog, acid rain, particulate formation and global warming.

### Indicator relevance

Nitrogen oxides are removed from car exhausts to a very large extent by catalytic converters. Regulation of emissions from road vehicles began in 1970 and since then standards have become progressively more stringent. But it was not until 1991 that catalytic converters became compulsory for new petrol-engined cars.



**Figure 8.9.**  
Emissions of NO<sub>x</sub>  
from road vehicles  
(million tonnes of  
NO<sub>2</sub> equivalent)

Source: European  
Environmental Agency.

NO<sub>x</sub> emissions have fallen at similar rates in both the EU-15 and EU-25 since the early 1990s, reflecting the growing impact of catalytic converters. Decrease was slow in the early 1990s, and accelerated from 1992, with the mean annual rate of decrease between 2000 and 2003 reaching – 4.6 % for the EU-25 and – 4.7 % for the EU-15.

### Analysis

Emissions of NO<sub>x</sub> are strongly linked to emissions of ozone precursors from transport, as road vehicles are responsible for the majority of these emissions and NO<sub>x</sub> comprises a large part of the ozone forming potential. Emissions of NO<sub>x</sub> have the same influence on healthy life expectancy, defoliation, and biodiversity, as well as on the proportion of population suffering from pollution. It also influences climate change.

### Potential linkages



## Social and environmental impact of transport



# Greenhouse gas emissions from transport

**Definition:** This indicator shows trends in the **emissions from transport** (road, rail, inland navigation and aviation) **of the greenhouse gases regulated by the Kyoto Protocol**. Three gases are relevant in the context of transport (carbon dioxide, methane, and nitrous oxide) and these have been aggregated according to their relative global warming potentials.



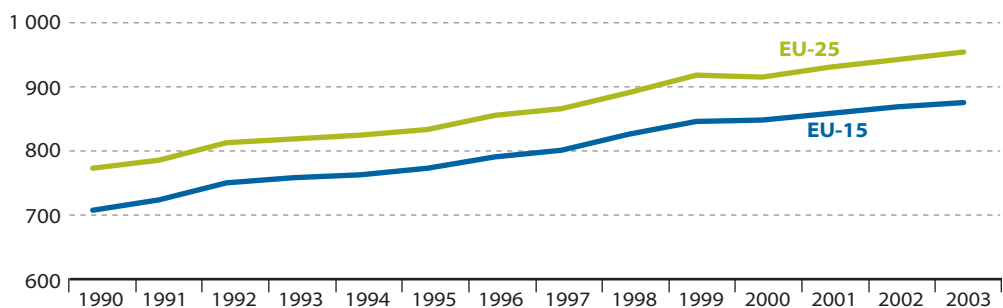
### Indicator relevance

The European Community is a signatory to both the United Nations Framework Convention on Climate Change and the Kyoto Protocol thereto. The EU as a whole is therefore committed to a reduction of its greenhouse gas emissions of 8 %, compared with the base year, by 2008–12.

Transport is of importance for several reasons. Firstly, it is a significant emitter of greenhouse gases, being responsible for about 19 % of the total in 2003. Also it is the only major source sector which is producing more greenhouse gas emissions than in 1990; every other sector has reduced its emissions (see ‘Greenhouse gas emissions by sector’). Transport is therefore a critical sector in achieving the Kyoto target.

**Figure 8.10.**  
Greenhouse gas emissions from transport (million tonnes of CO<sub>2</sub> equivalent)

Source: European Environment Agency, Eurostat.



### Analysis

Emissions of greenhouse gases continue to increase roughly in line with energy consumption. During the 1990s, the average growth rate for the EU-15 stood at about 1.7 % per year, although growth in the 10 new Member States was less than 0.2 % per year. This situation has now changed, as growth in the EU-15 has slowed down to about 1 % per year on average since 2000, compared with 5.6 % per year in the new Member States.

More than three-quarters of these emissions are produced by road transport. Although passenger cars have become more energy efficient, either through improvements in engine design or through a shift in favour of diesels, the continuing rise in the vehicle fleet and the use of on-board ancillary equipment such as air-conditioning continue to drive the emissions upwards.

If transport growth is maintained, the only ways to reduce carbon dioxide emissions, which are the major part of greenhouse gases, are to shift to low-carbon fuels, increase engine efficiencies and reduce friction.

### Potential linkages

Transport is currently highly dependent on oil products, and greenhouse gas emissions from this sector directly depend on energy consumption of transport. Transport makes a major contribution to total greenhouse gas emissions. A higher consumption of biofuels would be expected to reduce greenhouse gas emissions from transport.



Social and environmental impact of transport

## People killed in road accidents



**Definition:** The indicator measures the **number of fatalities caused by road accidents**, which includes drivers and passengers of motorised vehicles and pedal cycles as well as pedestrians, killed within 30 days from the day of the accident. For Member States not using this definition, corrective factors were applied.

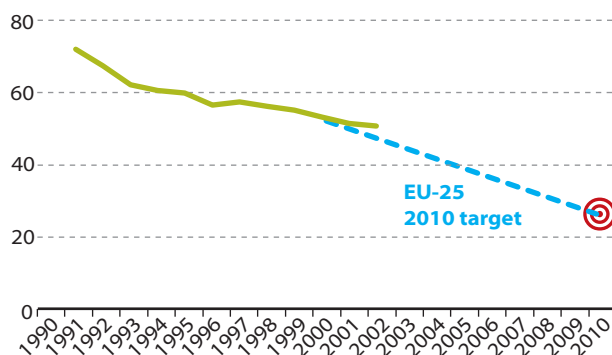
Despite the halving of fatalities in road traffic accidents between 1970 and the early 2000s, road safety is still an issue of major concern with some 50 000 fatalities per year in the enlarged Union. Most of these fatalities could be avoided and for these reasons the Commission, in its 2001 White Paper, proposed a target of reducing the number of victims by half by 2010, relative to 2000. This target has been endorsed by the European Parliament, but not by the Council. Since then the Commission has adopted a road safety action programme <sup>114</sup> which describes the measures considered necessary to meet this target.

### Indicator relevance

<sup>114</sup> *Saving 20 000 lives on our roads — A shared responsibility*, European Commission (2003).

Road traffic accidents are the major cause of death for young adults. Those in their twenties are almost twice as likely to be killed in a road accident than older people or the population as a whole.

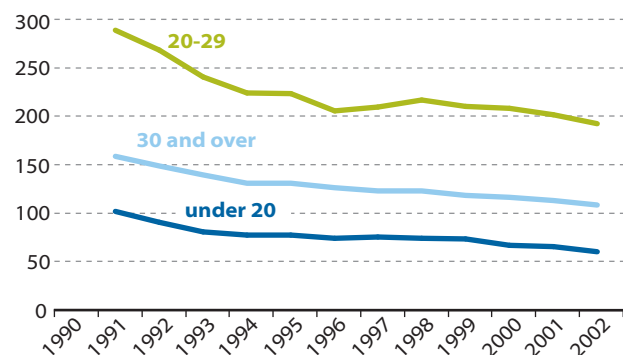
**Figure 8.11. People killed in road accidents, EU-25 (1 000s of fatalities)**



Source: Eurostat.

NB: The target of halving road traffic deaths by 2010 originally referred to the EU-15; here it has been applied to the EU-25.

**Figure 8.12. People killed in road accidents by age group, EU-15 minus Germany and Italy (fatalities per million inhabitants)**



Fatalities from road traffic accidents fell across the EU at an average rate of 3.4 % per year between 1991 and 2000. Since 2000 the annual rate of change has fallen to about 2.5 %, which is slightly less than needed to meet the 2010 target.

### Analysis

For the EU-15, the proportion of those aged between 20 and 29 years old who die as a result of a road accident remains at about 1.8 times that of the population as a whole.

The number of people killed in road accidents would be influenced by changes in the car share of passenger transport, and the road share of freight transport. A change in this indicator would influence healthy life-years at birth, and may also have an impact on the old-age dependency ratio.

### Potential linkages



## Methodological notes

### Energy consumption of transport

The statistics presented here are derived from Eurostat's energy balance sheets. The balance sheets are based on energy supplied within the national territory and include all flows (production, foreign trade, stocks, transformation inputs and outputs, consumption, etc.). Within these sheets 'final energy consumption' represents the energy delivered to the final user.

It should be noted that maritime and pipeline transport are not included in the balance sheet concept of final energy consumption. In the case of maritime transport, marine bunkers are considered as exports in the balance sheets. The argument for this is that refuelling of ocean-going ships is not directly related to the economic activity of the reporting country. In the case of oil and gas pipelines, the energy consumed by compression and pumping stations is considered under consumption of the energy sector rather than as final consumption.

### Car share of inland passenger transport

Data on passenger transport performance are collected through the Eurostat/ECMT/UNECE common questionnaire on transport statistics, and from 2003, rail transport data are also collected pursuant to Regulation (EC) No 91/2003 on rail transport statistics. The common questionnaire is accompanied by a glossary for transport statistics.

Where data have been unobtainable from these sources, figures have been taken, where possible, from national statistical institutes, the European Conference of Ministers of Transport, the United Nations Economic Commission for Europe, the International Railways Union, the Directorate-General for Energy and Transport or estimated by Eurostat.

### Road share of inland freight transport, and volume of freight transport

Rail and inland waterways transport are based on movements on national territory, regardless of the nationality of the vehicle or vessel. Road transport is based on all movements of vehicles registered in the reporting country.

Data on goods transport performance are collected through the following legal acts:

- road: Council Regulation (EC) No 1172/98 on statistical returns in respect of the carriage of goods by road;
- rail: Council Directive 80/1177/EEC on statistical returns in respect of carriage of goods by rail, as part of regional statistics (replaced by Regulation (EC) No 91/2003 on rail transport statistics);

- inland waterways: Council Directive 80/1119/EEC on statistical returns in respect of carriage of goods by inland waterways.

As with passenger transport, above, where data have been unobtainable from these sources, figures have been taken, where possible, from national statistical institutes, the European Conference of Ministers of Transport, the United Nations Economic Commission for Europe, the International Railways Union, the Directorate-General for Energy and Transport or estimated by Eurostat.

GDP data are compiled in accordance with the European system of accounts adopted in the form of Council Regulation (EC) No 2223/96 dated 25 June 1996 and originally published in the Official Journal L 310 of 30 November 1996.

### Emissions of ozone precursors from transport, emissions of NO<sub>x</sub> from road vehicles, and greenhouse gas emissions from transport activities

Emissions data are compiled by the European Topic Centre on Air and Climate Change on behalf of the European Environment Agency. They are based on national submissions to the Convention on Long-Range Transboundary Air Pollution for ozone precursors (excluding methane) and NO<sub>x</sub>, or the United Nations Framework Convention on Climate Change and the EU greenhouse gas monitoring mechanism for greenhouse gas.

The aggregated indicator on 'emissions of ozone precursors' has been calculated on the basis of each substance's typical tropospheric ozone-forming potential, using the following coefficients: oxides of nitrogen, 1.22; non-methane volatile organic compounds (NMVOC), 1; carbon monoxide, 0.11; methane, 0.014. The results are expressed in NMVOC equivalents (1 000 tonnes). It should be noted that the term 'NMVOC' comprises a large and diverse grouping of chemical compounds, displaying a wide range of physical and chemical characteristics, and therefore this aggregation represents a somewhat simplified approach to very complex processes of chemical interaction.

For 'emissions of NO<sub>x</sub>', nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>) are aggregated in terms of NO<sub>2</sub> equivalents, on the assumption that any nitric oxide is rapidly oxidised to nitrogen dioxide.

The different greenhouse gases have been aggregated by Eurostat on the basis of each gas' global warming potential, using the following coefficients: carbon dioxide (CO<sub>2</sub>), 1; methane, 21; and nitrous oxide, 310. The results are expressed in terms of CO<sub>2</sub> equivalents.



### Box 8.3: CARE — Community road accident database

CARE is a Community database on road accidents resulting in death or injury. The purpose of CARE is to provide a powerful tool which would make it possible to identify and quantify road safety problems throughout the European roads, evaluate the efficiency of road safety measures, determine the relevance of Community actions and facilitate the exchange of experience in this field.

Since 1984 a large number of measures to reduce road accidents have been taken at the Community level. Along with these measures, the Council decided on 30 November 1993 to create a Community database on road accidents (Council Decision 93/704/EC, OJ L 329, 30.12.1993, pp. 63–65). It was commonly agreed that such a database at the Community level would make it possible to identify and quantify road safety problems, evaluate the efficiency of road safety measures, determine the relevance of Community actions and fa-

ilitate the exchange of experience in this field.

Instead of entering into a lengthy process of defining and adopting a new standardised structure and recognising that this would require considerable changes for the national administrations (such as the harmonisation of accident reports, definitions and collection methodologies) it has been decided that the national data sets should be integrated into the CARE database in their original national structure and definitions, with confidential data blanked out.

Subsequently, the Commission provided a framework of transformation rules so that CARE provides compatible data. The process of improving 'homogenisation' of accident data within CARE and the process of developing it are under way.

Further information about CARE can be found at: <http://europa.eu.int/comm/transport/care>

#### People killed in road accidents

CARE (Box 8.3) data were used, with the exception of the 2002 age breakdown for Belgium which was taken from the Internet site of the federal public service for economy, SMEs, self-employed and energy ([http://statbel.fgov.be/figures/d364\\_fr.asp](http://statbel.fgov.be/figures/d364_fr.asp)).

The split by age covers the EU-15 countries with the exception of Germany (no data provided to CARE) and Italy (data only

provided up to 1998). Germany and Italy are both very close in their fatality rates to the EU-15 average.

Based on the age distribution data for Italy prior to 1998, it is possible to say that excluding Italian data makes little difference to the EU aggregate. However, since no age distribution data were available for Germany it is impossible to know how far the exclusion of these data may affect the EU aggregate.





# 9.

## Good governance



### Policy background

As stated in the plan of implementation of the 2002 World Summit on Sustainable Development, good governance is essential for sustainable development. Governance is an integral part of the sustainable development strategy, which states that ‘policy-making must become more open’ to tackle rising disaffection with the political process. In early 2000, the European Commission had already identified the reform of European governance as one of its four strategic objectives. A clear and trusted governance structure is essential to achieve the substantial changes to be made in many policy areas on the way to sustainable development.

The sustainable development strategy makes a direct reference to the preparation of the White Paper on governance<sup>115</sup> (Box 9.1) and specifically stresses the development of proposals on wide-ranging consultation of stakeholders from within and outside the Union. The White Paper sets out five principles and four proposals for change. The five principles which underpin European governance are openness, participation, accountability, effectiveness and coherence. Their application should reinforce the principles of proportionality and subsidiarity. The four proposals are grouped under four sub-titles: better involvement; better policies, regulation and delivery; EU contribution to global governance; refocused policies and institutions.

<sup>115</sup> European governance: a White Paper, COM (2001) 428.



In order to promote good governance and ensure the participation of civil society, the European Union institutions, bodies and agencies should conduct their work as openly as possible. There is a need for a coherent and comprehensive structure of rules for the internal work of the institutions, reflecting national and international experiences of good administrative culture. Such rules would apply to all decision-making processes, including the legislative process and the exercise of administrative authority.

The 'good governance' theme tries to respond to the needs for quantitative information on progress in this topic, which underpins all sustainable development policies but which is also extremely difficult to measure. The set of indicators presented in this chapter is a first attempt to address the issues raised in the White Paper on European governance.

### Main changes

**Table 9.1.**  
**Evaluation of**  
**changes in the**  
**good governance**  
**theme (from 2000)**



	EU-25	EU-15
<b>Citizens' confidence in EU institutions</b>	:	
<b>Policy coherence</b>		
Infringement cases	:	
Transposition of Community law	:	
<b>Public participation</b>		
Voter turnout in national and EU parliamentary elections		
E-government usage by individuals		

**LEGEND:**

- favourable change
- no or little change
- unfavourable change
- :
- insufficient data to evaluate change

The signals under this theme are rather mixed. Positive signals include the growing use of e-government by citizens and to some extent an increased confidence in EU institutions although the preliminary 2005 figures show a strong decrease. However, voter turnouts in parliamentary elections, both at national and EU levels, are decreasing in most countries and therefore send a negative message on public interest for public affairs. The number of infringement cases brought to the European Court of Justice strongly increased in 2003, indicating an increased difficulty for some Member States to implement Community law. Finally, the transposition of European directives into the national legal system has increased slightly since 2000, although much remains to be done in the new Member States.

**Citizens' confidence in EU institutions is at the same level as in 2000**

The trust of citizens in the EU institutions has been rising over the period 1999–2004. Those interviewed tend to trust the European Parliament most (57 % in November 2004), then the European Commission (52 %) and then the European Council (45 %), showing a great stability in the ranking of the three institutions in terms of public confidence over the period monitored. However, the preliminary results from May and June 2005 show that confidence in the European institutions fell significantly during the first half of 2005 to return approximately to the levels observed in May 2000.



### Box 9.1: The White Paper on European governance

The proposals for change made by the Commission in the White Paper can be divided into four groups.

- Better involvement: European institutions should be more open and communicate more openly with the general public on European issues. This implies a more systematic dialogue at an early stage of policy shaping with both European, national or regional associations or networks, and with civil society.
- Better policies, regulation and delivery: the EU should improve the quality, effectiveness and simplicity of regulatory acts. Other kinds of instruments should be used in addition to legislation. Commission departments should mobilise and exploit the most appropriate expertise, with a view to establishing a sound knowledge base for better policies. Finally the Commission committed itself to carrying out impact assessments for all major legislative and policy initiatives, and proposed that the other institutions also undertake impact assessments where they ask for substantial amendments to Commission proposals.
- The EU's contribution to global governance: the success-

ful implementation of governance reform domestically is a precondition for the EU to make a credible case for change at the global level. The EU intends to promote good governance principles in international relations, as well as to improve the dialogue with governmental and non-governmental actors of third countries when developing policy proposals with an international dimension.

- Refocused policies and institutions: the Union should identify more clearly its long-term objectives such as the overall objective of sustainable development. In setting priorities and ensuring coherence, the institutions should avoid policy decisions inspired by short-term considerations. The Union should revitalise the Community method in order to deliver better policies, and each institution should focus on its core tasks.

A public consultation on the governance White Paper ran over an eight-month period between July 2001 and March 2002. In its report on European governance (see further reading), the Commission analysed the main outcomes of this consultation and described the initial steps undertaken to improve governance.

The number of Member State infringement cases brought before the Court of Justice of the European Communities has significantly increased between 1998 and 2004, rising from 118 to 193 cases. The breakdown of actions for failure of a Member State to fulfil obligations shows a predominance of actions concerning justice and the implementation of Community law, the environment, the internal market, and agriculture and fisheries policy.

**The number of infringement cases is growing ...**

Progress in the transposition of Community directives in national legislation has been observed between 2000 and 2004 as the indicator has grown up from 96.6 to 97.7 %, but this is below the target set by the Council in 2001 of a rate of transposition of at least 98.5 %. This rise can be observed in all sectors except taxation and customs, justice and home affairs, and competition. The new Member States are, in general, still below the EU average despite the huge efforts made over the last years to catch up in the implementation of Community law.

**... but transposition of Community law into national legislation is improving**

Although decreasing in most countries, the voter turnout in national parliamentary elections has remained well above 50 % in all countries, except Poland. Eurostat's current estimate for the EU-25 turnout in national elections is slightly below 70 %. As a comparison, the turnout in the last EU parliamentary elections was below 50 % (45.7 % in the EU-25 and 49.1 % in the EU-15). The discrepancy between the two turnouts exceeds 20 % in a majority of countries, indicating a relative disinterest in European affairs.

**Public participation in elections is decreasing but better access is given to public information**

The use of e-government by citizens has been growing rather quickly since this information started to be collected in 2002. The indicator shows great disparities among Member States, from 8 % in Greece to 45 % in Luxembourg and Finland.



### Box 9.2: The Aarhus Convention

On 25 June 1998, the European Community signed the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, known simply as the Aarhus Convention. In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate for his or her health and well-being, the purpose of

this convention is to guarantee the rights of access to information, public participation in decision-making and access to justice in environmental matters.

In May 2003, the Community adopted Directive 2003/35/EC in order to align the provisions on public participation in accordance with the Aarhus Convention.

### Rationale for the selection of indicators

Indicators in this theme were selected to reflect the main issues outlined in the White Paper on governance (Box 9.1), as the sustainable development strategy draws explicitly on it.

The headline indicator is the 'level of citizens' confidence in EU institutions', which is an indicator on the public perception of the action of and trust in the main EU institutions (Council, Parliament, Commission). As with any perception indicator, it should first be analysed in terms of trends rather than absolute values. It gives an indication of the (perceived) performance of the institutions and is intended to reflect the degree of implementation of the four priorities outlined in the White Paper.

The other indicators are grouped in two sub-themes.

- **Policy coherence** illustrates policy priorities on 'better policies, regulation and delivery' and 'refocused policies and institutions'. Indicators focus on the vertical dimension of policy coherence, in other words, coherence between EU and national levels. The current indicators measure two different aspects of the implementation of Community law, through the number of infringement cases brought to the European Court of Justice, and the level of transposition of Community directives in national legislation.
- **Public participation** refers to the 'better involvement' priority. Indicators in this sub-theme refer to the level of citizens' involvement in political life (voter turnout in both EU and national elections), and to the use of e-government by individuals.

In addition, it is worth noting that several indicators concerning this theme are still under development. For the policy coherence sub-theme, additional indicators which would be useful to monitor this theme include indicators on the proportion of environmentally harmful subsidies, the administrative cost imposed by legislation, and on the share of the Commission's proposals for which an impact assessment has been undertaken. The latter indicator will give more insight into horizontal policy coherence, between sectoral policies. An indicator on responses to EC internet public consultation would also improve the coverage of the public participation sub-theme.

### Further reading on good governance in Europe

'Report from the Commission on European governance', COM(2002) 705

'Communication from the Commission on the future of the European Union, European governance — Renewing the Community method', COM(2001) 727

'Communication from the Commission on impact assessment', COM(2002) 276

'Communication from the Commission on better regulation for growth and jobs in the European Union', COM(2005) 97



Headline indicator



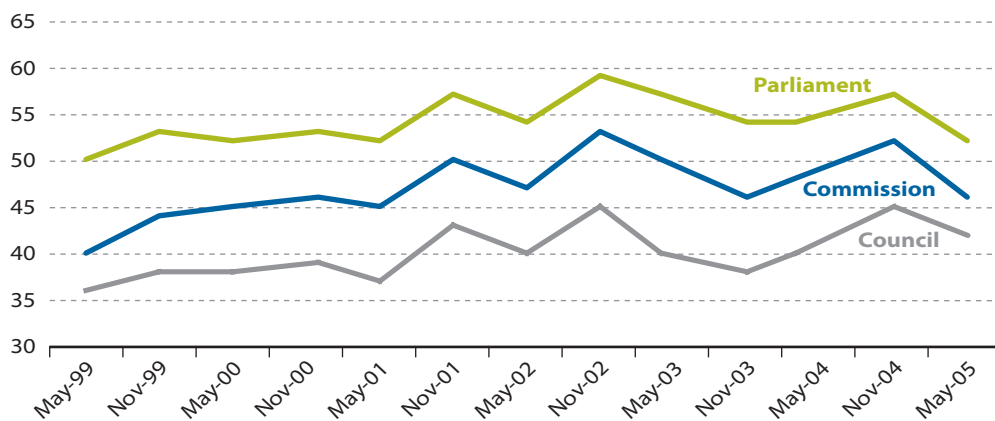
## Citizens' confidence in EU institutions



**Definition:** The level of citizens' confidence in EU institutions (Council of Ministers, European Parliament and European Commission) is expressed as the share of positive opinions (people who declare that they 'tend to trust') about this institution. The indicator is based on the bi-yearly Eurobarometer, a survey which has been conducted since 1973 to monitor the evolution of public opinion in the Member States.

Potential replies to the question on the level of confidence include 'tend to trust', 'tend not to trust' and 'don't know' or 'no answer'. Trust is not precisely defined and could leave some room for interpretation to the interviewees.

This indicator measures the perceived confidence in EU institutions. The confidence in institutions should be a key to measure the implementation of some of the principles outlined in the White Paper on European governance <sup>116</sup>: accountability, effectiveness and coherence. Nevertheless, as noted in Eurobarometer reports, the low level of public awareness of the various EU institutions has to be taken into account in the interpretation of this indicator.



### Indicator relevance

<sup>116</sup> 'European governance: a White Paper', COM(2001) 428.

**Figure 9.1. EU-25 level of citizens' confidence in EU institutions (%)**

Source: European Commission, Eurobarometer opinion poll.

The indicator shows a rise in citizens' confidence in all the three institutions over the period 1999–2004 where it increased by 12 percentage points for the Commission, seven points for the Parliament and four points for the Council. The last Eurobarometer survey was carried out in May–June 2005 overlapping with the Constitution ratification period and the referenda in France and the Netherlands. The preliminary results show that confidence in the European institutions fell significantly during the first half of 2005 <sup>117</sup> to return approximately to the levels observed in May 2000.

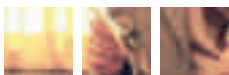
As the three curves have moved very much in parallel, there is a great stability in the ranking of the three institutions in terms of public confidence. People interviewed tend to trust most the European Parliament (57 % in November 2004), then the European Commission (52 %) and then the European Council (45 %).

### Analysis

<sup>117</sup> Eurobarometer 63. Public opinion in the European Union: First results. 2005, European Commission, Directorate-General for Press and Communication.

In the same way as good governance is a prerequisite for sustainable development, public confidence in EU institutions is a necessary condition for the successful implementation of most EU policies, which in its turn may also reinforce public confidence. Citizens' confidence in EU institutions is therefore potentially indirectly linked to indicators in most themes.

### Potential linkages



### Policy coherence



## Infringement cases

**Definition:** The indicator measures the **total number of new actions for failure of a Member State to fulfil its obligations brought in front of the Court of Justice**. It covers actions under Articles 93, 169, 170, 171 and 225 of the EC Treaty (now Articles 88 EC, 226 EC, 227 EC, 228 EC and 298 EC), Articles 141 EA, 142 EA and 143 EA and Article 88 CS. The referral to the Court is the last stage in the infringement procedure after the letter of formal notice and the reasoned opinion.



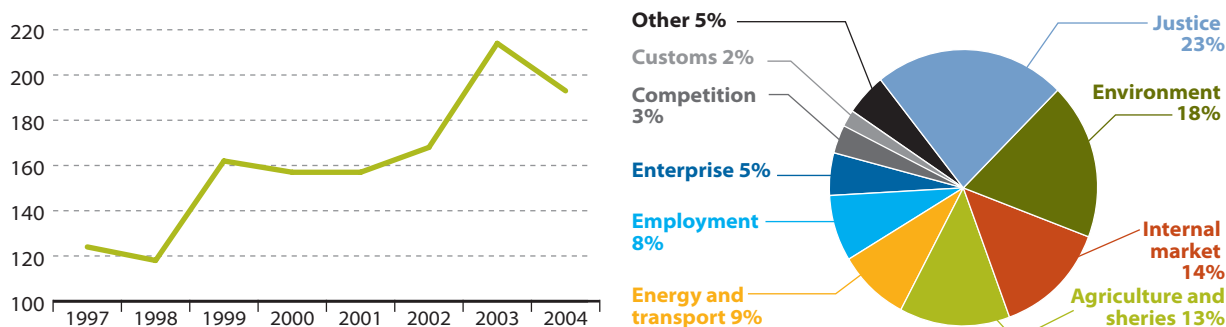
The breakdown by policy area of the number of actions for failure of a Member State to fulfil its obligations is not published by the Court of Justice. The only available breakdown concerns the number of direct actions, which includes the actions for failure to fulfil obligations (by far the largest group with 88 % of actions in 2004), for annulment (11 % in 2004), for failure to act, for damages or on arbitration clauses.

It should also be added that infringement covers many different types of case, including not only the failures to transpose the EU law but also, for instance, the failure to notify or the lack of conformity of the national implementing measures or technical norms specified by the law.

### Indicator relevance

The indicator provides a measurement of the implementation of Community law at national level, and gives some insight into areas which cause difficulties to Member States.

Figure 9.2. Number of new infringement cases (EU-15), total and by policy area (2004)



Source: Court of Justice of the European Communities.

### Analysis

The number of new infringement cases brought in front of the Court of Justice of the European Communities has almost doubled between 1998 and 2003, going from 118 to 214 cases. The decrease to 193 cases in 2004 does not alter the trend significantly, and the new Member States are not yet included in this indicator. The breakdown of actions for failure of a Member State to fulfil obligations shows a predominance of actions concerning justice and the implementation of Community law (23.3 %), the environment (18.3 %), the internal market (13.7 %) and agriculture and fisheries policy (13.2 %), which altogether account for almost 70 % of all actions.

### Potential linkages

The number of infringement cases reflects the failure to implement commonly agreed policy measures. Its breakdown by policy area could therefore give an indication of progress in other themes of sustainable development. The increase in the transposition of Community law is likely to reduce the number of infringement cases.



Policy coherence



## Transposition of Community law



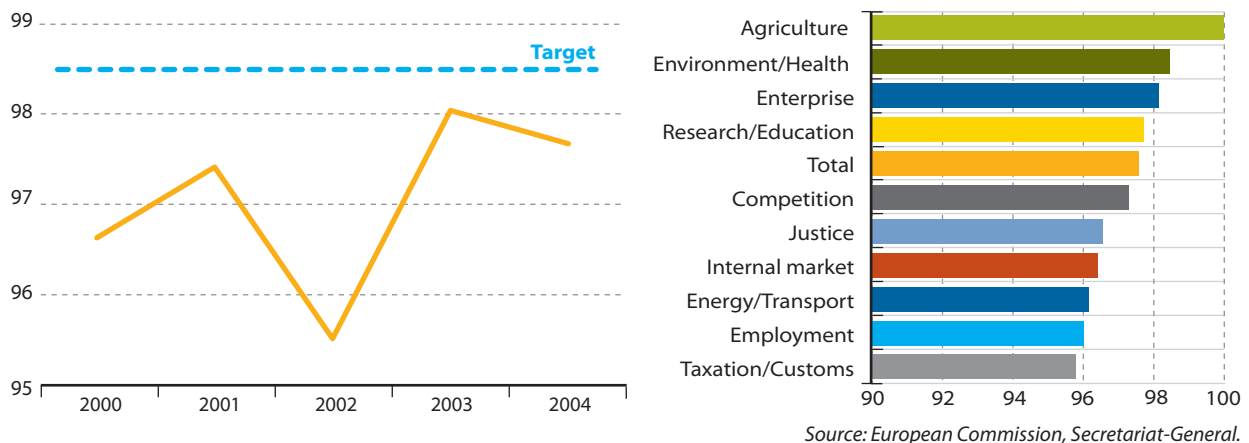
**Definition:** The indicator looks at the situation relating to the notification by Member States to the European Commission of the national measures for the implementation of directives in all sectors. The indicator measures the **percentage of directives for which measures of implementation have been notified among the total number of directives applicable** on the reference date. Applicable directives are all directives in force (not repealed) where the transition phase has expired and which require implementation in the Member States' internal legal order (within a deadline or prior to the reference date) irrespective of the fact that they have been implemented by one or more Member States.

The indicator measures the status in the notification by Member States of measures for the effective implementation of Community law. 'Late transposition, bad transposition and weak enforcement contribute to the public impression of a Union which is not delivering'<sup>118</sup>. Therefore the indicator can be considered as a measure of policy coherence between the European Union and its Member States.

### Indicator relevance

<sup>118</sup> 'European governance: a White Paper', COM(2001) 428.

**Figure 9.3. Transposition of Community law (%): (a) over time and (b) in 2004 (EU-25)**



Source: European Commission, Secretariat-General.

There is a break in the time-series in 2004 as for the first time the data concerning the 10 new Member States were included in the indicator calculation. The overall effect is to reduce slightly the EU average as those countries are in general still below this average despite huge efforts made over the last years to catch up in the implementation of Community law. Nevertheless, the trend between 2000 and 2004 remains largely positive as the indicator in total has grown up from 96.6 to 97.7 %, although still behind the target set in 2001 by the Council at 98.5 %. This rise can be observed in all sectors except taxation and customs, justice and home affairs, and competition. A large discrepancy in the quantitative importance of the various sectors should also be noted as environment, health and consumer protection (45 %) and enterprises (24 %) represent together more than two thirds of the whole set of directives.

### Analysis

The level of transposition of Community law reflects the delay or the failure to introduce in the national legal order commonly agreed policy measures. Its breakdown by policy area could therefore give an indication of progress in other themes of sustainable development, although it is unclear to what extent the different directives contribute to sustainable development. The increase in the transposition of Community law is likely to reduce the number of infringement cases.

### Potential linkages





### Public participation



## Voter turnout in national and EU parliamentary elections

**Definition:** These two indicators measure the **percentage of the population who cast a vote** (or ‘turnout’) **in the total population entitled to vote**, either at national or EU parliamentary elections. The turnout includes those who cast blank or invalid votes. In Belgium, Luxembourg and Greece, voting is compulsory. In Italy, voting is a civic obligation (no penalty).



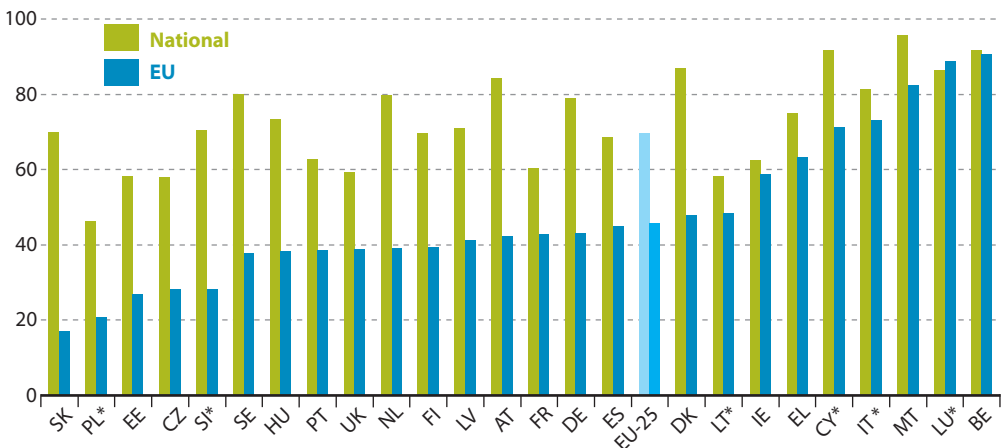
The two indicators are not fully comparable as they refer to different dates of elections and to different populations of reference. Nevertheless, the magnitude of the discrepancies they illustrate tends to call for a comparison between both, regardless of methodological shortcomings.

### Indicator relevance

Both indicators reflect one aspect of public participation in public affairs at national and EU level. They are less relevant for countries where voting is compulsory, but their aggregation at EU level gives a clear indication of the trends. The gap between voter turnout in national and EU elections gives an indication of the lower participation in EU affairs. The disaffection with the political process measured by declining turnouts is also known as the ‘democratic deficit’.

**Figure 9.4.**  
Voter turnout in national (last year available <sup>119</sup>) and EU (2004) parliamentary elections (%)

Source: International Institute for Democracy and Electoral Assistance and European Parliament.



NB: the EU-25 figure for national elections is a Eurostat estimate.

### Analysis

Although decreasing in most countries, the voter turnout in national parliamentary elections has remained well above 50 % in all countries except Poland. Eurostat’s current estimate about an EU-25 turnout in the last national elections is slightly below 70 %. As a comparison, the turnout in the last EU parliamentary elections was below 50 % (45.7 % in the EU-25 and 49.1 % in the EU-15). The discrepancy between the two turnouts exceeds 20 % in a majority of countries, showing a lack of involvement and probably some disinterest for European matters. Obviously this analysis does not apply for countries where voting is compulsory, where voter turnout in the two types of elections is similar.

<sup>119</sup> Data for national elections refer to the last year where national parliamentary elections were held. For most countries, this year is located between 2000 and 2004. For countries marked with an asterisk, the data refer to a year prior to 2000 (last year available).

### Potential linkages

The linkages are similar to those of the headline indicator. An increase of the confidence in the European Parliament should have a positive effect on voter turnout in European elections.



Public participation



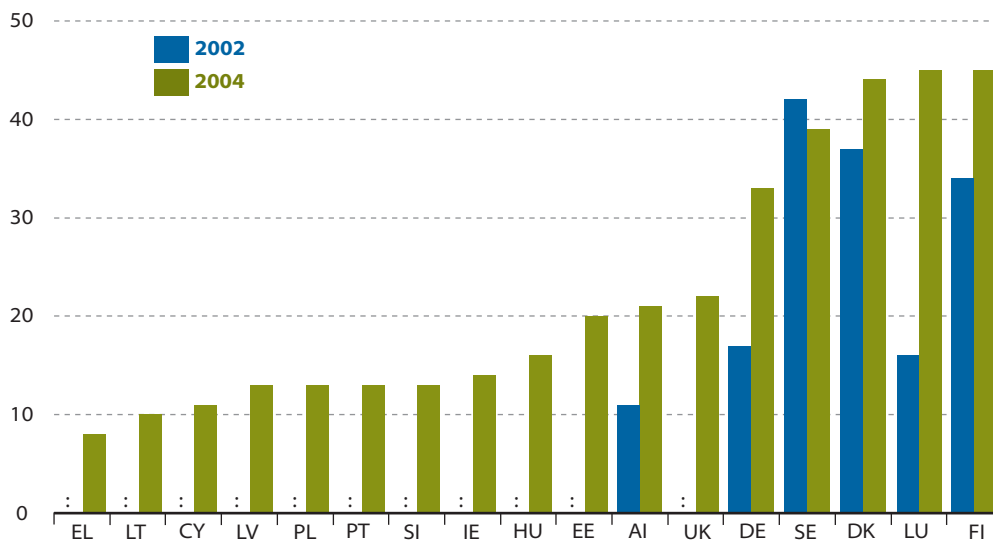
## E-government usage by individuals



**Definition:** The indicator measures the **percentage of individuals aged 16 to 74 who have used the internet, in the last three months, for interaction with public authorities** (i.e. having used the internet for one or more of the following activities: obtaining information from public authorities' websites, downloading official forms, sending filled in forms).

In order to improve openness of the public administrations and participation of the general public, there is a need to make information as accessible as possible. This was acknowledged by the Lisbon European Council in 2000, who concluded that 'Real efforts must be made by public administrations at all levels to exploit new technologies to make information as accessible as possible'. This indicator is intended to measure the accessibility by internet of certain services to citizens. The increase in the usage of e-government is supposed to signal a de facto increased openness of public administrations contributing to a stronger participation of the general public.

### Indicator relevance



**Figure 9.5.**  
E-government usage by individuals in 2004 (%)

Source: Eurostat.

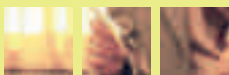
The use of e-government by citizens has been growing rather rapidly since this information started to be collected in 2002. There is no EU average as this information does not exist yet in eight Member States. The indicator shows great disparities among Member States, from 8 % in Greece to 45 % in Luxembourg or Finland. Nevertheless, the indicator is likely to be highly correlated with the overall access rate to the internet among the same population.

### Analysis

The indicator is very difficult to interpret in terms of sustainable development as nothing is known about the administrative or policy areas in which the citizens use e-government.

E-government usage by individuals could contribute to a higher voter turnout in national and EU parliamentary elections, and an increase in participation to policy-making, which in the long run could result in higher public confidence in national governments and EU institutions. Research and development may increase e-government usage through better technology and higher speed connections.

### Potential linkages



## Methodological notes

### Citizens' confidence in EU institutions

The level of citizens' confidence in each EU institution (European Parliament, European Commission and Council of Ministers of the European Union) is expressed as the share of positive (people who declare that they 'tend to trust') opinions about this institution.

The survey used is the standard Eurobarometer, established in 1973. Each survey consists of approximately 1 000 face-to-face interviews per Member State (except Germany: 2 000, Luxembourg: 600, United Kingdom: 1 300 including 300 in Northern Ireland). Reports are published twice yearly.

The surveys are conducted by national poll institutes and the INRA-Europe International Research Associates — European network coordination office.

### Infringement cases

The information concerning the 'number of infringement cases brought in front of the Court of Justice' is extracted from the administrative records of the European Court of Justice (annual reports).

The total number of infringement cases — and its breakdown by policy area — covers all new cases. It consists mainly of actions for failure of a Member State to fulfil its obligations brought in front of the Court of Justice and covers actions under Articles 169, 170, 171 and 225 of the EC Treaty (now Articles 226 EC, 227 EC, 228 EC and 298 EC), Articles 141 EA, 142 EA and 143 EA and Article 88 CS. The other actions are labelled: actions for annulment (about 18 % of total cases in 2003), actions for failure to act, actions for damages and actions on arbitration clauses (about 5 % in 2003).

The number of new infringement cases is not available as a breakdown by Member State. For this breakdown, only the number of actions for failure to fulfil obligations is available.

### Transposition of Community law

The information concerning the 'transposition of Community law' was extracted from the annual reports from the Commission on the monitoring of the application of Community law.

The indicator looks at the situation of the notification by Member States of the total number of national measures implementing directives. The percentage of implemented directives is the ratio: directives for which measures of implementation have been notified by Member States, divided by directives applicable on the reference date by Member States.

### Voter turnout in national and EU parliamentary elections

The information concerning the 'voter turnout in national parliamentary elections' was extracted from the website of the International Institute for Democracy and Electoral Assistance ([www.idea.int](http://www.idea.int)). The information concerning the 'voter turnout in EU parliamentary elections' was extracted from the European Parliament website ([www.europarl.eu.int](http://www.europarl.eu.int)).

The indicator is defined as the level of participation of voters in European Parliamentary elections. The number of those who cast a vote or turn out at an election includes those who cast blank or invalid votes.

### E-government usage by individuals

The indicator covers the percentage of individuals (aged 16–74) using the internet to interact with public authorities (i.e. having used the internet for one or more of the following activities; 'obtaining information from public authorities' websites', 'downloading official forms', 'sending filled in forms').

The Community survey on ICT usage in households and by individuals carried out once a year is currently used as a source.



# 10.

## Global partnership



### Policy background

The interdependencies between countries have considerably increased over the last two decades. The EU acknowledged, together with other nations, a global responsibility and agreed on concerted actions for global sustainable development at the UN Millennium Summit in 2000. Although it recognises the need to take a global perspective, the sustainable development strategy proposed in the Commission's communication to the Gothenburg Council was very much an internal strategy. The Gothenburg European Council underlined, in its conclusions, that the external dimension needed to be further developed, particularly in the context of the Johannesburg World Summit on Sustainable Development. In 2002, the Commission adopted a second communication focusing on the global dimension of sustainable development<sup>120</sup>, emphasising that the external dimension should be an integral part of the EU sustainable development strategy. The communication focuses on a number of priority issues, including: harnessing globalisation, trade for sustainable development; fighting poverty and promoting social development; sustainable management of natural resources; improving the coherence of European Union policies; and better governance.

Later in 2002, at Johannesburg, the Heads of State or Government expressed their commitment to the plan of implementation for Agenda 21, integrating the three pillars of sustainable development — economic development, social development and environmental protec-

<sup>120</sup> 'Towards a global partnership for sustainable development', COM(2002) 82.



<sup>121</sup> Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August to 4 September 2002 (United Nations publication, Sales No E.03.II.A.1 and corrigendum). Resolution 2. Annex. Chapter I: Resolutions adopted by the summit, Resolution 1, Resolution 2 and Annexes.

<sup>122</sup> For the purpose of this chapter, 'developing country' means a country on Part I of the DAC list of aid recipients of the Development Assistance Committee of the OECD.





tion — at local, national, regional and global levels. The Johannesburg political declaration and the plan of implementation <sup>121</sup> address major issues that humanity is facing, such as poverty, food security, desertification, environmental degradation, loss of biodiversity, and climate change, which are aggravated by a predicted increase of the world's population from today's six billion people to nine billion by 2050. Furthermore, the outcome of the International Conference on Financing for Development held in Monterrey in March 2002 ('The Monterrey consensus') recognised that achieving the internationally agreed goals demands a new partnership between developed and developing countries, including efforts to expand trade opportunities for developing countries, increased official development assistance (ODA), and debt relief. Although the delivery of ODA and private investments is not a synonym of sustainable development, they both contribute to it and can be considered as a necessary condition for sustainable development.










## Main changes

**Table 10.1.**  
**Evaluation of changes in the global partnership theme <sup>122</sup> (from 2000)**



**LEGEND:**

-  favourable change
-  no or little change
-  unfavourable change
-  insufficient data to evaluate change

	EU-25	EU-15
<b>Official Development Assistance</b>	:	
<b>Financing for sustainable development</b>		
ODA per capita	:	
Bilateral ODA	:	
Financing for development	:	
<b>Globalisation of trade</b>		
EU imports from developing countries		
Fair-trade	:	
<b>Resource management</b>		
CO <sub>2</sub> emissions in EU and developing countries		

**The EU-15 is well on track to reach its target for ODA by 2006 but remains shy of the UN target**

<sup>123</sup> *A world player — The European Union's external relations*, European Commission, 2004.

The indicators in global partnership show positive changes in many policy areas. However, global changes tend to mask significant disparities between sectors and regions. Progress is also less impressive when measured against EU or UN targets.

The contributions of ODA/GNI vary substantially between Member States. While some countries are well below the EU 2006 target of 0.39 %, a few are above the UN target of 0.7 %. Although the EU-15 is on track to achieve the intermediary 2006 target, significant further efforts will be needed to achieve the 2010 target of 0.55%, and the 2015 target of 0.7 %. The EU is still the world's biggest aid donor, contributing 56 % of the ODA from OECD countries in 2002, compared with 20 % for the United States and 14 % for Japan <sup>123</sup>. Bilateral ODA by sector of destination is predominantly orientated towards social infrastructure projects (33 % in 2003), and towards actions relating to debt such as forgiveness, swaps, buy-backs, rescheduling and refinancing. Concretely, this translates into each European citizen having paid an € 86 contribution towards ODA in 2003, versus € 61 some 13 years previously.



### Box 10.1: European Union objectives on global partnership

- ‘Communication towards a global partnership for sustainable development’, COM(2002) 82
  - Ensure that globalisation contributes to sustainable development.
  - Ensure adequate financing to attain the international development targets and the MDGs.
  - Ensure that current trends in the loss of environmental resources are effectively reversed at national and global levels by 2015. Develop sectoral and intermediate objectives in some key sectors — water, land and soil, energy and biodiversity.
- European Council in Barcelona (2002)
  - Integrate developing countries into the world economic system notably through implementation of the Doha development agenda and ensure that trade policies/investment flows contribute to sustainable development.
  - Reach UN goal of 0.7 % for ODA/GNI: Member States lagging behind this goal to increase their ODA in the next four years within their respective budget allocation processes, whilst the other Member States renew their efforts to remain at or above the target of 0.7 % of ODA, so that collectively a EU average of 0.39 % is reached by 2006 and each Member State contributes at least 0.33 % ODA/GNI by 2006 (Monterrey, 2002).
- Sixth environmental action programme (Decision No 1600/2002/EC)
  - Ensure that trade and environmental policy measures are mutually supportive.
  - The pursuit of ambitious environmental policies at the international level paying particular attention to the carrying capacity of the global environment. The further promotion of sustainable consumption and production patterns at the international level.

However, total financing for development, including ODA, other official flows and private flows, fell from a peak at € 102.4 billion in 1999 to a historical low at € 38.7 billion in 2002 due to a dramatic cut of almost 100 % in private flows during the same period. There are some signs of an improvement in 2003 thanks to a slight recovery of the European economy.

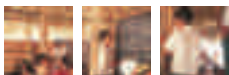
**Europe’s financing for development is suffering from the slowdown of the economy**

The EU is the world’s biggest trader, accounting for 20 % of global imports and exports, and represents the largest market for products from the developing countries. The increase of imports from China and to a lesser extent from India tends to mask the lack of progress from other regions, notably sub-Saharan Africa. The share of imports from the least-developed countries still remains well below 5 % of EU imports from DAC countries and is even showing signs of falling to a level of about 3.5 %. A rapid growth in the commercialisation of fair trade labelled products is observed, but their market share remains very low.

**Imports from developing countries are increasing ...**

Although EU imports from developing countries can contribute to their development, it can also have a negative impact in terms of natural resource management. The steady increase of imports of material from developing countries is contributing to the exhaustion of non-renewable resources and tends to export environmental pressures and degradation outside EU borders. The level of CO<sub>2</sub> emissions per capita illustrates the dramatic inequality of resources’ use between EU and developing countries.

**... creating an EU-driven pressure on developing countries’ resources**



## Rationale for the selection of indicators

The indicators selected in this theme are based on policy measures taken at European level as well as commitments made at world level. At European level, they refer to measures included in the Commission's communication, 'Towards a global partnership for sustainable development', the sixth environment action programme and the conclusions of the European Council held in Barcelona (Box 10.1). At global level, they mainly refer to the commitments made at the World Summit on Sustainable Development in Johannesburg in 2002, and to the millennium development goals (MDGs), adopted at the UN Millennium Summit in 2000 (Box 10.2).

### Box 10.2: The millennium development goals for the year 2015

- Goal 1: Eradicate extreme poverty and hunger
  - Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than USD 1 a day
  - Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger
- Goal 2: Achieve universal primary education
  - Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
- Goal 3: Promote gender equality and empower women
  - Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015
- Goal 4: Reduce child mortality
  - Target 5: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate
- Goal 5: Improve maternal health
  - Target 6: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio
- Goal 6: Combat HIV/AIDS, malaria and other diseases
  - Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS
  - Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases
- Goal 7: Ensure environmental sustainability
  - Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
  - Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and the proportion of people without access to basic sanitation
  - Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers
- Goal 8: Develop a global partnership for development (see bilateral ODA indicator)
  - Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system (includes a commitment to good governance, development, and poverty reduction — both nationally and internationally)
  - Target 13: Address the special needs of the least developed countries (includes: tariff and quota free access for least developed countries' exports; enhanced programme of debt relief for HIPC and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction)
  - Target 14: Address the special needs of landlocked countries and small island developing States (through the programme of action for the sustainable development of small island developing States and the outcome of the 22nd special session of the General Assembly)
  - Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term
  - Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth
  - Target 17: In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries
  - Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications





The headline (level I) indicator, official development assistance, besides describing the fulfilment of the ODA commitments of the EU countries, provides an indication of the level of financial resources earmarked by EU governments for the attainment of sustainable development in less-favoured countries.

The remaining (level II and III) indicators are arranged in three sub-themes:

- **financing for sustainable development:** the three selected indicators, bilateral ODA, total EU financing for development and ODA per capita, illustrate more concretely the way Europe is contributing to the development of Development Assistance Committee (DAC) countries;
- **globalisation of trade:** EU trade policy aims to contribute to a more equitable integration of developing countries into the international trading system — the selected indicators provide an indication on the market share taken by developing countries as trading partners with the EU, and on the trade of Fairtrade labelled products;
- **resource management:** the indicator on EU imports of materials from developing countries monitors the potential consequent pressure on natural resources in these countries. The level of CO<sub>2</sub> emissions per capita illustrates the inequality of resource use between EU and developing countries. It should be completed later on by an indicator on the contribution of the clean development mechanism to greenhouse gas emissions reductions in developing countries.

#### Further reading on global partnership in Europe

'Communication from the European Commission: Corporate social responsibility: A business contribution to sustainable development', COM(2002) 347

'Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The social dimension of globalisation — the EU's policy contribution on extending the benefits to all', COM(2004) 383

*European Commission Report on Millennium Development Goals 2000–04*, European Commission, 2004

*Efforts and policies of the members of the Development Assistance Committee, development cooperation*, 2004 report, OECD

*European Union development policy*, Issues paper, European Commission, Development DG, 7 January 2005

'Communication from the European Commission to the Council, the European Parliament and the European Economic and Social Committee: Policy coherence for development: accelerating progress towards attaining the millennium development goals', COM(2005) 134



Headline Indicator



## Official development assistance

**Definition:** The indicator is defined as **net disbursements for official development assistance** to the DAC countries as a **percentage of gross national income (GNI)** at market prices.

ODA consists of grants or loans — bilateral or multilateral — that are undertaken by the official sector with promotion of economic development and welfare in the recipient countries as the main objective.

DAC countries refer to ‘developing countries and territories’ on Part I of the OECD DAC list of aid recipients. GNI at market prices equals GDP minus primary income payable by resident units to non-resident units, plus primary income receivable by resident units from the rest of the world.



### Indicator relevance

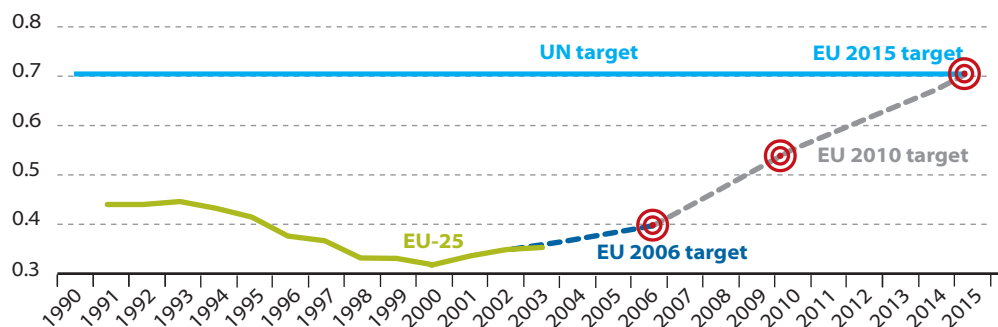
The 2002 Commission communication, ‘Towards a global partnership for sustainable development’, states as one of its priority objectives the need to ‘ensure adequate financing to attain the international development targets and the millennium development goals (MDGs)’.

The 2002 Barcelona Presidency conclusions recalled the commitment by each Member State to generate sufficient financial resources to achieve the MDGs and, in this context, to reach the UN goal of 0.7 % for ODA. The Member States that had not yet reached the 0.7 % target committed themselves — as a first significant step — to increase their ODA volume within their respective budget allocation processes to at least 0.33 % of GNI by 2006. These individual commitments were coupled with a collective commitment to reach an EU average of 0.39 % by 2006.

The principal aim of the European Union’s development policy is poverty alleviation, with a view to its eventual eradication. Inequality in income between the developed world and the developing countries is a major social and economic concern. The EU is a major player in the development sphere. It is the source of approximately half of the public aid effort worldwide and is the main trading partner for many developing countries. Its development activities cover all regions of the world.

**Figure 10.1.**  
EU-15 official development assistance (% of gross national income)

Source: OECD.

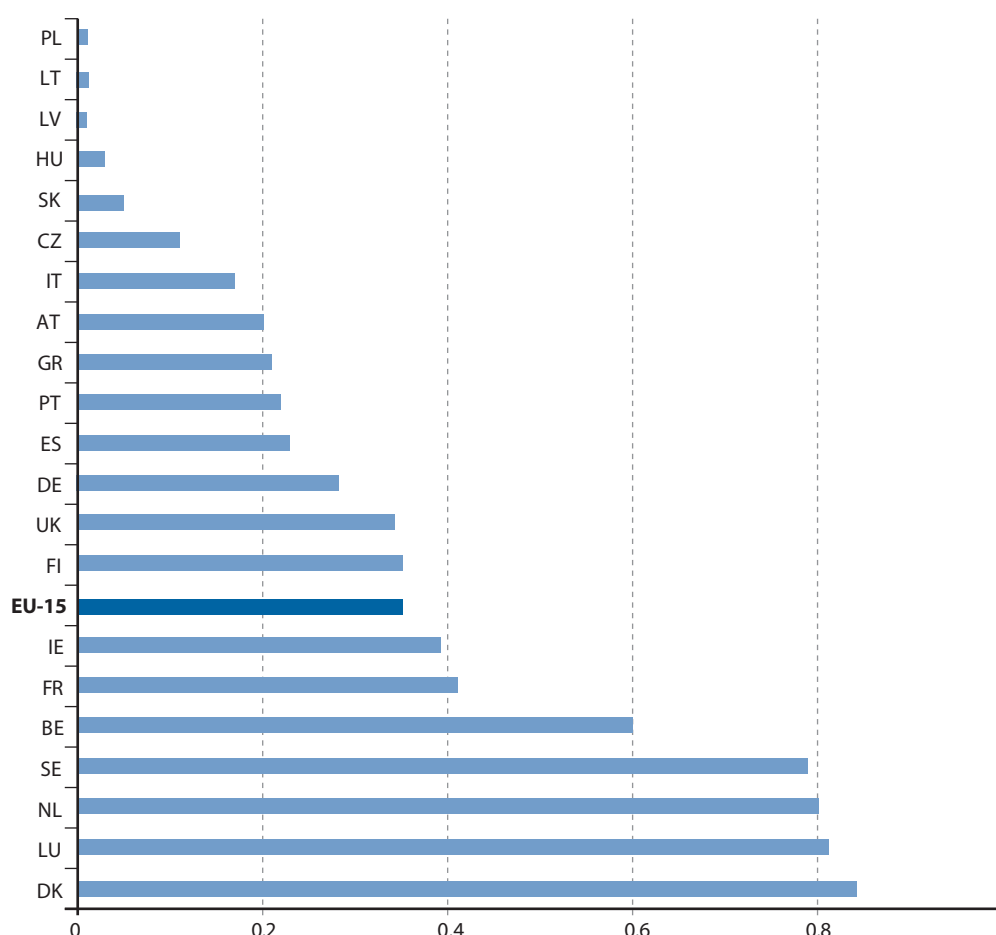




## Analysis

While the monetary volume (at market prices) of EU ODA increased from € 22.2 billion to 32.8 billion between 1990 and 2003, the contribution in terms of net ODA as a percentage of gross national income decreased from 0.44 to 0.35 % over the same period. From 2000 to 2003, ODA increased by 6.2 % per year on average. When expressed as a percentage of gross national income, the increase for the same period is 0.03 percentage points, from 0.32 to 0.35 %.

The increasing trend observed over the period 2000–03 puts the EU on track to achieving its collective commitment to reach an EU average of 0.39 % GNI by 2006. The national targets of a budget allocation of at least 0.33 % of GNI by 2006 are already achieved by nine countries. However, a few countries are still lagging substantially behind. In 2003, the percentage of GNI donated to developing countries varied from 0.17 % for Italy to 0.84 % for Denmark. Except for France, the largest Member States, while remaining the largest absolute donors, commit a proportion of ODA in their GNI less than the EU-15 average. For example, in 2003, the expenditure of Germany and the United Kingdom amounted to 0.28 % and 0.34 % of GNI respectively. The 2003 result represents only half of the UN target of 0.7 %, to be reached by 2015. The UN target is achieved by only four countries (Denmark, Luxembourg, the Netherlands and Sweden).



**Figure 10.2.**  
EU-25 official development assistance in 2003 (% of gross national income)

Source: OECD.

NB: Estonia, Cyprus, Malta and Slovenia are not included.

There is a consensus that, if the millennium goals are to be achieved, there has to be a significant increase in funding, and particularly in the amount of ODA, beyond the commitments made at Monterrey. Following a proposal by the European Commission <sup>124</sup>, the General

<sup>124</sup> Policy coherence for development: Accelerating progress towards attaining the Millennium Development Goals, COM(2005) 134.



Affairs Council of 25 May 2005 decided to undertake a new collective objective consisting in achieving 0.56% of their GNI in ODA by 2010, with a view to achieving the overall target of 0.7% of the GNI by 2015.

### **Potential linkages**

Official development assistance is one of the sources of funding for sustainable development in the rest of the world, together with foreign direct investments (FDI) and other official flows (OOF). There is a strong positive link with economic growth, since it is more difficult to set aside resources for assistance when growth is weak.

ODA also contributes to tackle global issues that have a more or less direct impact at EU level. For example, if ODA contributes to better infrastructure and socioeconomic conditions, this may reduce migration from developing countries. On the other hand, if ODA contributes to investment in cleaner technologies, it may influence greenhouse gas emissions from developing countries, with consequences for global climate change. There is also a link with good governance, since fulfilling the EU commitment towards more generous ODA would increase policy coherence.



Financing for sustainable development



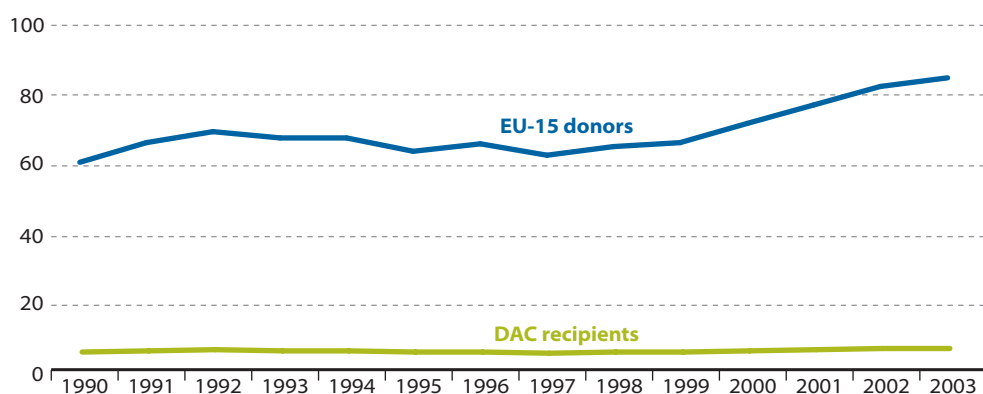
## ODA per capita



**Definition:** The indicator, both in EU donors and in recipient countries, is defined as **EU-15 net disbursements for ODA** at market prices to the countries of Part I of the DAC lists of recipients. It is calculated either **per EU-15 inhabitant** or **per recipient country inhabitant**.

The European Union is committed to achieving the UN goal of 0.7 % ODA per GNI, in order to achieve the major objective of EU aid which is to reduce overall poverty. A pragmatic illustration of the level of ODA is obtained in measuring the contribution by EU-15 citizen and comparing it with the corresponding amount of money received by each inhabitant of DAC countries. This provides a more concrete overview of the real evolution of European contribution to development aid than by looking at total ODA disbursements.

### Indicator relevance



**Figure 10.3.**  
ODA per capita  
(euro per capita)

Source: OECD.

With the 2003 peak for ODA, each European citizen paid on average the historically high contribution to ODA of € 86, compared with € 61 some 13 years previously (both at market prices). This represents an average annual growth rate of 5.8 % since 2000 when it was only 1.8 % between 1990 and 2000. As for the recipient countries, this translated into receipts amounting to respectively € 5.40 and € 6.60 per inhabitant in 1990 and 2003, with an average annual growth rate of 6.1 % since 2000.

### Analysis

As an important share of total ODA (more than 26 % in 2003) cannot be allocated to a precise recipient country or group of countries, the breakdown of ODA per capita is not calculated by income group. An indication about this allocation is, however, given with the breakdown of total ODA per group of countries and its comparison with the share of each region in the total population (see 'ODA by income group').

See the headline indicator.

### Potential linkages



### Financing for sustainable development



## Bilateral ODA

**Definition:** The indicator is defined as total **official development assistance commitments made either by bilateral aid or by regional banks**. It is calculated at market prices and covers aid from the EU-15 countries to the countries mentioned in Part I of the DAC list.

Bilateral transactions are undertaken directly by a donor country with an aid recipient country. They also include transactions with national and international non-governmental organisations (NGOs) active in development and other internal development-related transactions such as interest subsidies, spending on promotion of development awareness, debt reorganisation and administrative costs.

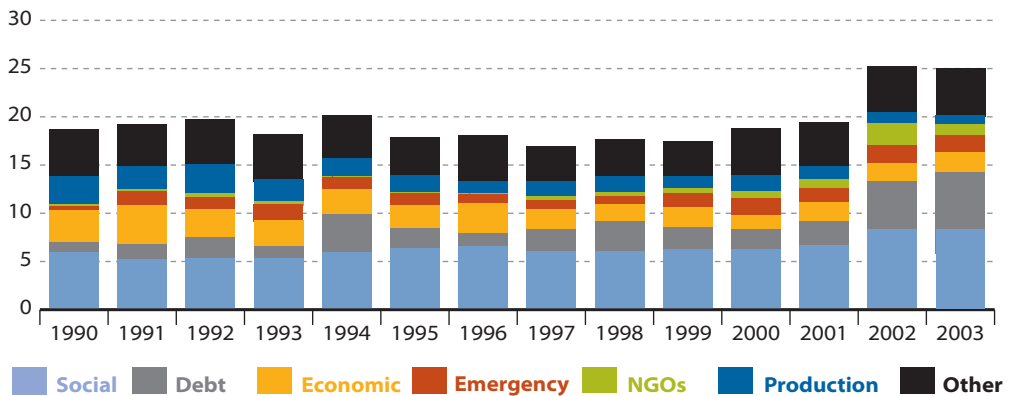


### Indicator relevance

The indicator describes the fulfilment of ODA commitments by EU countries and provides information on the allocation of ODA in different aid categories with different opportunities to strive for poverty alleviation and welfare development. It is important to track movements of aid by sector of destination to assess whether aid is allocated to the most needed sectors, in conformity with the millennium development goals (MDGs) set for the year 2015 and with EU political commitments.

**Figure 10.4.**  
Bilateral (and regional banks) ODA by category (billion euro)

Source: OECD.



### Analysis

Total bilateral commitments (including commitments from regional banks) reached a peak in 2002 before remaining almost stable in 2003, at € 25.1 billion, up by 10.0 % in annual average since 2000. Since 1990, the overall increase has been on average of 2.2 %, following several ups and downs over the decade.

Commitments for social infrastructure and services constitute the first post with 33.2 % of the total. Of these (see further breakdown on the SDI website), commitments for health services have significantly increased by 36.5 % between 2000 and 2003, in relation to the combat against HIV/AIDS (MDG No 6). The promotion of education (MDG No 2) has resulted in aid to education services growing by 34.1 %. Actions relating to debt (MDG No 8, target 15), the second major item at 23.6 % of the total in 2003, has increased almost threefold. The third main item is economic infrastructure and services (around 8 % of the total), which have declined over the 1990s, but have increased by 39 % since 2000. In spite of these signs of progress, some areas like water and sanitation (MDG No 7, target 10) lag behind (see the SDI website).

### Potential linkages

See headline indicator.



Financing for sustainable development

## ODA by income group



**Definition:** The indicator is defined as **net bilateral and imputed multilateral disbursements** at market prices for official development assistance to countries mentioned in Part I of the DAC list. See the ‘Methodological notes’ for a description of the groups of countries.

Bilateral transactions are undertaken directly by a donor country with an aid recipient country. They also include transactions with national and international non-governmental organisations (NGOs) active in development and other internal development-related transactions such as interest subsidies, spending on promotion of development awareness, debt reorganisation and administrative costs.

Multilateral transactions refer to contributions by Member States to international institutions with governmental membership which conduct all or a significant part of their activities in favour of development and aid recipient countries. A contribution to such an agency is deemed to be multilateral if it is pooled with other contributions and disbursed at the discretion of the agency.

Imputations are made by the OECD on the basis of annual reports received from these international institutions, but it is not possible to allocate the total amount of multilateral ODA (as well as bilateral ODA) to a specific country or group of countries. In 2003, for instance, a total of € 8.6 billion (26.3 %) of total net ODA could not be allocated to precise countries.

The indicator describes the fulfilment of EU ODA commitments and provides information on the allocation of ODA by type of country. It is important to track movements of aid by country of destination to check whether aid is allocated to the countries where assistance is the most urgent, in conformity with EU political commitments.

### Indicator relevance

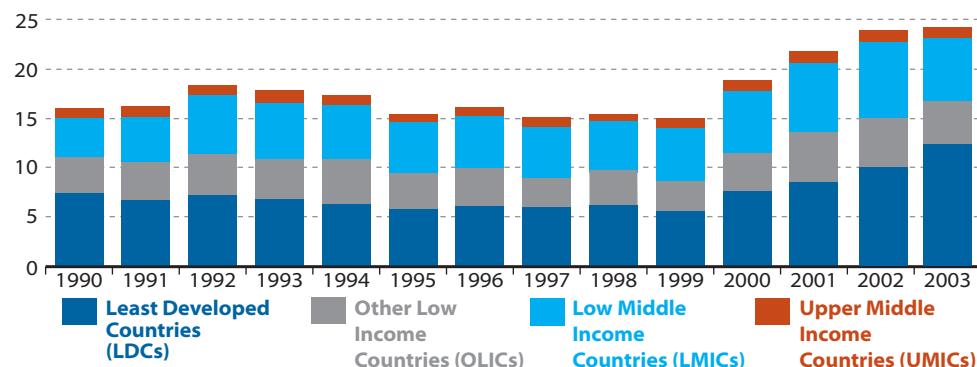


Figure 10.5. Bilateral and imputed multilateral ODA by income group (billion euro)

Source: OECD.

The allocation of EU ODA shows a clear predominance of aid to the least-developed countries (LDCs) which represented 51.2 % of the total in 2003 when the population of these countries represent only 14.1 % of the total. The next groups in order of importance are the low-middle income countries (with 26.3 % of the total) and the other low income countries (with 18.3 % of the total), although they account for respectively 40.3 % and 36.9 % of the total population of the DAC countries.

### Analysis

The LMIC and OLIC groups, however, include high population countries such as China, India and Indonesia. Their aid receipts, while large in absolute financial terms, are relatively small when compared with their population.

See the headline indicator.

### Potential linkages



### Financing for sustainable development



## Financing for development

**Definition:** The indicator is defined as **EU total financing for development to DAC countries** at market prices and refers to net disbursements of official development assistance, other official flows and private flows (mainly foreign direct investment).



Private flows include private export credits, direct investment and financing to multilateral institutions. OOF are transactions which do not meet the conditions for eligibility as ODA (or official aid), either because they are not primarily aimed at development, or because they have a grant element of less than 25 %.

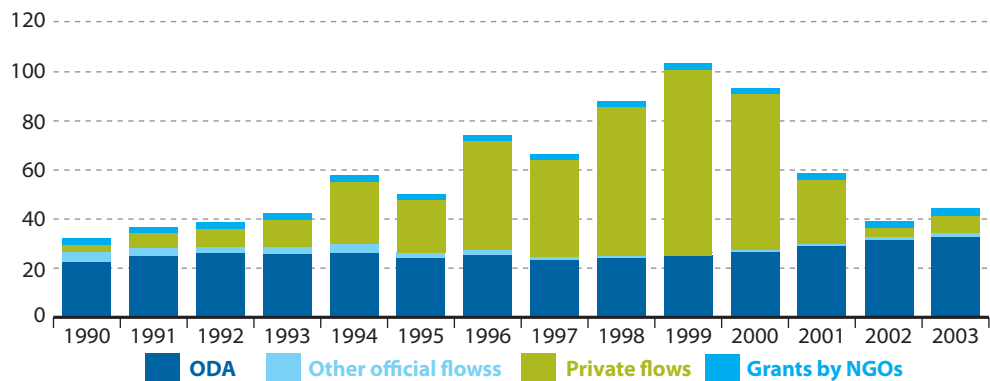
### Indicator relevance

The indicator is a measure of the volume of various kinds of financial inflows to developing countries and presents the most important contributions of different actors (private enterprises, governments and civil society stakeholders) to activities in developing countries. It encompasses the key aspects of the Monterrey consensus, ODA and FDI being the key contributors to development.

ODA refers to projects undertaken by the official sector to eradicate poverty in the recipient countries. FDI includes significant investments by foreign companies of production facilities or ownership stakes taken in the national companies. FDI is a clear indicator of the trend towards globalisation as companies invest all over the world to access markets, technology and talents. FDI often requires a fairly stable political situation, rule of law and respect of human rights (OECD).

**Figure 10.6. Total EU-15 financing for development, by type (billion euro)**

Source: OECD.



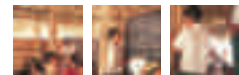
### Analysis

The trends in the various private and official flows can vary considerably from year to year. Total financing for development fell drastically over 2000–02, after a peak at € 102.4 billion in 1999, to € 38.7 billion in 2002 and started to move up again in 2003, to € 43.5 billion. The main component of financing over 1996–2000 was private flows, mainly foreign direct investment, which shrunk to € 0.7 billion in 2002, around one tenth of the 2000 level, to increase again in 2003, to € 8.5 billion. ODA has grown at a relatively regular pace, and now dominates by far, at € 32.8 billion, versus € 27.4 billion in 2000. The FDI peak of the late 1990s is partly due to restored financial solvency of debt-distressed countries, progress with structural reform and the transformation of several countries from planned to market economies. It is expected that this improvement will continue, in particular over 2005 as a consequence of the huge global response to the Indian Ocean tsunami disaster, which is likely to raise both official and private aid considerably.

### Potential linkages

Linkages to total financing for development are likely to be similar to the ones described under the headline indicator. In addition, FDI can lead to an infusion of innovative technologies and new management practices, for example through an increase in corporate social responsibility. The amount of FDI is not unambiguously interpretable in terms of sustainable development.





Globalisation of trade



## EU imports from developing countries



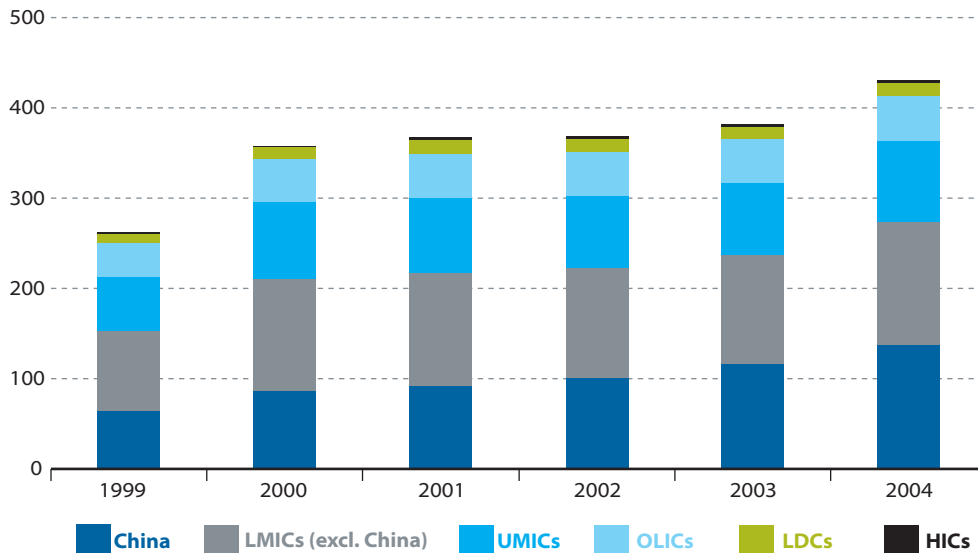
**Definition:** The indicator is defined as the value at market prices of **EU imports from DAC countries** (Part I of DAC list), successively broken down by groups of countries and **by groups of products**. The countries from the DAC list of aid recipients are classified by income groups referring to the World Bank definition (see ‘Methodological notes’ for more details).

Agricultural products, crude materials, energy products and manufactured goods are defined as the products covered by, respectively, sections 0 and 1, sections 2 and 4, section 3, and sections 5 to 8 of the standard international trade classification (SITC) revision 3.

As regards trade policy, the EU has taken important steps to promote the gradual integration of developing countries into the world economy, enhancing their potential for trade and contributing to their economic development. The ‘Everything but arms’ initiative has fully opened the EU market to imports from the least developed countries (LDCs). In the broader context of the World Trade Organisation negotiations, the EU has also supported differential treatment and enhanced trade-related assistance for those countries, in order to take account of their special needs and constraints. The EU imports indicate both the access as well as capacities of developing countries to reach EU markets and to benefit from global trade in their national economies, but this does not guarantee for the use of environmentally and socially sustainable modes of production.

### Indicator relevance

It should be noted that the group of countries making up the DAC group is not homogeneous. China and India, for instance, are members of this group, and strongly influence all aggregates.



**Figure 10.7.**  
EU-25 imports from developing countries by income group (billion euro)

Source: Eurostat.



## Analysis

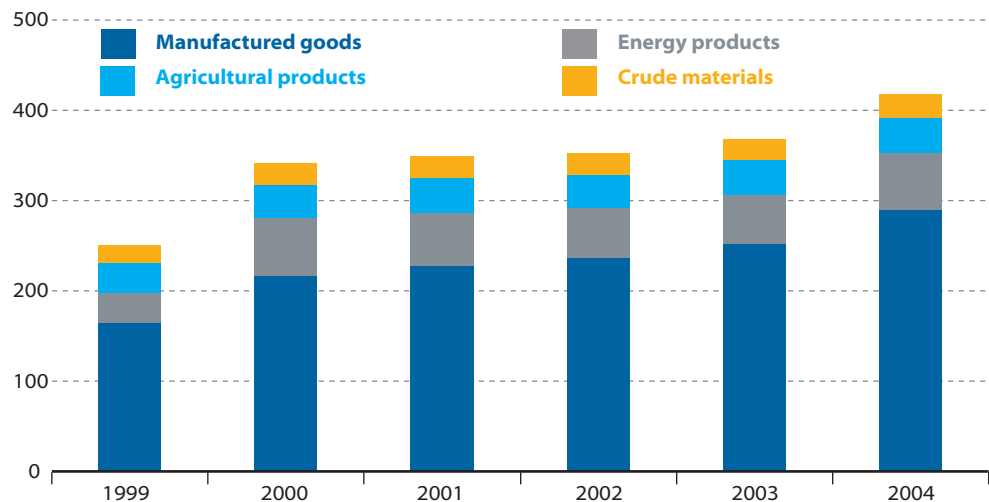
In 2004, the imports from DAC countries amounted to € 427.8 billion, which is about 41 % of total EU-25 imports. Amongst developed countries, the EU is the most important market for developing countries in general and for LDCs in particular <sup>125</sup>.

Between 2000 and 2004, the total value of imports increased by an average annual growth rate of 4.6 %, mainly driven by an average increase of 12.1 % of imports from China. For the LDCs the average annual growth has reached 1.8 % during the same period. It should be underlined again that imports from China account for 32 % of DAC imports. The share of imports from the LDCs remains well below 5 % of EU imports from DAC countries and is even showing signs of regressing at around 3.3 % in 2004.

<sup>125</sup> European Commission report on millennium development goals 2000–04, European Commission, 2004.

**Figure 10.8.**  
EU-25 imports from developing countries by group of products (billion euro)

Source: Eurostat.



If the total value of imports has increased by an average 4.6 % between 2000 and 2004, this is first of all due to the progress in manufactured goods which have increased by an average rate of 7.5 %. The only decrease is observed for energy products (– 0.6 % on average).

The EU imports of agricultural products, which are for most developing countries the main source of revenue, grew by an average 2.5 % between 2000 and 2004. In 2004, the imports from DAC countries amounted to around 68 % of EU total agricultural imports.

## Potential linkages

An increase in imports indicates progress in the further economic integration of third countries but also the degree of EU dependence on third countries' resources, with an impact on CO<sub>2</sub> emissions and other environmental impacts (embodied emissions of imported products, exported to third countries) in both the EU and the developing countries. Depending on the management of woodlands and agricultural land, an increased import of agricultural products can have a positive or negative impact on these resources and on biodiversity in the exporting countries.

Production and consumption patterns are strongly linked to imports through corporate social responsibility concerns and this link should be reflected in domestic material consumption. The impact of increased imports on natural resources is probably indirect, as opposed to the dependency of the transport sector on imported energy, which is having a direct impact on the energy consumption by transport. In good governance, policy coherence and more specifically subsidies could affect the level of imports.



Globalisation of trade



## Fair trade



**Definition:** The indicator is defined as the **volumes in tonnes of Fairtrade labelled products** sold to EU-15 countries, by product group.

Products can only be labelled as ‘Fairtrade’<sup>126</sup> if they meet the fair trade standards set by the Fairtrade Labelling Organizations (FLO) international standards and policy committee for producer groups, traders, processors, wholesalers and retailers. This certification contributes to the development of disadvantaged producers and workers in developing countries. The FLO has established standards to cover the following products: coffee, tea, cocoa, sugar, honey, bananas, fresh fruit and vegetables, dried fruit, fruit juices, rice, wine, nuts and oilseeds, cut flowers, ornamental plants, cotton and sports balls.

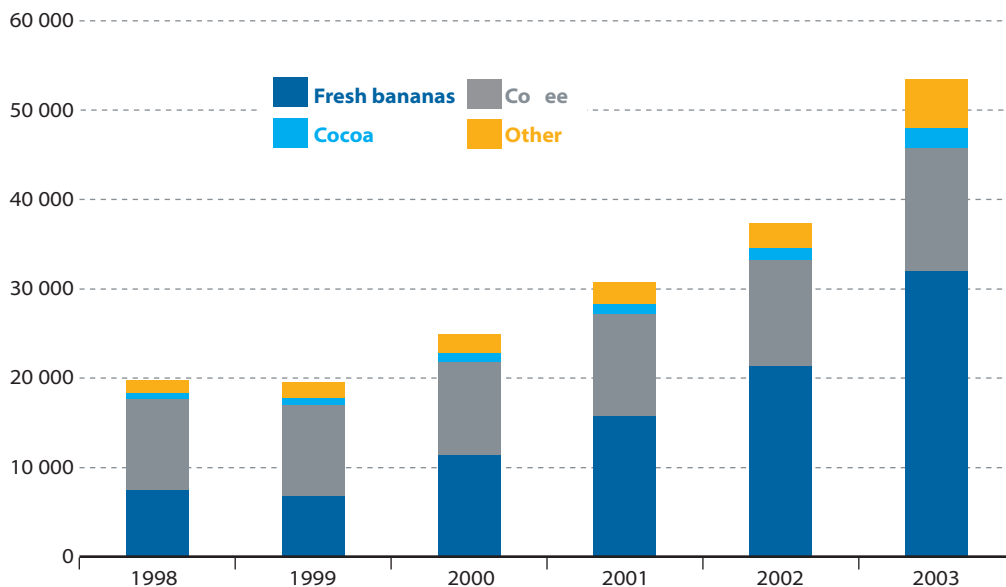
<sup>126</sup> ‘Fairtrade’ is a trademark of the FLO and should not be confused with the broader generic term ‘fair trade’ for which no universally agreed definition exists.

Several EU policy documents emphasise that measures have to be taken to ensure that globalisation contributes to sustainable development. To that end, it is recommended to ensure that the developing countries are integrated equitably into the world economy and to help them reap the benefits of trade and investment liberalisation through complementary policies. Another priority objective is to provide incentives for environmentally and socially sustainable production<sup>127</sup>.

### Indicator relevance

By promoting the use of environmental and social standards, the fair trade movement aims for the highest impact possible on disadvantaged producers and workers in developing countries. Compared with free trade, it attempts to take into account in its pricing policy the full costs associated with production, including environmental and social costs.

<sup>127</sup> ‘Towards a global partnership for sustainable development’, COM(2002) 82.



**Figure 10.9.**  
Sales of selected  
Fairtrade labelled  
products (tonnes)

Source: Fairtrade Labelling Organizations International.

NB: Other includes tea, rice and other fresh fruit and juices.



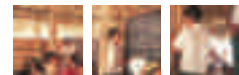
## Analysis

Although the volume of sales of Fairtrade labelled products across the EU-15 has grown on average by 29 % per year between 2000 and 2003, its proportion in total imports or consumption remains very low. The sales grew by 43.2 % in 2003 compared with 2002 figures, confirming the substantial growth for labelled products. The main share is taken by fresh bananas which accounted for 60 % of the sales in 2003, followed by coffee, with 26 % of the sales. The first market for Fairtrade labelled products in the EU-15 is the United Kingdom, which represented about 44 % of EU sales in 2003.

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## Potential linkages

The attention given by the general public to fair trade issues is growing rapidly. When sales of fair trade products rise to a significant level, an increase in sales could potentially affect domestic material consumption, through imports of materials. It could also affect the social cohesion and the preservation of natural resources in developing countries, including biodiversity, through certification schemes, which include standards for social security and environment. Good governance and more particularly policy coherence might influence the trend of sales of Fairtrade labelled goods.



Resource management



## EU imports of materials



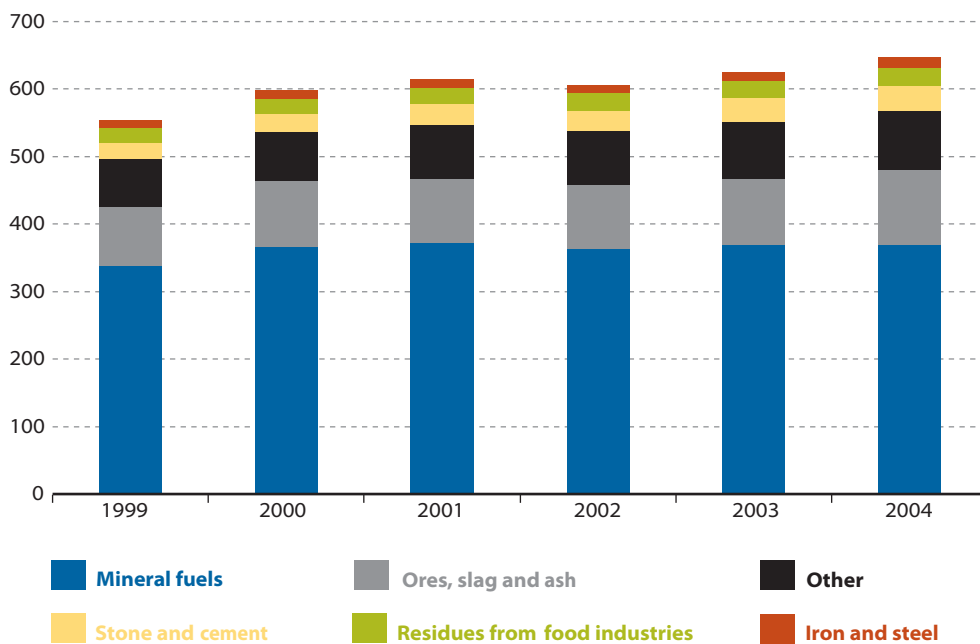
**Definition:** The indicator is defined as **EU-25 imports of materials from DAC countries**, measured in million tonnes.

Imports from a non-EU country include goods which enter the statistical territory of the Member State from a non-EU country (see 'Methodological notes'). Data refer to trade statistics concerning the following chapters of the combined nomenclature (CN): 01 to 18, 23 to 27, 31 to 36, 39 to 41, 44 to 47, 50 to 53, 70 to 81.

The indicator was selected to reflect the EU impact on resource use in developing countries. The resource use is an attempt to measure how much each country contributes to global environmental degradation. EU imports of natural resources tend to transfer the environmental burden of natural resource exploitation to the exporting countries.

### Indicator relevance

'Incorporate sustainable management of natural resources, including biodiversity, in development cooperation programmes, and strengthen the focus on environmental and natural resources management issues in poverty reduction strategy papers' are priorities of millennium development goal No 7 ('ensure environmental sustainability').



**Figure 10.10.**  
EU-25 imports of materials from developing countries (million tonnes)

Source: Eurostat.



**Analysis** During the period 2000–04, the imports of materials from developing countries rose by an annual average growth rate of 1.9 % corresponding to an increase from 598.6 to 646.5 million tonnes of materials. During this period the main increases were in ores, slag and ashes (Chapter 26 of the CN) with 12.7 million tonnes, and stones and cement (Chapter 25 of the CN) with 10.2 million tonnes. Mineral fuels, oils and products from their distillation (Chapter 27 of CN) have remained by far the largest group of products imported from developing countries, representing 57 % of total materials.

The interpretation of this indicator in terms of sustainable development is ambiguous, as on one hand the increase of imports serves the purpose of contributing to the improvement of the economic integration of developing countries, but on the other hand the increase in imports of materials is a sign of additional environmental pressures put on developing countries.

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**Potential linkages** EU imports of materials is related to ODA. As is the case with EU imports from developing countries, it also has an impact on CO<sub>2</sub> and other emissions (embodied emissions of imported products), and potentially global biodiversity. It is a component of domestic material consumption.



Resource management



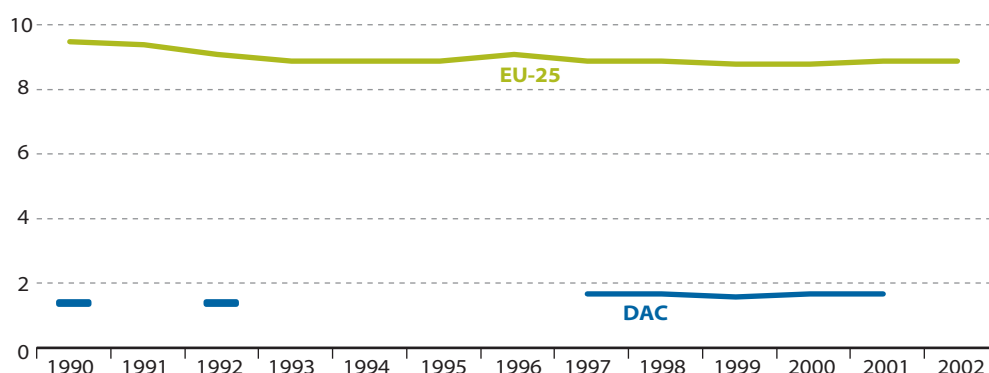
## CO<sub>2</sub> emissions in EU and developing countries



**Definition:** The indicator compares the **levels of carbon dioxide (CO<sub>2</sub>) emissions per inhabitant in the EU with levels in developing countries**. They are both measured in tonnes per capita. Developing countries are here identified as the ‘developing countries and territories’ in Part I of the OECD Development Assistance Committee list of aid recipients (DAC Part I countries).

Over time, the EU has implemented a range of environmental measures aimed to improve and protect the global environment. The CO<sub>2</sub> emissions per capita indicator is one of the indicators used for monitoring the EU achievements on MDG No 7 (‘ensure environmental sustainability’).

The EU is a party to the United Nations Framework Convention on Climate Change, and has committed itself under the Kyoto Protocol to an 8 % reduction in EU greenhouse gas emissions by 2008–12, compared with 1990. Few of the DAC Part I countries have signed the Kyoto Protocol, but they are recognised as being especially vulnerable to the adverse impacts of climate change.



**Figure 10.11.**  
CO<sub>2</sub> emissions per capita in the EU and in developing countries (tonnes per capita)

Source: European Environment Agency (EEA) for EU countries and International Energy Agency (IEA) for DAC countries.

NB: Data exclude emissions and removals due to land-use change and forestry (LUCF).

Despite an increase of CO<sub>2</sub> emissions per capita in DAC countries they remain more than five times lower than the EU-25 level (5.5 times more in 2001, and 6.7 times more in 1990).

Looking at the period 1990–2002, CO<sub>2</sub> emissions per capita at EU-25 level were 6.8 % lower in 2002 than 12 years earlier (from 9.4 to 8.8 tonnes per capita). Since 2000, the CO<sub>2</sub> emission per capita at the EU-25 level increased from 8.7 to 8.8 tonnes per capita (0.6 % per year).

In DAC countries on the other hand, CO<sub>2</sub> emissions went up from 1.4 to 1.6 tonnes per capita (12.5 %) during the period 1990–2001, and from 1.5 to 1.6 tonnes per capita between 2000 and 2001.

See linkages under greenhouse gas emissions.

### Indicator relevance

### Analysis

### Potential linkages



### Official development assistance indicators

The data come from the OECD DAC database. DAC statistics are collected annually from the members of the OECD Development Assistance Committee (DAC). These comprise 22 donor countries and the European Commission. The data cover aid loans and grants, other official flows, private market transactions and assistance from non-governmental

organisations to each recipient country and recipient countries combined (see Box 10.3).

DAC statistics aim to meet the needs of policy-makers in the field of development cooperation, and to provide a means of assessing the comparative performance of aid donors. Recording of transactions follows the 'Handbook for reporting debt reorganisation on the DAC questionnaire'.

### Box 10.3: Grouping of countries

In order to ensure the comparability of country groupings among indicators from various sources, a single grouping of countries has been used in the whole global partnership theme. This grouping is based on the DAC list of recipient countries (Part I only). 'Developing countries' are countries listed in this document. The list is reviewed every three years.

The World Bank defined some thresholds in order to cluster countries by level of income. This definition has been used for income groups but restricted to Part I of the list as it was on 1 January 2003. Countries and territories are clustered by income groups as follows.

- Least developed countries (LDCs): the General Assembly of the UN is responsible for the final decision on the list of LDCs. The current definition includes three criteria which are: a low income criterion, based on the gross national income per capita, a human resource weakness criterion, and an economic vulnerability criterion. The list includes 50 countries: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, East Timor, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Laos, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Tanzania, Togo, Tuvalu, Uganda, Vanuatu, Yemen, and Zambia.
- Other low income countries (OLICs): other countries with per capita GNI inferior to USD 745 in 2001. This includes 22 countries: Armenia, Azerbaijan, Cameroon, Congo, Côte d'Ivoire, Georgia, Ghana, India, Indonesia, Kenya, Kyrgyzstan, Moldova, Mongolia, Nicaragua, Nigeria, North Korea, Pakistan, Papua New Guinea, Tajikistan, Uzbekistan, Vietnam, and Zimbabwe.

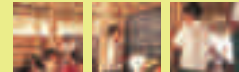
- Low-middle income countries (LMICs): countries with per capita GNI of between USD 746 and 2 975 in 2001. This includes 45 countries: Albania, Algeria, Belize, Bolivia, Bosnia and Herzegovina, China, Colombia, Cuba, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, Guatemala, Guyana, Honduras, Iran, Iraq, Jamaica, Jordan, Kazakhstan, former Yugoslav Republic of Macedonia, Marshall Islands, Micronesia, Morocco, Namibia, Niue, Palestinian Administered Areas, Paraguay, Peru, Philippines, Serbia and Montenegro, South Africa, Sri Lanka, Saint Vincent and the Grenadines, Suriname, Swaziland, Syria, Thailand, Tokelau, Tonga, Tunisia, Turkey, Turkmenistan, and Wallis and Futuna.
- Upper-middle income countries (UMICs): countries with per capita GNI of between USD 2 976 and 9 205 in 2001. This includes 32 countries: Anguilla, Antigua and Barbuda, Argentina, Barbados, Botswana, Brazil, Chile, Cook Islands, Costa Rica, Croatia, Dominica, Gabon, Grenada, Lebanon, Malaysia, Mauritius, Mayotte, Mexico, Montserrat, Nauru, Oman, Palau, Panama, Saint Helena, Saint Kitts and Nevis, Saint Lucia, Saudi Arabia, Seychelles, Trinidad and Tobago, Turks and Caicos Islands, Uruguay, and Venezuela.
- High-income countries (HICs): countries with per capita GNI exceeding USD 9 206 in 2001, currently Bahrain only. Part II countries and territories — which are included in the World Bank definition but not used by Eurostat in this publication — are the following: 10 new EU Member States (Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia), Aruba, Bahamas, Belarus, Bermuda, Brunei, Bulgaria, Cayman Islands, Chinese Taipei, Falkland Islands, French Polynesia, Gibraltar, Hong Kong (China), Israel, Kuwait, Libya, Macao, Netherlands Antilles, New Caledonia, Qatar, Romania, Russia, Singapore, South Korea, Ukraine, United Arab Emirates, and Virgin Islands (UK).

The EU indicators are compiled as follows:

- official development assistance: sum of net ODA (both bilateral and multilateral) to the DAC Part I list of countries disbursed by each Member State divided by the sum of GNI at market prices in each Member State;

- official development assistance by income group: sum of net bilateral and imputed multilateral ODA disbursed by each Member State;
- bilateral ODA by category: sum of disbursements made to bilateral aid or regional banks by EU-15 countries to the DAC Part I list of countries in each Member State;





- total EU financing for development, by type: sum of net disbursements of ODA, OOF and private flows to DAC Part I list of countries in each Member State;
- ODA per capita, in EU-15 donor or recipient countries: sum of net disbursements for ODA to the DAC Part I list of countries in each EU-15 Member State divided by the sum of inhabitants of relevant countries.

The categories of aid presented refer to the following.

- **Social infrastructure and services:** this main category relates essentially to efforts to develop the human resource potential of aid recipients. It comprises education, health, population policies and programmes and reproductive health, water supply and sanitation, government and civil society, other social infrastructure and services.
- **Economic infrastructure and services:** this major heading groups assistance for networks, utilities and services that facilitate economic activity. It includes transport and storage, communications, energy generation and supply, banking and financial services, business and other services.
- **Action relating to debt:** this main heading groups all actions relating to debt (forgiveness, swaps, buy-backs, rescheduling, refinancing).
- **Emergency assistance:** this main heading groups emergency and distress relief in cash or in kind, emergency food aid, humanitarian aid including aid to refugees, and assistance for disaster preparedness.
- **Support to NGOs:** this main heading refers to official funds paid over to national and international non-governmental organisations for use at the latter's discretion. Official funds made available to NGOs for use on behalf of the official sector, in connection with purposes designated by the official sector, or known to and approved by the official sector, are not reportable as support to NGOs but as ODA through NGOs.

More information is available at: <http://www.oecd.org>

#### EU imports from developing countries

All data concerning the following indicators: EU imports from developing countries, total EU imports from developing countries, by group of products and EU imports of materials from developing countries, by group of products come from Eurostat, Comext database.

The product classification of the combined nomenclature (CN) is applied for the detailed data whereas the SITC Rev. 3 or the broad economic categories (BEC) is used for aggregated data. The geonomenclature is used for classifying the countries for external trade purposes.

Data collection takes place via customs declarations applying a commonly agreed categorisation of products and services in global trade. Imports from a non-EU country include goods which enter the statistical territory of the Member State from a non-EU country and are: (1) placed under the customs procedure for release into free circulation (goods that will be consumed in the importing Member State or dispatched to another Member State), either immediately or after a period in a customs warehouse; or (2) placed under the customs procedure for inward processing or processing under customs control (usually goods destined to be processed, transformed or repaired for subsequent re-export) either immediately or after a period in a customs warehouse.

#### Fair trade

Sales volume data in tonnes were provided by Fairtrade Labelling Organizations International (FLO). It should be noted that this indicator only covers products certified by FLO. Further information is available at <http://www.fairtrade.net>.

The data cover the 12 EU countries operating national initiatives: Belgium, Denmark, Germany, France, Ireland, Italy, Luxembourg, Netherlands, Austria, Finland, Sweden and United Kingdom.

Only foodstuffs are included in the indicator. 'Other' includes mainly tea, sugar, honey, fresh fruit, fruit juices and rice.

#### CO<sub>2</sub> emissions in the EU and in developing countries

For EU Member States, total CO<sub>2</sub> emissions (IPCC Source Category 0) are compiled by the European Environment Agency based on the annual national submissions to the Secretariat of the United Nations Framework Convention on Climate Change.

The estimates of CO<sub>2</sub> emissions from fuel combustion in developing countries are calculated by the International Energy Agency using the IPCC Tier 1 Sectoral Approach.

Population data for the EU and developing countries have been extracted from the Eurostat and DAC/OECD databases respectively.

# Conclusion

## 1. Methodological conclusions: further needs for monitoring and reporting

### Evaluating changes: the need for more indicative targets

The objectives of this report were to measure recent changes based on the sustainable development indicators adopted by the European Commission in February 2005, and to evaluate them in terms of progress towards the objectives agreed in the 2001 sustainable development strategy, and in subsequent commitments such as the Johannesburg Summit, wherever possible. Evaluations have been based on changes since 2000, while also placing them in the perspective of longer term developments.

The evaluation of changes presented in this report has been based on simple and consistent rules to ensure transparency, and consistency in the evaluation of all indicators.

When there is a clear policy target, the evaluation is based on the distance to the linear target path in the last year for which data are available. The advantage of this rule is that there is a direct link with policy objectives, but it should also be recognised that the assessment then depends on how ambitious the target is.

When there is no quantified target, the evaluation is based on the mean annual rate of change, providing a relative assessment of whether changes are going in a favourable or unfavourable direction, rather than an absolute assessment of whether a goal has been reached. One drawback of this rule is that it does not differentiate between indicators which are subject to relatively rapid change, such as, for example, the GDP growth rate, and other indicators which are expected to change more slowly, for example 'healthy life years'.

The approach adopted highlights the importance of setting targets for the evaluation of changes. Additional commonly agreed indicative targets, as advocated in the sustainable development strategy review<sup>127</sup> would indeed facilitate future evaluation exercises.

<sup>127</sup> 'The 2005 review of the EU sustainable development strategy: Initial stocktaking and future orientations', COM(2005) 37.

### Improving data availability and indicators

Data availability has been a constraint in analysing the main changes, with some of the relevant areas not having been adequately covered. One immediate conclusion from the exercise is that more efforts need to be devoted to developing the methodologies needed and improving data availability in order to allow for more complete and better monitoring.

The SDI set results from the work of a group of experts, including statisticians, scientists and policy-makers from the European Commission and Member States, and can therefore be considered as the best available approach, given the data constraints. Some efforts are still needed, however, to improve the indicator set, as more information becomes available. It should also be emphasised that the current set of indicators may need to be revised to take into account changes in the post-review strategy.

### Towards a full reporting cycle

This report is the first assessment of progress based on commonly agreed indicators. It can be seen as the first test of the EU sustainable development indicators set, providing a concrete basis to focus the debate on how to measure progress towards sustainable development. A more complete picture of EU achievements on the path towards a more sustainable development will gradually emerge from a regular reassessment of progress towards 2010 objectives, as part of the full reporting cycle advocated in the review of the strategy.

## 2. Policy conclusions: is the EU on a sustainable development path?

### 2.1. Sustainable development strategy objectives: where are we now?

This section summarises progress with respect to the key objectives stated in the sustainable development strategy, based mainly on headline indicators. Headline indicators provide the general direction of progress within a theme, but do not necessarily provide an aggregate picture which is consistent with other indicators within each theme. Some level 2 indicators are also commented on when they are associated with a clear target in the strategy. The more detailed summaries given in each theme overview provide more nuanced conclusions.

**Table 11.1:**  
Summary evaluation of recent changes in headline indicators (EU-25)

GDP per capita	
Risk of poverty rate <sup>1</sup>	
Old-age dependency ratio	
Healthy life years <sup>1</sup>	
Greenhouse gas emissions <sup>1</sup>	
Gross inland energy consumption	
Domestic material consumption <sup>1</sup>	
Farmland birds <sup>2</sup>	
Fish catches <sup>2</sup>	
Energy consumption of transport	
Citizens' confidence in EU institutions <sup>1</sup>	
Official development assistance <sup>1</sup>	

**LEGEND:**

- favourable change
- no or little change
- unfavourable change

NB: 1. The evaluation is based on EU-15 data, due to insufficient EU-25 data availability.

2. The distinction EU-15/EU-25 does not apply to this indicator.



Headline indicators were selected to measure progress towards specific targets and wider objectives of the sustainable development strategy, including the four priority areas outlined by the Gothenburg Council: combating climate change, ensuring sustainable transport, addressing threats to public health, and managing natural resources more responsibly. They also cover the Lisbon strategy objectives of combating poverty and social exclusion, and dealing with the economic and social implications of an ageing society, which, as emphasised by the 2001 communication of the European Commission, are an integral part of the strategy. The first headline indicator corresponds to the economic dimension of the strategy, and the last two indicators correspond to the issues of good governance and the global dimension of sustainable development, briefly mentioned in the strategy, and later developed as full objectives in the plan of implementation of the Johannesburg Summit.

In the economic development theme, the growth rate of real GDP per capita has slowed down, from 3.6 % in 2000 to 0.6 % in 2003 in the EU-25. Associated objectives in the strategy included raising the employment rate to 67 % by 2005 and to 70 % by 2010. Neither of these objectives are within reach, the increase in the employment rate having slowed down from 2000 to 2004, to reach 63.3 % in the EU-25 and 64.8 % in the EU-15.

Within the poverty and social exclusion theme, the at-risk-of-poverty rate increased from 15 % in 2000 to 16 % in 2001 in the EU-15, in contrast with the Lisbon objective of 'making a decisive impact on the eradication of poverty'. An associated objective included 'halving the number of 18 to 24 year-olds who are not in further education and training'. The number of early school-leavers has indeed been reduced significantly since 2000 in the EU-15, but insufficiently as reaching the 2010 target would imply a further decrease of 7.1 % every year, compared with the annual decrease of 1.7 % between 2000 and 2004.

At the same time, the old-age dependency ratio grew at an annual rate of 1.2 % between 2000 and 2004 in the EU-25, as a consequence of population ageing, and is expected to double between 2004 and 2050. The goals of the Lisbon strategy included maintaining the sustainability of public finances and inter-generational solidarity. While public pensions expenditure has stabilised since 2000, the risk of poverty for persons aged 65 and over increased from 17 % in 1999 to 19 % in 2001 in the EU-15, suggesting that it is not yet possible to guarantee an adequate standard of living throughout life. With respect to the quantified target of increasing the average EU employment rate among older women and men (55–64) to 50 % by 2010, employment for this age group increased from 38.8 % in 2000 to 41.7 % in 2003, placing the EU-15 on track to reach the 2010 target, although this will require further significant progress.

Europeans are living relatively longer and healthier lives, although improvements are slow, as they occur over a long time frame. The Gothenburg Council had called for a response to 'citizens' concerns about the safety and quality of food, use of chemicals and issues related to outbreaks of infectious diseases and resistance to antibiotics'. Regarding food safety, the strong decrease in the salmonellosis incidence rate in the EU-25 is a positive achievement. However, although growth in the production of total toxic chemicals has stabilised since 2000 in the EU-15, there is a worrying shift from the least harmful to the most harmful category of toxic chemicals. Although data are insufficient to evaluate overall changes in antibiotic resistance, there was an increase in erythromycin resistance in 10 out of 15 EU-25 countries for which data were available.

Targets for climate change and energy have not been reached. The Gothenburg Council had reaffirmed its commitment to delivering on Kyoto targets, as a first step towards tackling climate change. However, following a decrease in the 1990s, greenhouse gas emissions increased between 2000 and 2003 in the EU-15, raising concerns about reaching the Kyoto targets. There are hopes that recent policy changes in implementing the Kyoto flexible mechanisms will improve the situation. The communication to the Gothenburg Council also called for 'clear action to reduce energy demand' and the presidency conclusions reaffirmed the need to 'meet the indicative target for the contribution of electricity produced from renewable energy sources to gross electricity consumption by 2010 of 22 %'. The target was set at 21 % for the EU-25 in the



Accession Treaty. However, gross inland energy consumption increased between 2000 and 2003, along with an increase in gross electricity consumption. The production of electricity from renewable sources remained stable over the same period, resulting in a decrease of the share of electricity from renewables in gross electricity consumption from 13.7 to 12.8 % in the EU-25, and from 15.2 to 13.7 % in the EU-15, and moving away from the 2010 targets.

The Gothenburg Council had stressed the importance of decoupling economic growth from resource use and the generation of waste. On the positive side, there has been a relative decoupling of domestic material consumption, with stable levels of material consumption (and even a decrease in 2001), while GDP was increasing. Further progress in terms of decreasing material consumption will be needed to achieve absolute decoupling. There has also been a small relative decoupling in municipal waste collection (and implicitly in waste generation) in the EU-25, from 2000 to 2003, while there is no sign of decoupling in the EU-15.

Recent changes within the theme of management of natural resources have been unfavourable, with a further decrease in the farmland bird index over recent years, and an increase in the proportion of fish catch taken from stocks outside their safe biological limits, despite measures taken to reduce the fishing fleet. This contrasts with the goals outlined in the Gothenburg Presidency conclusions (1) that biodiversity decline should be halted by 2010, and (2) that the review of the common fisheries policy should address the overall fishing pressure by adapting the EU fishing effort to the level of available resources. The changes observed in the farmland bird index should also be put in the context of an additional target of the European Council, that the common agricultural policy should increase its emphasis on 'environmentally sustainable production methods, including organic production... and the protection of biodiversity'. Although the main indicators in the agricultural sector show rather favourable changes from 2000 to 2003, with an increase in the share of agricultural area under agri-environmental support, and under organic farming, and a decrease in live-stock density index, a favourable change in the farmland bird index has not been observed in recent years.

There has been no significant progress in the transport sector, with the energy consumption of transport following the increase in GDP, although the main goal of the strategy was precisely to 'bring about a significant decoupling of transport growth and GDP growth. The communication to the Gothenburg Council also proposed as an objective to 'bring about a shift in transport use from road to rail, water and public passenger transport, so that the share of road transport in 2010 is no greater than in 1998'. The car share of inland passenger transport in 2002 was only slightly above 1998 levels in the EU-15, but the road share of inland freight transport in the EU-15 increased from 77.1 % in 1998 to 79.4 % of tonne-km in 2003.

The sustainable development strategy included aspects of good governance by stating that 'to tackle ... rising disaffection in the policy process, policy-making must become more open'. The subsequent White Paper on good governance confirmed this goal, and defined four priorities: better involvement; better policies, regulation and delivery; the EU's contribution to global governance; and refocused policies and institutions. The headline indicator of this theme monitors the perceived performance of EU institutions, which implicitly is intended to reflect progress in these four priorities. In this context, it is not a positive sign that the confidence of citizens in the main EU institutions increased from 2000 to 2004, but then fell back to 2000 levels in 2005.

Finally, the Gothenburg Council had also 'reaffirmed its commitment to reach the UN target for official development assistance of 0.7 % of GDP as soon as possible'. The Barcelona Council set an intermediary collective target of 0.39 % of gross national income by 2006. There was a clear improvement in the global partnership theme with an average annual increase in official development assistance of 6.2 % between 2000 and 2003, putting the EU on track to meet its collective target of 0.39 % by 2006. Substantial additional efforts will however be needed to reach the new intermediary target set in 2005 of 0.55% by 2010, and the UN target of 0.7% by 2015.



## 2.2. Integrating the different dimensions of sustainable development

Obtaining a comprehensive global picture of how different dimensions and different policy priorities integrate is still difficult. Not enough is known in particular on links between social and environmental issues. More generally, it is clear from the sections on inter-linkages in this report that a lot of work needs to go into exploring the underlying theoretical and causal linkages. This section proposes some initial conclusions regarding interlinkages. Devoting more research to this area is essential to provide an empirical basis to theoretical links, in order to identify synergies and trade-offs between potential policy measures, and to evaluate policies in the context of sustainable development more generally.

The combined changes in the economic and social dimensions are rather negative: weak economic growth is coupled with an increased poverty rate. The ageing of society threatens the viability of public finances. There is a need for measures which would provide benefits in both dimensions. The increase in lifelong learning and the decrease in early school-leavers are already encouraging signs, as further education should have a positive impact both on labour productivity, and on reducing the risk of poverty. The increase in the employment rate of older people is also an encouraging sign in terms of mitigating unfavourable demographic trends, and could indirectly influence economic development, for example through increased labour productivity. More needs to be done to achieve the vision set out in the sustainable development strategy, where 'economic growth supports social progress' and 'social policy underpins economic performance'.

**Economic and social dimensions: need for more synergy**

Economic growth has traditionally implied increased use of energy and materials in society, which in turn has given rise to environmental degradation through emissions and other pressures on ecosystems. For development to be more sustainable, it is important to find ways of decoupling economic growth from environmental impact. At the same time, measures to alleviate the potentially negative environmental impact can be themselves a motor of economic growth. Decoupling economic growth from the use of natural resources and the production of waste is a key objective of the sustainable development strategy.

**Economic and environmental dimensions: uneven progress in terms of decoupling**

Regarding atmospheric emissions, the evaluation of recent changes in terms of decoupling is mixed. CO<sub>2</sub>, along with other greenhouse gas emissions, is still strongly coupled to gross inland energy consumption. Energy intensity (ratio of gross inland energy consumption and GDP) had been decreasing in the 1990s, but has stabilised in more recent years, meaning that emissions which are coupled with gross inland energy consumption are again also coupled with GDP growth. More positive is the clear decoupling trend for the emissions of acidifying substances and precursors of ground-level ozone.

A very similar evaluation applies in the transport sector. As GDP has grown, the energy consumption of transport has continued to increase, reflecting increases in traffic and leading to increases in emissions of greenhouse gases. On the other hand, emissions of some noxious pollutants, such as those responsible for summer smog, are continuing to decrease, and the numbers killed in road accidents are also continuing to fall.

Finally, while municipal waste is still fairly strongly coupled with GDP, domestic material consumption has remained relatively stable. There has even been an absolute decrease in 2001, although it is too early to conclude whether this indicates an absolute decoupling.

Good governance and global partnership are cross-cutting issues, which potentially affect all other themes. Public confidence in EU institutions affects the successful implementation of most EU policies and therefore most other policy issues. Similarly, most EU sustainable development priorities have an external dimension. For example, changing production and consumption patterns are seen both in the increase in the number of EU products with eco-labels, and in the increase in sales of Fairtrade labelled products, reflecting a growing awareness of environmental and global issues by consumers. EU greenhouse gas emissions also contribute to global warming, and a comparison with emissions from developing countries is a useful exercise.

**Institutional aspects of sustainable development: good governance and global partnership**



### 2.3. Is the EU on a sustainable development path?

On the basis of the findings in this report, it is clear that EU development cannot yet be considered sustainable, or even heading towards sustainability. Very few targets set in the EU sustainable development strategy in 2001 are within reach.

Looking at the summary provided by the headline indicators, it is noticeable that there are only two areas where recent changes have been favourable, although this is in contrast with the developments in other indicators within the same theme. For all other headline indicators, changes have either been insufficient or unfavourable.

Although these evaluations focus on recent developments, they should be seen in a wider context. Policies contributing towards sustainable development were adopted before the sustainable development strategy: EU commitments to sustainable development started with the Rio Summit in 1992, and sustainable development became a Treaty objective in 1997. It is therefore not too early to consider whether the situation has evolved. In several themes, there has been progress during the 1990s, but this progress has stalled since 2000. This is the case, for example, for energy consumption, greenhouse gas emissions, poverty, and economic growth. It is clear from the analysis presented in this report that tackling these unfavourable trends still represents a complex challenge.

## Annex: List of sustainable development indicators

This annex introduces the indicators which were adopted by the Commission in February<sup>128</sup> and those which are introduced in the present publication. The following table is composed of three columns, which describe the following.

- Level: the level of a particular indicator in the hierarchy of the SDI set.
- Indicator labels by theme: this column refers to the labels used to name the indicators. When two titles are proposed, the first one is the title used in the communication, while the second one, presented between brackets, is the operational title as used in the present publication. In addition, the indicators included in the present publication are in bold. In some cases, indicators have been clustered which explains that the same operational title can appear twice. As in the February communication, the indicators in italics are the so-called ‘best needed’ indicators, which cannot be produced for the time being, due to lack of data or methodology.
- Other indicator sets: the indicators are compared with identical or similar indicators in other indicator sets, produced at European or world level. When indicators are not identical but only similar, references to other sets are marked between brackets.

The meaning of the abbreviations used to describe other indicator sets is the following.

- CSD: CSD theme indicators framework, United Nations Commission for Sustainable Development
- ECHI: European Community health indicators, European Commission, Health and Consumer Protection DG
- EEA: core set of indicators, European Environment Agency
- FAO: United Nations Food and Agriculture Organisation
- IRENA: indicator reporting on the integration of environmental concerns into EU agricultural policy, joint project between the European Commission (Agriculture and Rural Development DG, Environment DG, Joint Research Centre, and Eurostat) and the European Environment Agency
- Laeken: indicators on poverty and social exclusion adopted at the Laeken European Council, European Commission, Eurostat
- MCPFE: Ministerial Conference on the Protection of Forests in Europe
- MDG: indicators related to the millennium development goals, millennium indicators database, United Nations Statistics Division
- OECD: list of indicators contained in the OECD factbook 2005, Organisation for Economic Cooperation and Development
- SI: structural indicators, European Commission, Eurostat
- SPC: indicators in the field of poverty and social exclusion, ‘Indicators’ sub-group of the Social Protection Committee, European Commission, Employment, Social Affairs and Equal Opportunities DG
- TERM: indicators related to the transport-environment reporting mechanism, Eurostat
- WHO: European Environment and Health information system, ‘core’ European EH indicators, World Health Organisation

<sup>128</sup> ‘Sustainable development indicators to monitor the implementation of the EU sustainable development strategy’ SEC(2005) 161 final, 9.2.2005.





LEVEL	INDICATOR LABEL BY THEME	OTHER INDICATOR SETS
<b>THEME 1: ECONOMIC DEVELOPMENT</b>		
1	<b>Growth rate of GDP per capita (GDP per capita)</b>	(CSD)
2	<b>Investment as percentage of GDP, by institutional sector (investment)</b>	CSD, SI
3	Real GDP growth rate	OECD, SI
3	<b>GDP per capita in purchasing power standards</b>	SI
3	<b>Regional breakdown of GDP per capita (regional breakdown of GDP per capita)</b>	(OECD)
3	<b>Total consumption expenditure as percentage of GDP (consumption expenditure)</b>	(EEA)
3	Net national income as percentage of GDP	
3	Inflation rate	OECD, SI
3	<b>Net saving as percentage of GDP, by institutional sector (saving)</b>	OECD
2	<b>Labour productivity per hour worked (labour productivity)</b>	OECD, SI
2	<b>International price competitiveness — Real effective exchange rate — (international price competitiveness)</b>	OECD
3	<b>Unit labour cost growth, for total and industry (unit labour cost)</b>	SI
3	<b>Lifelong learning</b>	SI
3	Turnover from innovation as a percentage of total turnover, by economic sector	
3	<b>Total R &amp; D expenditure as a percentage of GDP (research and development expenditure)</b>	CSD, OECD, SI
3	Public expenditure on education as a percentage of GDP	SI
2	<b>Total employment rate (employment)</b>	ECHI, OECD, SI
3	Total employment growth	SI
3	Total employment rate, by gender and by highest level of education attained	(OECD), (SI)
3	<b>Total unemployment rate, by gender, by age group, and by highest level of education attained (unemployment)</b>	CSD, MDG, OECD, SI
3	Regional breakdown of unemployment rate	OECD, (Laeken), (SI)
<b>THEME 2: POVERTY AND SOCIAL EXCLUSION</b>		
1	<b>At-risk-of-poverty rate after social transfers (risk of poverty)</b>	ECHI, Laeken, SI, (CSD), (MDG)
2	<b>At-persistent-risk-of-poverty rate (persistent risk of poverty)</b>	Laeken, SI
3	<b>At-risk-of-poverty rate, by gender, by age group, by highest level of education attained, and by household type</b>	Laeken, SI
3	Relative at-risk-of-poverty gap	Laeken, (MDG)
3	<b>Inequality of income distribution — Income quintile share ratio (income distribution)</b>	Laeken, SI, (CSD)
3	<i>Poverty mobility</i>	
2	<b>Total long-term unemployment (long-term unemployment)</b>	Laeken, OECD, SI
3	<b>Gender pay gap in unadjusted form (gender pay gap)</b>	CSD, SI
3	Very long-term unemployment rate	Laeken
3	<b>People living in jobless households, by age group (jobless households)</b>	Laeken, SI
3	At risk-of-poverty rate after social transfers, by most frequent activity	Laeken
2	<b>Early school-leavers</b>	Laeken, SI, (CSD), (MDG)
3	<b>Persons with low educational attainment, by age group (persons with low educational attainment)</b>	Laeken, CSD, (MDG)
3	<i>Adequacy of housing conditions</i>	SPC, (WHO)



LEVEL	INDICATOR LABEL BY THEME	OTHER INDICATOR SETS
<b>THEME 3: AGEING SOCIETY</b>		
1	<b>Current and projected old-age dependency ratio (old-age dependency ratio)</b>	SPC
2	<i>Projected theoretical replacement ratio</i>	
2	<b>Ratio of median household equivalised income of persons aged 65 + to median household equivalised income of persons aged &lt; 65 (relative median income ratio)</b>	SPC
3	<b>At-risk-of-poverty rate for persons aged 65 years and over (risk of poverty for persons aged 65 years and over)</b>	SPC
2	<b>Life expectancy at age 65 by gender (life expectancy at age 65)</b>	ECHI, SPC
3	<b>Total fertility rate (fertility rate)</b>	ECHI
3	<b>Net inwards migration, by main age groups (inwards migration)</b>	OECD
2	<b>General government consolidated gross debt as a percentage of GDP (government debt)</b>	CSD, OECD, SI
3	<b>Current and projected public (and private) pensions expenditure as percentage GDP (pensions expenditure)</b>	SPC
3	<b>Total employment rate, by age group (employment rate, by age group)</b>	ECHI, SPC
3	<i>Average exit age from the labour market</i>	SI, SPC
3	<b>Current and projected public expenditure on care for the elderly as percentage of GDP (expenditure on care for the elderly)</b>	(SPC)
<b>THEME 4: PUBLIC HEALTH</b>		
1	<b>Healthy life years at birth by gender (healthy life years)</b>	ECHI, SI, (CSD), (OECD)
2	<b>Percentage of overweight people, by age group (overweight people)</b>	ECHI, (OECD)
2	<b>Resistance to antibiotics — Streptococcus pneumoniae pathogens (resistance to antibiotics)</b>	
3	<b>Healthy life years at age 65 by gender</b>	ECHI
3	<i>Health care expenditure as percentage of GDP</i>	ECHI, OECD
3	<b>Cancer incidence rate, by gender and by type (cancer incidence rate)</b>	ECHI
3	<b>Suicide death rate, by gender and by age group (suicide death rate)</b>	ECHI
3	<b>Percentage of present smokers, by gender and by age group (present smokers)</b>	ECHI
3	<i>Work with high level of job strain/stress</i>	
3	<b>Serious accidents at work</b>	SI
2	<i>Deaths due to infectious food-borne diseases</i>	
2	<b>Salmonellosis incidence rate in human beings (salmonellosis incidence rate)</b>	
3	<i>Dioxins and PCBs in food and feed</i>	
3	<i>Heavy metals, and mercury in particular, in fish and shellfish</i>	
3	<i>Pesticides residues in food</i>	
2	<i>Index of apparent consumption of chemicals, by toxicity class</i>	
2	<b>Index of production of chemicals, by toxicity class (production of toxic chemicals)</b>	
2	<i>Population exposure to air pollution by particulate matter</i>	SI, (EEA), (WHO)
3	<i>Population exposure to air pollution by ozone</i>	SI, (EEA), (WHO)
3	<b>Proportion of population living in households considering that they suffer from noise and from pollution (population suffering from noise and from pollution)</b>	(WHO)
3	<i>Monetary damage of air pollution as % of GDP</i>	



LEVEL	INDICATOR LABEL BY THEME	OTHER INDICATOR SETS
<b>THEME 5: CLIMATE CHANGE AND ENERGY</b>		
1	<b>Total greenhouse gas emissions (greenhouse gas emissions)</b>	CSD, SI, (OECD)
2	<b>Greenhouse gas emissions by sector</b>	
3	<b>CO<sub>2</sub> intensity of energy consumption</b>	
3	<i>CO<sub>2</sub> removed by sinks</i>	
1	<b>Gross inland energy consumption, by fuel</b>	EEA
2	<b>Energy intensity of the economy</b>	CSD, EEA, MDG, SI
2	<b>Final energy consumption by sector (final energy consumption)</b>	EEA, (MDG)
2	<b>Gross electricity generation by fuel used in power stations (gross electricity generation)</b>	OECD
3	<b>Share of renewable energy, by source (renewable energy)</b>	CSD, EEA, IRENA, OECD, SI
3	<i>Combined heat and power generation as percentage of gross electricity generation</i>	(EEA)
3	<i>Energy intensity of manufacturing industry</i>	
3	<b>Consumption of biofuels, as a percentage of total fuel consumption in transport (consumption of biofuels)</b>	(EEA)
3	<i>External costs of energy use</i>	
3	<i>Energy tax revenue at constant prices and energy consumption</i>	
3	<i>High-level radioactive waste and spent nuclear fuel awaiting permanent disposal</i>	CSD
<b>THEME 6: PRODUCTION AND CONSUMPTION PATTERNS</b>		
1	<i>Total material consumption and GDP at constant prices</i>	(CSD)
1	<b>Domestic material consumption and GDP at constant prices (domestic material consumption)</b>	(CSD)
2	<b>Emissions of acidifying substances and ozone precursors and GDP at constant prices, by source sector (emissions of acidifying substances and ozone precursors)</b>	EEA, WHO
2	<i>Generation of waste by all economic activities and by households</i>	CSD, (EEA), (SI)
2	<b>Municipal waste collected per capita (municipal waste collected)</b>	EEA, SI, (CSD), (OECD)
3	<b>Components of domestic material consumption</b>	(CSD)
3	<b>Domestic material consumption, by material</b>	(CSD)
3	<b>Municipal waste treatment, by type of treatment method (municipal waste treatment)</b>	CSD, SI, (EEA)
3	<i>Generation of hazardous waste, by economic activity</i>	CSD
2	<b>Electricity consumption per dwelling for lighting and domestic appliances (electricity consumption by households)</b>	
2	<i>Green public procurement</i>	
3	<b>Household number and size (household composition)</b>	
3	<i>Meat consumption per capita</i>	FAO
3	<i>Share of consumption of products with an EU or national eco-label</i>	
2	<b>Share of area under agri-environmental support in total utilised agricultural area (area under EU agri-environmental support)</b>	IRENA
2	<b>Livestock density index (livestock density)</b>	IRENA
3	<b>Nitrogen surplus</b>	IRENA, (EEA), (OECD)
3	<b>Share of area occupied by organic farming in total utilised agricultural area (organic farming)</b>	IRENA, EEA
3	<i>Use of selected pesticides</i>	CSD, (IRENA), (FAO)
3	<i>Share of industrial production from enterprises with a formal sustainable management system</i>	
3	<b>Enterprises with an environmental management system (environmental management systems)</b>	
3	<i>Ethical financing</i>	
3	<b>Eco-label awards, by country and by product group (eco-labels)</b>	



LEVEL	INDICATOR LABEL BY THEME	OTHER INDICATOR SETS
<b>THEME 7: MANAGEMENT OF NATURAL RESOURCES</b>		
1	<i>Biodiversity index</i>	
<b>1</b>	<b>Population trends of farmland birds (farmland birds)</b>	SI, IRENA
<b>1</b>	<b>Fish catches from stocks outside 'safe biological limits' (fish catches)</b>	SI, (CSD), (EEA)
2	<i>Sufficiency of Member States' proposals for protected sites under the habitats directive</i>	SI, (CSD), (EEA), (IRENA), (MDG)
3	<i>Change in status of threatened and/or protected species</i>	EEA, (CSD), (IRENA)
2	<i>Trends of spawning biomass of selected fish stocks</i>	
3	<i>Effective fishing capacity and quotas, by specific fisheries</i>	(EEA)
<b>3</b>	<b>Size of fishing fleet (fishing fleet)</b>	EEA
3	<i>Structural support to fisheries and percentage allocated to promote env. friendly fishing practices</i>	
<b>2</b>	<b>Groundwater abstraction as percentage of available groundwater resources (groundwater abstraction)</b>	IRENA, CSD
<b>3</b>	<b>Population connected to wastewater treatment systems (wastewater treatment systems)</b>	EEA, (MDG), (WHO)
3	<i>Emissions of organic matter as biochemical oxygen demand to rivers</i>	CSD
3	<i>Index of toxic chemical risk to aquatic environment</i>	
2	<i>Land-use change, by category</i>	IRENA, (EEA)
<b>2</b>	<b>Built-up area as a percentage of total land area (built-up area)</b>	(CSD), EEA
2	<i>Excess of critical loads of acidifying substances and nitrogen in sensitive natural areas</i>	
3	<i>Percentage of total land area at risk of soil erosion</i>	IRENA
3	<i>Percentage of total land area at risk of soil contamination</i>	IRENA, (EEA)
<b>3</b>	<b>Percentage of forest trees damaged by defoliation (defoliation)</b>	MCPFE
3	<i>Fragmentation of habitats due to transport</i>	TERM
<b>THEME 8: TRANSPORT</b>		
1	<i>Vehicle-km and GDP at constant price</i>	
<b>1</b>	<b>Energy consumption by transport and GDP at constant price (energy consumption of transport)</b>	TERM, WHO
<b>2</b>	<b>Car share of inland passenger transport</b>	SI, (OECD)
<b>2</b>	<b>Road share of inland freight transport</b>	SI
3	<i>Modal split of passenger transport</i>	TERM, WHO, (EEA), (OECD)
3	<i>Modal split of freight transport</i>	TERM, WHO, (EEA),
<b>3</b>	<b>Volume of freight transport and GDP at constant price (volume of freight transport)</b>	SI
3	<i>Energy consumption by transport mode</i>	TERM
3	<i>Access to public transport</i>	
2	<i>External costs of transport activities</i>	TERM
3	<i>Freight transport prices by mode</i>	(TERM)
3	<i>Investment in transport infrastructure by mode</i>	TERM
<b>2</b>	<b>Emissions of air pollutants (particulate matter and ozone precursors) from transport activities (emissions of ozone precursors from transport)</b>	TERM
<b>2</b>	<b>Greenhouse gas emissions by transport activities, by mode (greenhouse gas emissions from transport)</b>	TERM
<b>3</b>	<b>People killed in road accidents, by age group (people killed in road accidents)</b>	OECD, (TERM), (WHO)
<b>3</b>	<b>Emissions of NO<sub>x</sub> from road vehicles — petrol and diesel — (emissions of NO<sub>x</sub> from road vehicles)</b>	TERM, (EEA)



LEVEL	INDICATOR LABEL BY THEME	OTHER INDICATOR SETS
<b>THEME 9: GOOD GOVERNANCE</b>		
<b>1</b>	<b>Level of citizen's confidence in EU institutions (citizens' confidence in EU institutions)</b>	
2	<i>Proportion of environmentally harmful subsidies</i>	
<b>2</b>	<b>Number of infringement cases brought in front of the Court of Justice, by policy area (infringement cases)</b>	
2	<i>Administrative cost imposed by legislation</i>	
3	<i>Share of major proposals in the Commission's legal and work programme for which an impact assessment has been undertaken</i>	
<b>3</b>	<b>Transposition of Community law, by policy area (transposition of Community law)</b>	
<b>2</b>	<b>Voter turnout in national parliamentary elections</b>	
2	<i>Responses to EC Internet public consultations</i>	
<b>3</b>	<b>Voter turnout in EU parliamentary elections, by gender, by age group and by highest level of education attained</b>	
3	<i>E-government online availability</i>	SI
<b>3</b>	<b>E-government usage by individuals</b>	SI
<b>THEME 10: GLOBAL PARTNERSHIP</b>		
<b>1</b>	<b>Official development assistance (ODA) as percentage of gross national income (Official development assistance)</b>	CSD, MDG, OECD
<b>2</b>	<b>EU imports from developing countries (total and agricultural products) and agricultural budgetary support (EU imports from developing countries)</b>	(MDG), (OECD)
<b>2</b>	<b>Sales of selected Fairtrade labelled products (fair trade)</b>	
<b>3</b>	<b>Total EU imports from developing countries, by income group (EU imports from developing countries)</b>	(OECD)
<b>3</b>	<b>Total EU imports from developing countries, by group of products (EU imports from developing countries)</b>	
<b>2</b>	<b>Bilateral ODA by category (bilateral ODA)</b>	MDG
<b>3</b>	<b>Total EU financing for development, by type (financing for development)</b>	
3	<i>Access to public transport</i>	(OECD)
3	<i>ODA and FDI to developing countries, by income group and by geographical area</i>	MDG
<b>3</b>	<b>ODA per capita, in EU donors and in recipient countries (ODA per capita)</b>	
<b>2</b>	<b>EU imports of materials from developing countries, by group of products (EU imports of materials)</b>	
3	<i>Contribution of the clean development mechanism (CDM) to GHG emission reductions in developing countries</i>	
<b>3</b>	<b>CO<sub>2</sub> emissions per capita in the EU and in developing countries</b>	MDG

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