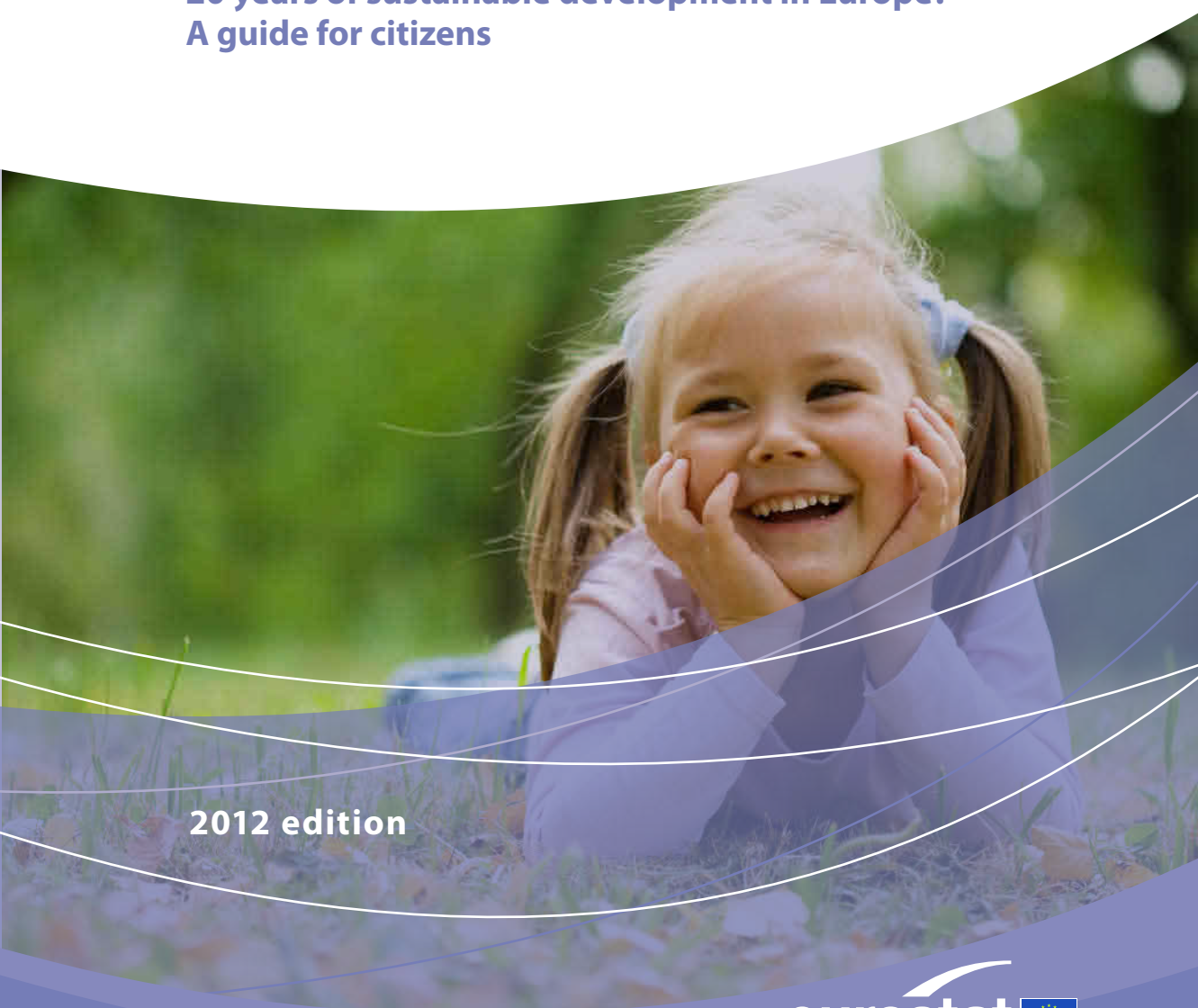
eurostat
Statistical books

Figures for the future

20 years of sustainable development in Europe? A guide for citizens



2012 edition

eurostat
EUROPEAN COMMISSION

eurostat
Statistical books

Figures for the future

20 years of sustainable development in Europe? A guide for citizens

2012 edition

eurostat
EUROPEAN COMMISSION

Europe Direct is a service to help you find answers to your questions about the European Union.

Freephone number (*):

00 800 6 7 8 9 10 11

(*) Certain mobile telephone operators do not allow access to 00 800 numbers or these calls may be billed.

More information on the European Union is available on the Internet (http://europa.eu).

Cataloguing data can be found at the end of this publication.

Luxembourg: Publications Office of the European Union, 2012

ISBN 978-92-79-23873-4
doi:10.2785/28488
Cat. No KS-32-12-152-EN-C

Theme: General and regional statistics
Collection: Statistical books

Printed in Belgium

PRINTED ON RECYCLED PAPER THAT HAS BEEN AWARDED THE EU ECOLABEL FOR GRAPHIC PAPER (http://ec.europa.eu/ecolabel)

Foreword

Sustainable development has the goal of improving the quality of life and well-being on Earth for present and future generations. In other words, sustainable development affects how we live and what we do each day and it shapes the lives of our children and our children's children. Yet it is often seen as an abstract concept.

Eurostat is the leading provider of high-quality statistics on Europe. This service is not only for professionals; it strives to inform all European citizens about important trends. To bring the facts, figures and trends of sustainable development down to earth, this publication tries a new approach by presenting them through the eyes of a fictional 17-year-old girl, Anne.

'Figures for the future' combines statistical data with Anne's narrative about her hopes and dreams and the people she cares about. Speaking at a student assembly similar to a UN model conference, Anne tells a story about an important day in her life and describes how that day's events relate to sustainable development. She turns to the EU set of Sustainable Development Indicators (SDIs) provided by Eurostat to convey this story and give an account of sustainable and unsustainable trends in Europe over the past 20 years. Schoolmates from around the world complement this picture by bringing in global outlooks on sustainable development.

I hope you will enjoy reading this book. Perhaps it will help you to discover that statistics are indeed very close to our everyday life. They are all about us and the world around us. An important tool that helps to make good decisions about our future.

Walter Radermacher
Director-General, Eurostat

Credits

Editor-in-chief:

Viktoria Bolla (Eurostat)

Authors:

Markus Hametner (RIMAS, WU Vienna), Rosanne Adelman

Co-editors:

Mariana Popova (Eurostat), Carolyn Avery (ENDS, Haymarket Media Group Ltd)

Production:

Production co-ordinator: Carolyn Avery (ENDS, Haymarket Media Group Ltd)

Isabella Kaminski (ENDS, Haymarket Media Group Ltd), Kate Harkus (Haymarket Media Group Ltd)

Infographics: Leonard Dickinson (Haymarket Media Group Ltd), Carolyn Avery (ENDS, Haymarket Media Group Ltd), Markus Hametner (RIMAS, WU Vienna)

Illustrations: Gary Wing

Expert advisors:

Viktoria Bolla, Ales Capek, Mariana Popova, Vincent Tronet (Eurostat), Andreas Endl, André Martinuzzi, Michal Sedlacko (RIMAS, WU Vienna), Albrecht Gradmann, Tanja Srebotnjak (Ecologic Institute), Donald Huisingh (University of Tennessee), William M. Lafferty (ProSus Perspectives), Stephen Morse (University of Surrey), Nicole North, Stephanie Schwab, Myriam Steinemann, Remo Zandonella (INFRAS)

Data coverage and direct links to the database:

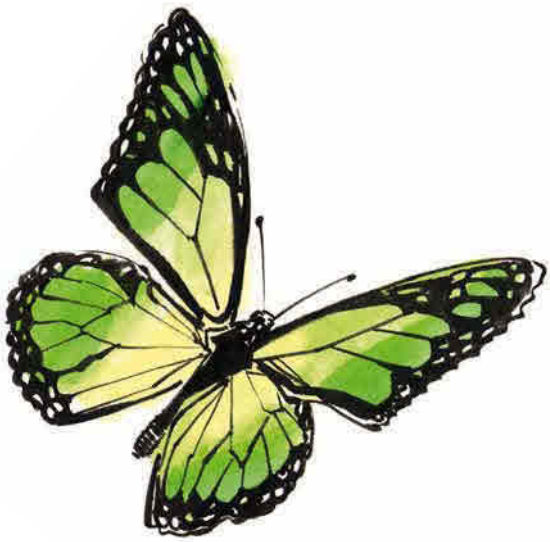
The data presented in this publication were extracted over March 2012.

The source under each graph contains a data code. This code can be used for direct access to the most recent data on Eurostat's website at: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

For more information:

Eurostat, the statistical office of the European Union
Bâtiment Joseph Bech
5, rue Alphonse Weicker
L-2721 Luxembourg
http://ec.europa.eu/eurostat
E-mail: estat-user-support@ec.europa.eu

Disclaimer:



Contents

1

Why Anne gets interested in sustainable development issues

'Sustainable development is such an abstract concept. How can I make an interesting presentation about it?' Anne pulls up a chair next to the desk in Marta's office.

Marta is making coffee for the two of them. She appears to be winding up her day's work, but Anne has a feeling that her own work has just started.

'What's this presentation for?' Marta hands Anne her coffee. She makes it strong, just the way Anne likes it.

Anne enjoys visiting Marta in her office. Even though Marta has known her since she was small, she now treats Anne like an adult and an equal. Anne is 17, after all. It won't be long before she finishes school and goes on to university.

Marta lives in the house next door to Anne and her father, Nick. When she moved in, Marta had just started on her first job as a reporter on a local newspaper. Now she freelances as an investigative journalist who specialises in environmental issues. Anne wonders if she'll be doing something similar in ten years' time. She hopes so.

'Do you remember when I got involved with my school's version of the model United Nations?'

'Of course I do,' Marta chuckles. 'It's kept you busy. I haven't seen so much of you since you started.'

'Well, that's ironic. One reason I joined the model UN was to get experience so I can do what you do.'

'Ah, is that why? I thought it was because you believed it would be a good way to meet boys,' Marta says.

Anne laughs. 'Oh, I should be so lucky! But I did say research experience was only *one* reason.'

Anne has come to seek Marta's professional advice, but she realises that a laugh with her friend will also do her good. As Marta pointed out, they haven't had much chance for a proper chat recently. And Anne misses that. Marta has always been there for a talk when her father has been too busy. They eventually came to share a love of art and reading, especially science fiction.

'Seriously, Marta, I'm feeling stuck. I have to give a presentation on the European Union's progress towards sustainable development in the past 20 years. But how will I make a bunch of data interesting? And much more… I want people to be excited and involved in the issue. It's all about leading a better life, so why shouldn't we be able to make it exciting?'

'OK, let's see how we'll do it.' Marta opens her laptop and invites Anne to draw closer so she can see the screen. 'First, tell me more about this model UN.'

'The model UN is a role-playing game, if a more serious one. So instead of sparring with monsters we take on parts as diplomats representing a country or an NGO in the UN. Mind you, this project runs on the principles of a model UN but it's not an *official* event, which gives us more flexibility. We invited partner schools around the world to meet up and form a delegation that would represent their country, with the aim of running a session about the Rio+20 conference. Naturally, pupils from our city belong to the EU delegation and we're presenting a position paper. And I'm helping to prepare a section in our paper about statistics.'

'You always were good at maths,' says Marta. 'I used to help you with your homework, remember?'

'And you still are,' Anne sighs. 'But this isn't just a matter of doing maths. I want people to engage with the numbers and assess progress on sustainable development.'

'Maybe we need to take a close look at the context first. I've been covering the Rio+20 in my work as well. So… this is the third major summit on sustainable development. The first was the "Earth Summit" in Rio in 1992 and the second was the "World Summit on Sustainable Development" in Johannesburg in 2002. These global summits can be traced back even further to the UN conference on the human environment held in Stockholm in 1972. Rio+20 really is a historic meeting and your presentation should convey the monumental potential of this event.'

Marta makes an expansive gesture with her hands as if she really is presenting the world and inviting her audience of one to explore and understand it. That's what I must do for my audience, Anne thinks. And my audience will be much bigger.

'And since you're dealing with statistics,' Marta continues, 'you should look at *Agenda 21* ([1]), the plan of action drawn up by the first Rio conference in 1992. Chapter 40 ([2]) specifically outlines how we can bridge the "data gap" and make reliable information available to all people working on sustainable development. And that means *everyone* – from senior international and national officials to local groups of citizens and concerned individuals. Agenda 21 really was a catalyst for efforts around the world to create national indicators for sustainable development, including the ones for the EU that I'm going to show to you. It will give you some historical insight, given that you weren't even born in 1992.'

'Yeah, 1992 seems like such a long, long time ago,' says Anne. 'I imagine everything has moved on since then. Is this Agenda 21 still relevant?'

'Huh! It wasn't *that* long ago. And yes, it still *is* relevant. One aim of the Rio+20 conference is to assess the progress to date and evaluate the gaps remaining from the previous summits. This means looking at how we can extend the work undertaken since Agenda 21. Referring to the principles of Agenda 21, Rio+20 calls for creating a set of global sustainable development goals and measuring progress towards these goals by the appropriate indicators. These will include new indicators that complement the ones we already have, such as gross national product.'

'Rio+20 calls for creating a set of global sustainable development goals and measuring progress towards these goals by the appropriate indicators'

([1]) United Nations, Agenda 21, 1992.
([2]) See http://www.un.org/esa/dsd/agenda21/res_agenda21_40.shtml

Marta types in another web address. 'So, that's some of the background. Now… let's have a look at the major themes of Rio+20 on the conference website ([3]).'

Anne reads from the page: 'The conference will focus on two themes: a) green economy in the context of sustainable development and poverty eradication… b) The institutional framework for sustainable development. Yes, I've seen this before. But what does it mean, exactly? What's *your* interpretation of these themes?'

'The green economy theme is about changing our economic system so it uses less resources and energy and takes into account social considerations. And the second theme will explore the institutions supporting global sustainable development.'

'And what's the role of the EU in this? There are a lot of documents from the EU talking about sustainable development. How do I know which ones are the most important?'

'I'd start with the *EU Sustainable Development Strategy* ([4]). This sets out the EU's goals and targets for sustainable development. Another useful document is the European Commission's communication: *Rio+20 – Towards the Green economy and Better Governance* ([5]).'

Anne looks at the Rio+20 communication on the screen. 'Rio+20… an opportunity the world cannot afford to miss,' she quotes. 'Hmmm… These documents set out targets and objectives, but do they provide enough information on how these objectives are being realised?'

'I'll show you what you need for *that*,' says Marta, browsing to a new web page. 'This is Eurostat's site for sustainable development indicators, or SDIs ([6]). I always use it when I'm putting together information on the EU. There are over 100 indicators here. They are organised into ten themes and each theme has one or two headline indicators.'

'I see,' says Anne, as she scrolls down the page.

Marta adds: 'Analyses of these indicators have been published every two years since 2005 in the *Monitoring Reports of the EU Sustainable Development Strategy* ([7]). So if you're monitoring the EU's progress towards sustainability, they were made for you!'

'So… How about if I pretend I'm doing my presentation!' Anne strikes a pose in front of the laptop. 'Hey kids, the headline indicator for socio-economic development is the growth rate of real GDP per capita!' Anne tries out Marta's dramatic hand gestures. She's pleased that she doesn't knock anything over.

([3]) See http://www.uncsd2012.org/rio20/objectiveandthemes.html
([4]) Council of the European Union, Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy, 10917/06
([5]) Commission communication, *Rio+20: towards the green economy and better governance*, COM(2011) 363 final
([6]) See http://ec.europa.eu/eurostat/sustainabledevelopment
([7]) See http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/publications

'I think you're getting the hang of it already,' says Marta. 'But you might want to leave out "hey kids" if this is meant to be some kind of UN simulation.'

Anne clears her throat and assumes a more solemn expression as she reads further. 'You said that each theme has a headline indicator. But why isn't there one for good governance?'

'That's an excellent question, Anne. Sometimes there are things that are not easily expressed in numbers. But remember, when you make your presentation you need to do more than read through a list.'

'And that brings us back to my original question…' says Anne. 'How do I present this mass of information?'

'Check out *Making Data Meaningful*, a very useful publication from the UN Economic Commission for Europe ([8]). You'll find the PDF on the UNECE website. This document gives pointers on how to tell a story with numbers. And that's what your presentation is… you're telling a *story*. A statistical story tells readers what happened, who did it, when and where it happened, and why it happened.

'But remember to be creative and improvise. For example… why don't you describe how sustainable development issues affect our lives every day? Perhaps you can pick out specific incidents from your own experience that illustrate this point. Corny as it sounds, you should just be yourself.'

'I can't be anyone else, can I?' Anne shrugs. 'But now that you mention it, I *do* remember a particular day... I'd been to the first meeting to set up the model UN and that night I had a dream about being in spaceship coming home to Earth. Then the next day I went on a school trip to the national park where my grandfather is now a ranger… That day made me think a lot about what I was doing and about the environment. Even that silly dream made me think.'

'Perhaps you can start with that day. Even the dream, if you think that's relevant. Everyone dreams. People will relate to that.'

'That's a great idea, Marta. And not so corny after all!'

'And I have a final tip: involve your audience. Have members of the audience summarise your presentation instead of doing it all yourself. That generates discussion about issues that don't have an easy bite-sized conclusion. And there's a little less work for you.'

Anne gets up from her seat and stretches. 'Thanks a lot. Guess it's time to go home now and get stuck into my homework again.'

([8]) See http://www.unece.org/stats/documents/writing

'I might as well see you out,' says Marta. 'I have to put out the recycling.'

Anne walks with a jaunty step to the door. She is feeling a lot better. She has the resources to put together the information she needs, and concrete ideas about how to present it. *Just be yourself.* Easier said than done, but with the right preparation she should be able to manage that.

***

Finally, the day of the presentation arrives. Anne looks around the hall and sees faces from many parts of the world. They all know something about sustainable development from the viewpoint of their own country or region or continent. How will these people react to her presentation? She has learned that sustainable development doesn't stop at the borders of the EU. Social justice around the globe is a vital issue, especially for people in developing countries. They could have a different view on progress towards sustainable development.

There's no time to think about all that right now. She has to keep her focus. She must keep her talk down-to-earth and concrete. And she must remember Marta's further advice just before she went home that day. She'd suggested that Anne learn lessons from the science fiction they both enjoy. Avoid 'info-dumping'. Weave the data in with her narrative and remember to make a *story* out of it.

The room is filled with the hum of random conversation. 'Well… hi everybody,' she begins. Her voice startles her as it booms out of the microphone. 'I'm Anne. As you may have noticed from my badge, I'm representing the European Union at this meeting, along with some colleagues. I am sure you're all familiar with the objectives of the Rio+20 conference. One objective is to "assess the progress to date", and that's what I'll try to do in my presentation. But I will also talk about myself. I don't want to throw numbers at you; I want to tell you how these numbers affect my life – and yours too.'

Marta had warned that her approach may raise a few eyebrows. But plenty of people in front of her have stopped talking and nudging each other. Now they're waiting to hear what she has to say.

Anne switches on her presentation. The first slide appears: *Figures for the future: 20 years of sustainable development in Europe?*

'I'm going to talk about whether the EU has moved towards sustainable development over the past 10-20 years. But I'll start with something that might not seem related at first… me getting up in the morning on a certain day a few weeks ago.

'The morning began when I woke up from a strange kind of dream, probably inspired by our first city-wide meeting for the model UN.

'See, in this dream a bunch of us were having a party… We were in a spaceship, celebrating our return home to Earth. In the windows around the control deck I saw our planet draw closer. It looked like those pictures in science textbooks – a ball covered in blue sea and swirls of cloud and patches of green. But this was right in front of me. It made me wonder about the billions of people sharing space on that blue-green globe and girls my age living in India or China, or Africa or America. We do ordinary things and make our separate paths, yet we're all connected because we live on the same planet. As the spaceship drew closer and orbited around the Earth, I saw the land, the cities and the

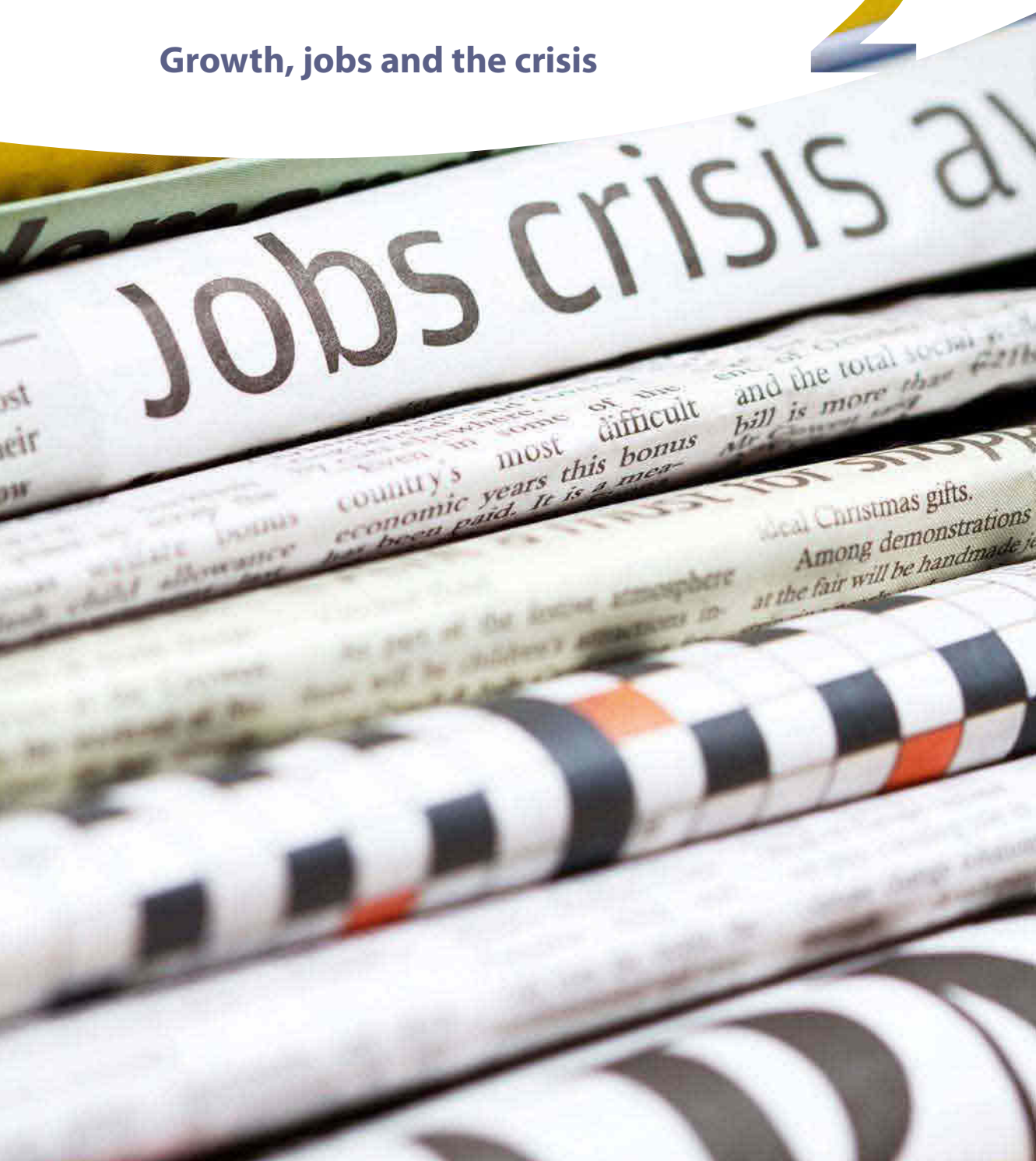
forests. There were more forests, surely. This Earth looks greener than it does in those old photos. A lot had changed while we were away…

'Then someone opened a window in the ship and this fresh air whooshed in that made me feel *great*. OK, I know what you're thinking… If you open the window of a spaceship, it creates a vacuum and everyone gets sucked out. But this was a dream, and health and safety regulations don't apply in dreams. Nor do the laws of physics.'

Anne pauses while a wave of muted chuckles sweeps through the room, bringing an answering smile to her own lips. 'But when you wake up, the concerns of economics as well as the laws of physics definitely *do* apply.'

2

Growth, jobs and the crisis



'I would like to start with the recent economic crisis and how it affected my mood that morning.' Anne puts on the second slide of her presentation, 2.1. It shows a curve going steadily up, until the upward trend is broken by a steep fall.

'I was in a good mood when I came down to breakfast. I was all fired up by a dream that might've been silly, but spoke to me about the new ideas I was encountering. These were all about looking at our planet as a whole and taking steps to improve our lives upon it.

'And then there was my father muttering over the newspaper… He's an investment banker and in view of recent financial troubles he's rather…' Anne is searching for the right term '… *sensitive* about economic trends and outlooks. That morning there was a worrying outlook in the newspaper, saying growth in the economy was slowing again.

'My father told me he was upset with the forecasts, especially when he'd thought things had been picking up after the crash in 2008… But I replied that I hadn't seen signs that anything had ever "picked up", with more people losing jobs because of cuts…

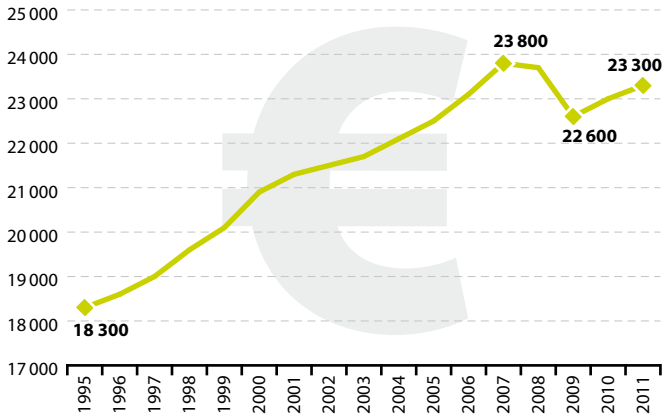
'Now, I mentioned the first model United Nations meeting where I met the other members of the European Union delegation, who came from schools all over the city. It was an eye-opener because I was working with people from less affluent areas. For example, I spoke with a colleague who lives in a poor area near the docks.' Anne briefly meets the gaze of her fellow delegate, who is sitting in the front row. She'd wanted to touch on a few stories other than her own and he was happy for her to mention his. 'My colleague told me that both his parents had lost their jobs over the past couple of years and were still unemployed. He also brought up a newspaper article about a major bank

2.1 **Years of economic growth interrupted**

- GDP grew fairly constantly in the EU until 2007
- After the 2008 'crash' the economy started to contract, shrinking 4.6 % in 2009
- Baltic states were hit hardest by the crisis

Real GDP per capita, EU-27

Euros (deflated)



Source: Eurostat (online data code: tsdec100)

Figures for the future: 20 years of sustainable development in Europe?

reporting a good rise in profits last year. I really didn't know what to think about that and wanted to find out more. But it might've been a mistake to ask my dad – over breakfast, no less – why banks seem to be doing rather well now while a lot of people are still facing difficulty dealing with the effects of the crisis.

'I was only asking a question. But, needless to say, my father didn't appreciate this line of questioning. In fact, maybe he went a bit ballistic. We got into an argument about economic growth and environmental health and sustainability and other things you don't ever expect to be shouting about over the croissants and cold-cuts. I wasn't really prepared for this because I didn't even have a chance to make my coffee. Dad forgets to make it for me because he still thinks of me as a child who only drinks fruit juice at breakfast. And that's juice without the *bits* in it.'

Another quiet chuckle arises from the audience. Anne hadn't meant to make light of the situation, but she sees that this incident has struck a chord. Though her audience comes from all over the world, many of these young people obviously have similar experiences and can sympathise when it comes to a row with their parents.

'So, let's look at the subject of the argument with my father. Did the economy "pick up" after the crash, only to slump again? Luckily, there's a figure that can tell us about what is happening with our economy: gross domestic product, or GDP. GDP measures the amounts of goods and services produced by an economy. It is also often used as a proxy for economic prosperity.'

Anne points to the line that represents GDP per person on the projection. As one of the illustrations she found on the Eurostat website, it tells a complex story so simply. *Thank you, Marta.*

'As we can see, GDP per person grew more or less constantly in the EU, at least until 2007. It approached a kind of plateau or levelling off between 2001 and 2004, when growth was slower than in the years before. Some Member States, like Germany, Italy and even the Netherlands, had experienced a shrinking economy during that time. But this was nothing compared with the "crash", as my father described it, that started in 2008 and that hit us fully in 2009.

'In 2009, our economy contracted by 4.6 %. But keep in mind that this figure is just an EU average. In the Baltic countries Estonia, Lithuania and Latvia, GDP per person fell by about 15 %. However, I found out that one country did see economic growth during the crisis and that was Poland. Poland's GDP per person grew a bit slower in 2009 than before, but it still grew. My father, though, wasn't taking much solace in Poland's GDP.'

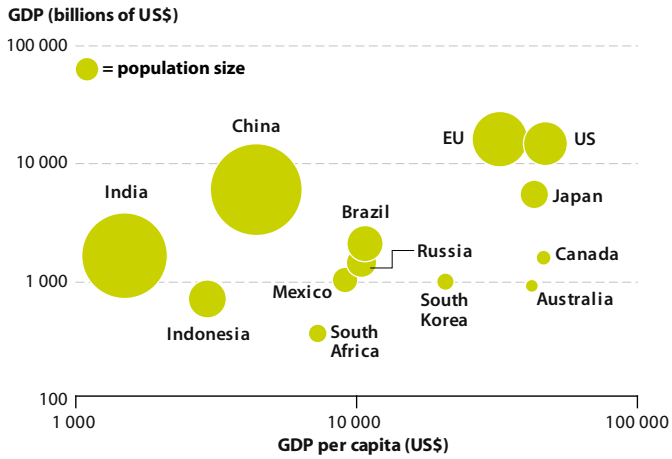
Anne stops, wondering if this observation could be taken the wrong way by any delegates from Poland. But there are no complaints, so she continues. 'So in spite of the crisis, the longer-term trend shows a rather favourable picture of economic growth in the EU. Between 1995 and 2011, GDP per person in the EU grew by more than 25 %. The European Single Market, which has ensured the free movement of people, goods, services and capital within the EU since 1993, has driven part of this growth. Up to 2006, the Single Market added 2.2 % to the EU's GDP and created about 2.8 million jobs in the EU ([1]).

([1]) European Commission Directorate-General for Economic and Financial Affairs, *Steps towards a deeper economic integration: the Internal Market in the 21st century A contribution to the Single Market Review*, Economic Papers N° 271, January 2007.

2.2 **The EU is the world's biggest economy**

- The EU's GDP per capita grew by 25 % from 1995 to 2011
- The world's GDP per capita grew by 40 % from 1992 to 2010
- Economic growth was fastest in middle-income countries such as Brazil, Russia and China

The EU compared with other economies in the world, 2010



Source: World Bank

Figures for the future: 20 years of sustainable development in Europe?

'However, in comparison the world's GDP per person grew by 40 % from 1992 to 2010 ([2]), indicating that economic growth was much faster in other parts of the world, especially in the so-called middle-income countries like Brazil, Russia, India and China.'

'But you do know that living standards in other parts of the world – including those "middle-income countries" – are still much lower than in Europe, don't you?' A man interrupts her with a question.

Anne shades her eyes from the lighting. Only now can she see the guy who is interrupting her, but she can't tell where he's from. Could be India. He seems to be reacting because she mentioned his country. 'I know – and I've even prepared a graph for this,' replies Anne. She puts on slide 2.2.

'A comparison with the rest of the world shows the EU today is the biggest economy in the world. In 2010, all 27 Member States together produced a GDP of more than 16 000 billion US dollars. That's an incredible number. The United States is second, followed by China and Japan.

'However, we can also see from slide 2.2 that GDP per person differs widely between developed nations – like the EU, the United States or Japan – and the "BRIICS" countries, which is an acronym that stands for Brazil, Russia, India, Indonesia, China and South Africa.'

([2]) United Nations Secretary-General's High-level Panel on Global Sustainability, Resilient People, Resilient Planet, *A future worth choosing*, 2012.

'So the higher growth in other parts of the world only means these countries are catching up with Europe,' the man insists. 'And the OECD ([3]) has projected that GDP growth rates will slow in China and India in the coming decades. Also, the highest economic growth is expected to take place in Africa. But Africa will still remain the poorest continent.'

Anne is taken aback and doesn't know how to answer. Scrapes of chairs, a cleared throat, then a murmur from the audience fills the lull.

'Yes… I know living standards in developing countries are lower,' she finally replies as she tries to gather her thoughts. She has just dealt with the first part of the man's question. But doing justice to the second part would take her well away from her immediate topic onto points she'd planned for later. 'We'll look at that in more detail later,' she says firmly. 'I will present information and graphs that will address your question and I'll be happy to take it up again.'

The man sits down. She hopes he doesn't think she's just brushing him off. Well, she'll just have to prove otherwise when she comes to the appropriate part of her presentation.

And now… to return to the topic at hand. 'So, anyway. I'll tell you more about the outlook that worried my father. Although the GDP graph on slide 2.1 showed us that growth did "pick up" in 2010, just as my father thought, the further outlook for GDP growth in the EU is uncertain. Economic growth actually slowed again in 2011 and according to recent forecasts ([4]) there is likely to be another contraction, of about 0.2 %, in 2012.

'As I've learned, GDP growth expands an economy's capacity to create new jobs. So let's see what the opposite – a shrinking economy – means for employment in the EU.' She puts on slide 2.3.

'This curve does look quite similar to 2.1, doesn't it? Growth in GDP did go hand in hand with a rise in employment. We can even see the plateau around 2002. And we can see that the crisis also hit the job market, with a time lag of about one year. Between 2008 and 2010, employment in the EU went down by 2.4 %. In absolute numbers, this means about 6 million people lost their jobs between early 2008 and early 2010 ([5]). Most recent figures from February 2012 ([6]) show that 24 550 million people in the EU were unemployed, which is about 10 % of the EU's labour force.'

'Growth in GDP did go hand in hand with a rise in employment'

The murmur in the audience has well and truly stopped. Everybody seems to be listening now, Anne thinks, and she's glad she followed Marta's advice about telling a story.

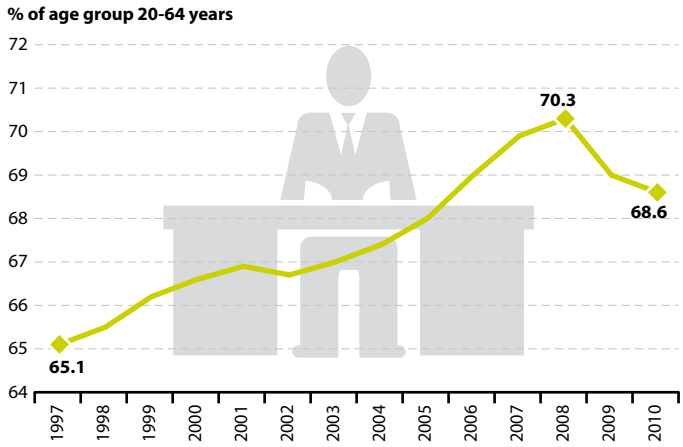
Finding her confidence again, Anne continues. 'Men were much harder hit than women, mainly because the crisis had a bigger impact on sectors that are dominated by men, such as construction and manufacturing. During the past two years, men accounted for more than 80 % of the decline in employment in the EU ([7]). The crisis also especially hit young people between 15 and 24 years and immigrants. Also, less educated people were more vulnerable to job losses, such as those working in the construction sectors of Spain, the UK and Ireland.' Anne looks around and waits.

([3]) OECD, *OECD Environmental Outlook to 2050: The Consequences of Inaction*, 2012.
([4]) Forecasts by the European Commission, Directorate-General for Economic and Financial Affairs as of March 2012.
([5]) National accounts, domestic concept. See also Statistics in focus 29/2011 "Modest positive signs in the EU-27 labour market".
([6]) Eurostat News Release 51/2012 from 2 April 2012.
([7]) European Commission Directorate-General for Employment, Social Affairs and Inclusion, *Employment and Social Developments in Europe*, 2011.

2.3 **Employment rates tend to follow GDP growth**

- Since 1997, employment in the EU has risen significantly
- The increase has been faster for women than for men
- The rise in female employment reflects growth in service industries

Total employment rate, EU-27



Source: Eurostat (online data code: tsdec410)

Figures for the future: 20 years of sustainable development in Europe?

After the reaction that greeted her mention of specific countries, she's ready for somebody to step up with a critical remark. Then she realises she mentioned EU Member States this time, so any objections would have to come from her own EU 'delegation'. They'd agreed to stick to the principle of 'speaking with one voice' for the EU and not to argue about differences among the Member States in front of the whole model UN audience.

She'd forgotten about that. Perhaps it didn't seem so important at the time. But now Anne feels thankful and she continues her presentation.

'The longer-term trend shows a positive picture, despite the crisis. This is similar to what we've seen with the GDP. Since 1997, employment in the EU has risen by more than 5 %. The increase was faster for women than for men, which means that we are finally catching up with men and the gap between employment rates of men and women is shrinking. That's good news for me and many others in this room.'

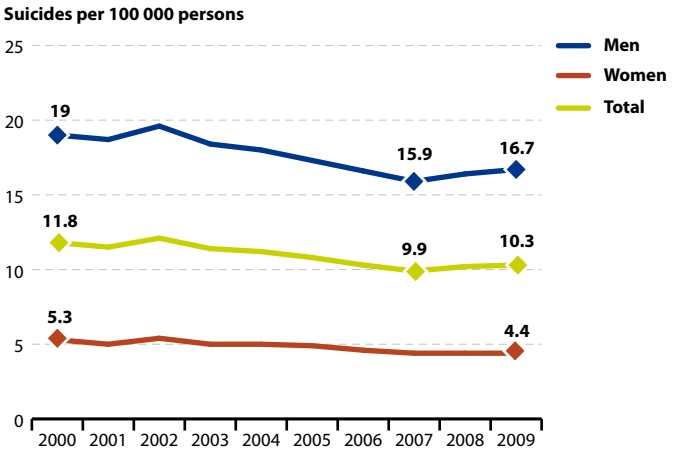
This comment is greeted by scattered applause. 'Yes,' Anne responds, 'signs of progress in one kind of inequality is definitely good news, though we have a long way to go to address the whole range of inequalities and exclusion. More than a quarter of all employed women still work in jobs in the lowest wage group, outnumbering men there by almost two to one. And women also hold more than 80 % of the existing part-time jobs, which usually tend to be in that same low-waged group ([8]). So perhaps we should hold our applause for just a little longer…' The audience is falling silent again.

([8]) European Commission Directorate-General for Employment, Social Affairs and Inclusion, *Employment and Social Developments in Europe, 2011*.

2.4 **Long-term fall in suicide rates**

- Suicide rates vary widely between men and women and between age groups
- More men commit suicide than women
- Suicides are highest among people 85 and older
- Increase in 2008 and 2009 linked to the economic crisis?

Suicide death rate, EU-27



Source: Eurostat (online data code: hlth_cd_asdr)

Figures for the future: 20 years of sustainable development in Europe?

'And concerning the further outlook, the job market hasn't really started to "pick up" yet, in contrast with GDP. In February 2012, there were about 1.8 million more unemployed people than one year before ([9]).

'So, going back to the spat I had with my father that morning, I think I was right to question him when he talked about things picking up "after the mess in 2008"… at least in terms of the labour market.'

Anne pauses before putting on the next slide, which will cover a sensitive subject.

'Now, I already mentioned that my father is an investment banker. I know that many people think banks were a major cause of the financial crisis. But being close to a banker – my father – I also know that some people working in that sector were hit hard by the crisis. Too hard.'

Slide 2.4 fills the screen. It is about suicides.

'The interplay of pressures and conditions that would provoke people to take their own lives is complex, as you can imagine. Cultural, age and gender differences all affect suicide rates, too. However, I've learned that suicides can also be seen as an indicator of mental health in a whole society.' Anne hesitates. This is where she planned to bring a more personal angle in again. But isn't her approach all about getting personal, as Marta suggested?

([9]) Eurostat News Release 51/2012 from 2 April 2012.

'One of my father's colleagues in the bank had committed suicide when he was kicked out of his job when the crisis hit. I didn't know him, but my father was shocked by this tragedy. Although he never really said it, I assume he blamed the crisis for his colleague's death. Maybe that's one reason why he is so concerned about negative economic outlooks.'

Anne looks at the graph she's presenting. A blue line for men, red for women, green for the total. Anne reminds herself that these coloured lines represent real people. She wants her audience to remember that too.

'If we look at suicide rates as an indicator of general mental health, they relate to how we *all* live, whether or not we have personally been affected by suicide. And I found trends in suicide rates that coincide with what happened to our economy and the job market during the crisis ([10]).

'As you can see on slide 2.4, there has been a downward trend overall since 2000. However, we can again see the plateau around 2002 that we already observed for the GDP and employment indicators. And we can also see that more people committed suicide in 2008 and 2009 than before. However, this is only true for men, where there was a 5% rise in suicides between 2007 and 2009. There was no change in suicides among women.

'I don't think it's far-fetched to imagine that someone who has lost his or her job may get so stressed and depressed by their financial *and* personal situation that they consider suicide. It's not only a job they may be losing, after all. It could be their home. *Everything.* So I'd say there could be some kind of connection between the trends we see in GDP and employment and suicide rates ([11]).'

Anne puts on a new slide. 'But the economic crisis did not only have consequences for those who lost their jobs or worse – it affects all of us. Slide 2.5 illustrates this.

'I'm sure you've already heard and read about the problem many countries are facing now: they have spent so much money on avoiding the harmful consequences of the crisis that public debt levels are going up. And that has already become a severe issue for a few EU Member States.

'Debt in the EU as a whole rose significantly between 2000 and 2010'

'Slide 2.5 shows the debt-to-GDP ratio, which is what you can usually read in newspapers. It shows how "big" public debt is compared with GDP. As we can see, debt in the EU as a whole has risen significantly from about 62 % in 2000 to 80 % in 2010.

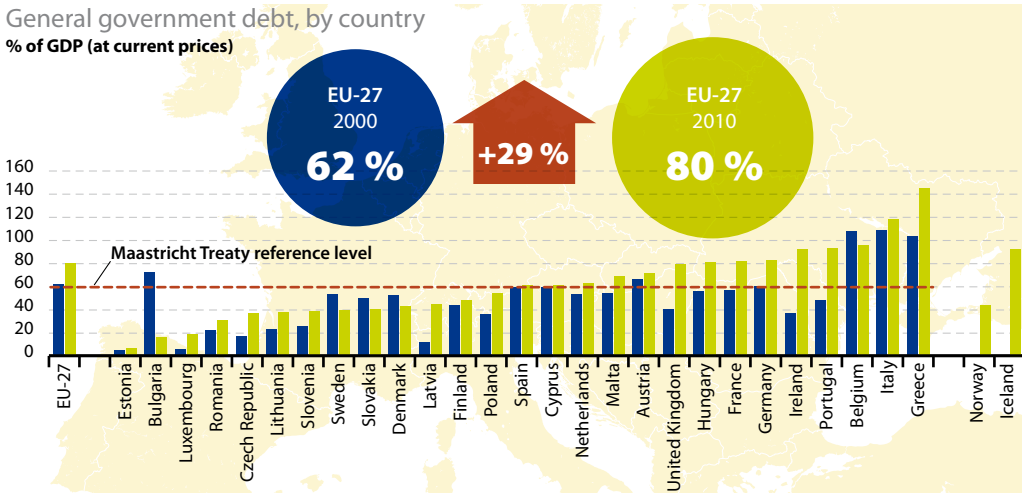
'We can also see that only five Member States have been able to reduce their debt levels over the past ten years. In all other countries, debt has increased. Also, about half of the EU Member States are above the reference level of 60 % that has been set in what's known as the Maastricht Treaty ([12]).'

'Excuse me,' someone calls from the audience. 'How is this related to sustainable development?'

Anne knows how to answer straight away because she asked this question herself while preparing her presentation.

([10]) Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., and McKee, M., 'Effects of the 2008 recession on health: a first look at European data', *The Lancet*, Vol. 378, pp. 124-125, 2011.
([11]) Stuckler, D., Basu, S., Suhrcke, M., Coutts, A., and McKee, M., 'The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis', *The Lancet*, Vol. 374, pp. 315-323, 2009.
([12]) Treaty on European Union, Official Journal C 191, 29 July 1992.

2.5 **Country debt has tended to rise over the past 10 years**



Source: Eurostat (online data code: tsdde410)

Figures for the future: 20 years of sustainable development in Europe?

'Putting it simply… in terms of sustainable development, debt figures above this reference level are considered unsustainable. The higher the debt, the more interest has to be paid and then there's less money for spending on health, education, infrastructure and other socially important goods and services. Moreover, sustainable development is also about justice between generations and I'm sure you wouldn't find it just if your parents handed over huge amounts of debt to you.'

Anne turns back to the screen. 'I want to mention one last thing in relation to this figure. At the right end of the chart you can see that some countries have debt levels around 100 % and above.' Anne looks at her notes: '93 % for Ireland and Portugal, 96 % for Belgium, 118 % for Italy and 145 % for Greece. So it's no surprise that, except for Belgium, these are the same countries that the newspapers mention regularly.'

Anne looks around the audience. She can see some heads nodding.

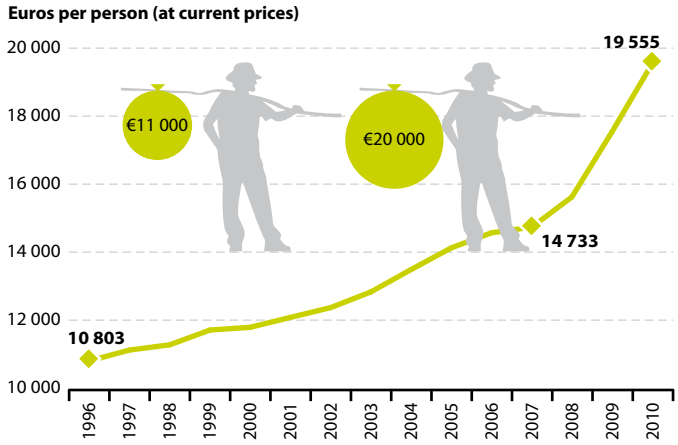
'But what I do find striking is the amount of debt that rests on every one of us.' She puts on slide 2.6.

'I've done some maths, dividing total EU debt by population figures. We can see that in 1996 each EU citizen carried a debt "rucksack" of about 11 000 euros. Over the years, this rucksack has become heavier and heavier, especially in the recent crisis. Each of us is now carrying a debt rucksack of almost 20 000 euros, which is nearly two times heavier than some 15 years ago. Be aware that these figures are not corrected for inflation, which means the "real" burden grew less dramatically. But still… I mean, I went on a camping trip a few years ago and had to carry an ordinary rucksack up a hill and that felt *massive*.

2.6 **Government debt per person has also grown**

- Public debt per person (in current prices) has almost doubled in the past 15 years, while the inflation rose by only 30 % during this period
- The sharp rise since 2007 reflects the effects of the economic crisis

General government debt, EU-27



Source: Eurostat (online data code: tsdde410, demo_gind)

Figures for the future: 20 years of sustainable development in Europe?

'My muscles were sore for a week afterwards. Imagine what a rucksack weighing the equivalent of 20 000 euros would be…'

'But is all growth necessarily "good" and is all debt necessarily "bad"?' Catherine, who is Anne's favourite teacher and chair of the EU delegation, has asked that question.

Anne breaks off and smiles at this prompt. Speaking 'in one voice' doesn't rule out members of the delegation encouraging each other and making sure their colleagues stay on topic.

'Well, these questions lie at the heart of sustainable development, especially how we need to consider the nature and direction of future growth. And we'll start looking at that when I move on to the next subject: energy consumption.'

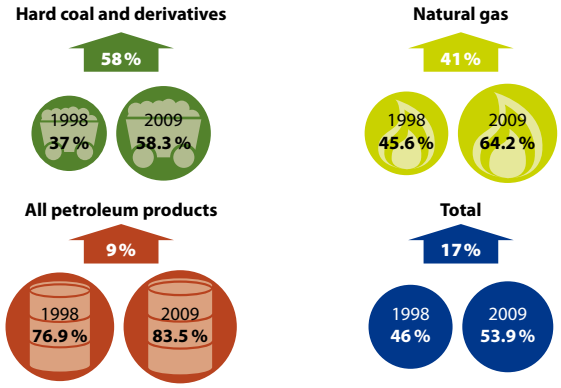
Energy: increasing consumption, increasing dependence

3

3.1 **Depending on other countries for energy**

- The EU's dependence on imported energy has risen constantly over the past decade
- Since 2004 more than 50 % of the energy used in the EU has been imported
- Dependence is highest for petroleum products such as crude oil
- About one third of crude oil and natural gas imports come from Russia

Energy dependence, EU-27



Note: 'Total' is not the average of the other three fuel categories shown. It also includes other energy sources, such as renewable energy or nuclear energy, which are treated as domestic sources.

Source: Eurostat (online data code: tsdcc310)

Figures for the future: 20 years of sustainable development in Europe?

'After the argument with my father, I stomped upstairs to get myself dressed for school. We were going on an excursion that day to the national park near our city. You should visit it if you haven't had the chance yet. My grandfather Robert works there and he can tell you some interesting things while showing you around.

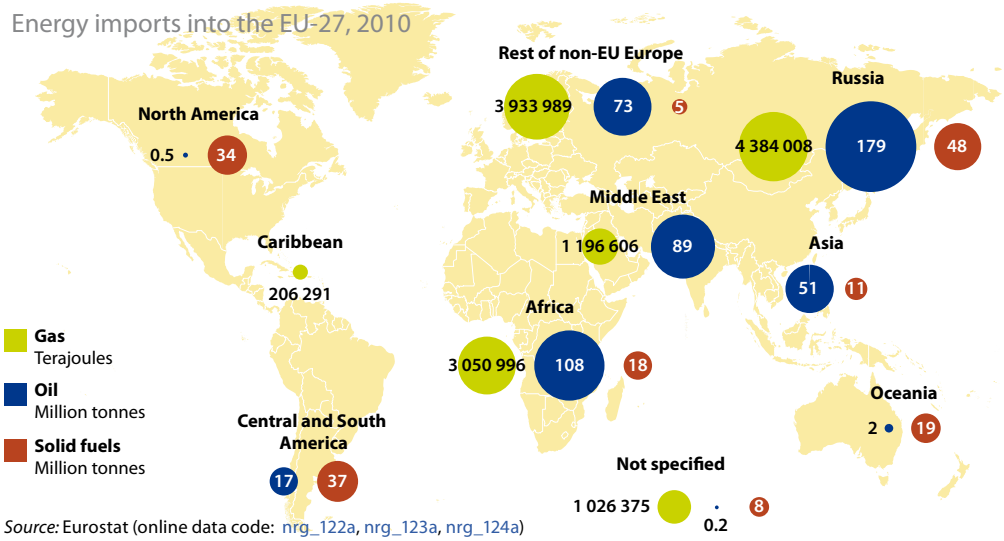
'So, when I came down again, my father was still sitting in the kitchen and grumbling over the newspaper. I could feel that was partly because I had challenged him. But from the tone and content of his grumbles, I could see he'd moved on to some other worrisome news. There was an article about the social unrest in North Africa and the Middle East, and how this might affect the already high energy prices in Europe.' Anne puts on slide 3.1.

'As you know, Europe doesn't have enough of its own energy sources to meet its needs, so it depends on imports from outside. This dependence has grown more or less continuously over the past decade and since 2004 more than half of the energy used in the EU is imported from other parts of the world.'

Anne points to slide 3.1. 'And as you can see here, the dependence varies for the different types of energy. It is highest for petroleum products, including crude oil. More than 80 % of these products are imported. The second highest dependence concerns natural gas, with a reliance of almost 65 % in 2009. For both energy sources, about one third of the total imports come from Russia. For crude oil, another 25 % is imported from Libya and the Middle East.

3.2 **Where the EU imports energy from**

Energy imports into the EU-27, 2010



Source: Eurostat (online data code: nrg_122a, nrg_123a, nrg_124a)

Figures for the future: 20 years of sustainable development in Europe?

'Since my father is a banker, managing risks by diversification is a major part of his day-to-day business. He is concerned that the supply of something we rely on for so many of our needs is concentrated among relatively few partners. So the article about social unrest in some of these partner countries made his alarm bells ring.'

'Isn't that a very one-sided point of view?' An angry voice interrupts Anne. 'I mean, there is a reason for the "social unrest", as you call it, in these countries. You only seem to be concerned about the "dangers" that arise from this movement for Europe. But have you also thought about the people in these countries and why they are taking to the streets?'

'Yes, I have thought about that. And if I'd voiced any of those thoughts – which were really questions again – no doubt I would've had another row with my dad.' A few sympathetic chuckles from the audience help Anne stay calm. 'But I have to admit I don't know very much about the circumstances that led to these movements. Maybe we can have a talk after my presentation – I would be interested to learn more about this.' The guy nods. He seems to be satisfied with this reply.

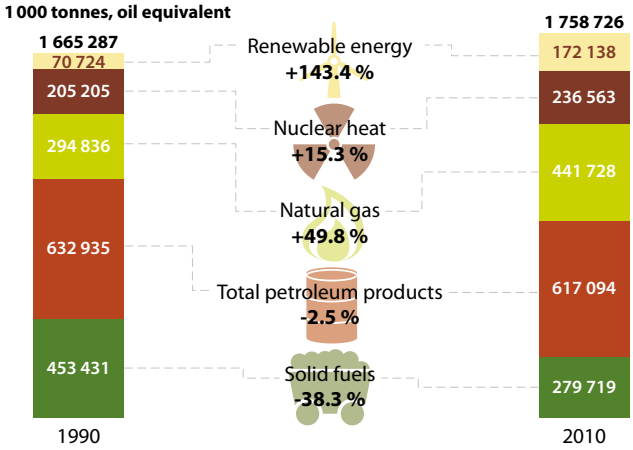
In a way he's right, Anne thinks. Her perspective *was* focused on the European Union. She remembers the 'world-embracing' gesture that Marta made when telling her about the historic relevance of the Rio+20 conference. *That's what I must do for my audience*, Anne had told herself then. But it's not so easy after all.

Again, Anne tries to pick up the thread of her presentation. 'So… what are the reasons for Europe becoming more and more dependent on energy imports? On one hand, the

3.3 **Energy consumption increasing**

- Energy consumption in the EU has grown by 6 % since 1990
- The EU's 'energy mix' has changed since 1990
- Use of solid fuels has fallen, while use of natural gas has grown by almost 50 %

Gross inland energy consumption, by fuel, EU-27



Source: Eurostat (online data code: tsdcc320)

Figures for the future: 20 years of sustainable development in Europe?

production of oil and gas in Europe is going down. On the other, we are using more and more energy.' With this, she switches to slide 3.3.

'Over the past 20 years, energy consumption in the EU has grown by 6 %. While we are using much less in the way of solid fuels like hard coal or lignite than in 1990, demand for natural gas and nuclear heat has risen. In particular, the growth in natural gas use by 50 % strikes me because this gave a big boost to the EU's growing energy dependence. The use of crude oil and petroleum products has pretty much stayed the same, though we've seen that this is where dependence on imports is highest in the EU.

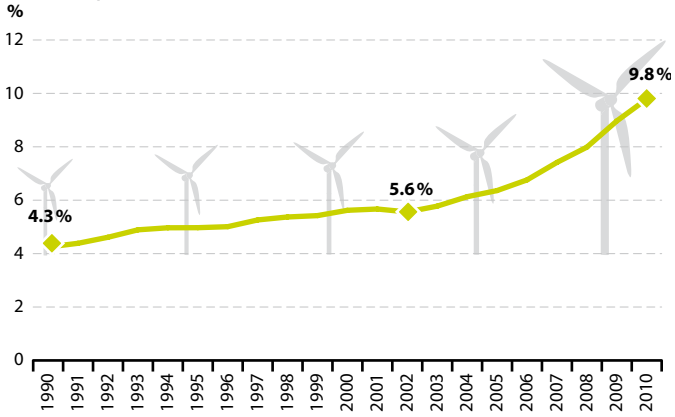
'But what gives *me* a big boost is the remarkable growth in the use of renewable energies by more than 140 %. As we can see on slide 3.4, the share of renewables in energy use rose rather slowly in the 1990s, but has jumped to almost 10 % since 2002. I'd consider this good news, keeping in mind that energy dependence for renewable energy is much lower than for fossil fuels. And as I will show you later, this is also good news for trends in greenhouse gas emissions.'

Anne points to the pie chart on slide 3.5. 'About two thirds of the renewable energy we use is biomass and renewable waste. On that trip to the national park I mentioned, my grandfather showed me bags of forest waste earmarked for use as biomass. And as we can see here, wood and wood wastes actually account for almost half of the renewable energy used in the EU. In fact, it's mainly biomass that has driven the jump in renewable energy use I mentioned earlier. The second main source, hydropower, in contrast stayed rather stable.

3.4 **Renewable energy playing a bigger role**

- Use of renewable energy in overall EU energy consumption has risen by 140 % since 1990
- The share of renewables has jumped to almost 10 % since 2002
- Increased use of biomass and waste has driven this leap

Share of renewable energy in gross inland energy consumption, EU-27



Source: Eurostat (online data code: tsdcc320)

Figures for the future: 20 years of sustainable development in Europe?

'Wind power and solar energy have risen remarkably over the past decade. In 2010, both sources produced about nine times more energy than in 1999. However, as we can see, their share in renewable energy consumption is still rather small. But this may change over the next ten years or so. Even my father has been talking about putting solar panels on our roof, so it must be catching on!'

Anne looks around the audience. She's become rather flushed and fervent when talking about renewable energy. She sees that many people are leaning forward, waiting for her next words. Others are taking notes. She's gratified that at least a few other students in the audience appear to share her enthusiasm.

'According to the EEA – the European Environment Agency – offshore wind energy capacity will rise 17-fold between 2010 and 2020, and other renewable energy technologies like concentrated solar power will also increase more than 11-fold ([1]). This sounds quite promising, doesn't it?'

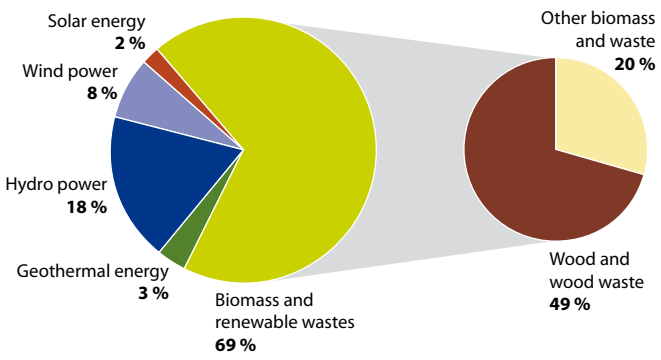
'I wouldn't be so sure about that.' The guy Anne previously associated with India steps in again. 'Assuming that the world economy will continue to grow, it is projected to need 80 % more energy in 2050, according to the Organisation for Economic Co-operation and Development ([2]). Without new policies and actions, the global energy mix in 2050 will not differ much from today, with the share of fossil fuels at about 85 % and renewables just over 10 %.'

([1]) *EEA, Huge renewable energy growth this decade, if EU countries meet projections, 2011.*
([2]) *OECD, OECD Environmental Outlook to 2050: The Consequences of Inaction, 2012.*

3.5 **Consumption of renewable energy**

- Biomass and renewable wastes are the most important renewable energy sources
- Wood and wood wastes account for almost half of renewable energy use in the EU
- Energy produced from wind and solar has increased nine-fold since 1999

Consumption of renewable energy, EU-27, 2010



Source: Eurostat (online data code: nrg_1071a, nrg_1072a)

Figures for the future: 20 years of sustainable development in Europe?

Obviously, her renewable energy figures don't sound so promising to *him*.

'Well… then let's hope there *will* be some real policy action at the Rio+20 conference concerning energy!' Anne is eager to hold on to her optimism about renewable energy.

'But I wanted to talk about something else,' she continues. 'So far, I have shown you the energy sources we are using in the EU and where they come from. Now I want to show you *who* is using the energy and what they use it for.' She puts on slide 3.6.

'Here we can see how the energy supplied to the "final consumer's door" is used. The three main energy consumers are industry, transport and households. Together, these sectors use about 85 % of the total energy supply. However, we can see that between 1990 and 2010 industry and transport switched roles as *the* major consumer. Energy use in industry fell by about 20 %, while energy demand in transport grew by almost 30 %.

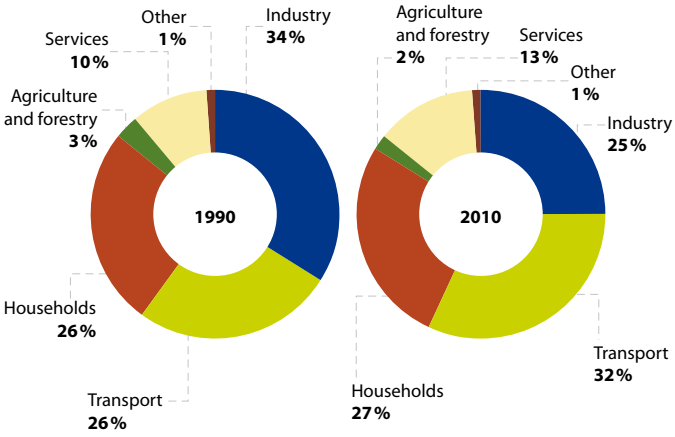
'And although the share of households stayed stable, their energy use *did* actually grow by about 12 %. But I have prepared another figure that illustrates an even more remarkable trend. It is about a very important form of energy that we use in households: electricity.' The screen flickers and slide 3.7 appears.

'As most of us know, electricity plays an important role in meeting our daily needs, from lighting, cooking, cleaning and heating to entertainment. And slide 3.7 underlines its vital role. We can see that over the past 20 years electricity use by households has risen continuously, by about 40 %. And what's the main reason for this growth? It is down to *us* and the way we consume. Electronic devices are becoming more efficient, but we are

3.6 **Where the energy is used**

- Three sectors – industry, transport and households – use about 85 % of the total energy supply
- Energy use in industry has fallen by 20 % since 1990, while energy use in transport has grown by 30 %

Final energy consumption, EU-27



Source: Eurostat (online data code: tsdpc320)

Figures for the future: 20 years of sustainable development in Europe?

using more of them and often at the same time. This is called the "rebound effect", which is when technological improvements are offset by behavioural changes.'

Anne notices some amazed faces. She smiles to herself, because she has expected this kind of reaction to 'us and the way we consume'.

'The growth in electricity use is also driven by how and where we live. There are more and more households with fewer and fewer people in the EU, but each household needs a washing machine, a dishwasher, a TV, a radio, a computer and so on.'

Anne thinks about the big house where she and her dad are living. It would make a perfect example of 'unsustainable living'.

'Take the house where I live with my father,' she adds. 'All those landscape windows, high ceilings and big rooms are lovely, but we use a lot of energy to heat and light our home. The roof, though, provides plenty of space for solar panels. And yes, I know we're not typical. Many other people live in smaller homes. But just because these homes are small, perhaps overcrowded, doesn't make them all warm and cosy and sustainable. Oh no… they're likely to be poorly insulated, with obsolete heating systems or no proper heating at all. And tenants in private *and* social housing are in no position to choose to install solar panels or biomass boilers even if they have the money to pay for them.

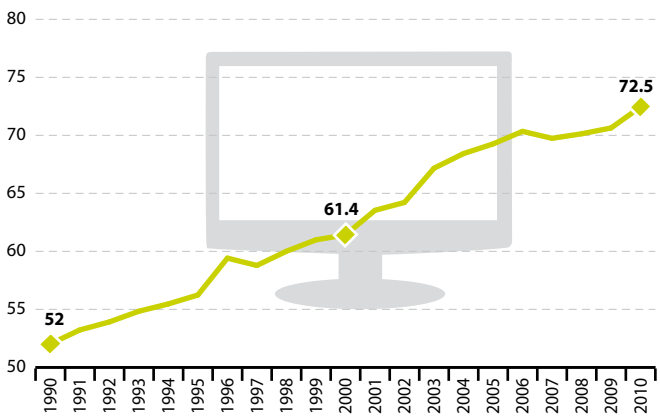
'So, that's the situation on some of the ground we stand on. But not all countries and regions face exactly the same situation. So… I've done some maths again to see the differences in electricity use across the EU.' The next slide appears.

3.7 **Households using more and more electricity**

- Electricity use by households has grown fairly constantly in the EU
- It has risen by about 40 % over the past 20 years
- The 'rebound effect' has offset technological improvements

Electricity consumption of households

Million tonnes of oil equivalent



Source: Eurostat (online data code: tsdpc310)

Figures for the future: 20 years of sustainable development in Europe?

'On slide 3.8 I have calculated the electricity used per household in the 27 Member States. We can see that the differences are quite dramatic. Looking at the extremes, a household in Finland uses six times more electricity than a household in Romania.'

'Do you have an explanation for these differences?' Catherine, Anne's teacher, steps in again. Anne is glad that she took some notes for this one, which she can turn to now.

'I think so. From what I have learned, there are big differences between Member States in electricity use due to lifestyle, habits and climate, among other things.'

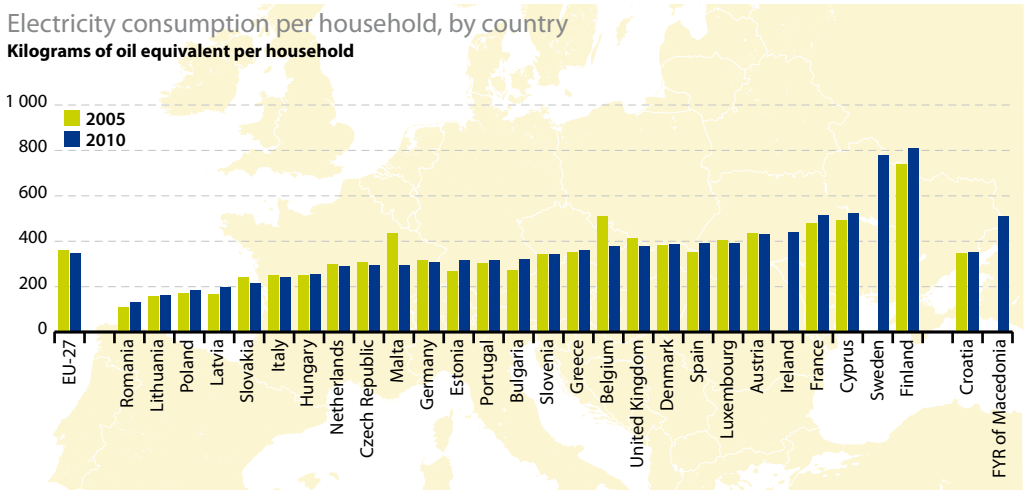
Anne checks her notes again. 'But we Europeans should consider ourselves lucky anyway. Because I have also learned that over 1.3 billion people, or 20 % of the world's population, lack access to reliable electricity ([3]).'

A girl in the back of the room takes down her hand. She obviously wanted to make a similar point. Anne is pleased she isn't the only one who has read the UN's 'resilience' report ([4]).

Anne doesn't need to read her notes to make her next point. 'Now, I mentioned my home, its size and unsustainable use of fuel. But it is unsustainable in other ways too. It certainly illustrates some issues in urban design and lifestyle that affect sustainability. Did I mention that it isn't near any public transport links and that I rely on my father to drive me to school? Or to go anywhere, really.

([3]) United Nations Secretary-General's High-level Panel on Global Sustainability, *Resilient People, Resilient Planet: A future worth choosing*, 2012.
([4]) See previous footnote.

3.8 **An EU-wide view of household electricity use**



Source: Eurostat (online data code: tsdpc310, lfst_hhnhtych)

Figures for the future: 20 years of sustainable development in Europe?

'In that context, I'll take you back to the scene in our kitchen... I was getting my packed lunch together. Sandwiches, a mini-carton of juice. Remember the juice. That juice is going to come up later.'

A single muted giggle greets that comment. 'I mean, not in *that* way,' insists Anne, sternly trying to suppress a smile. They're supposed to be UN delegates, after all! 'There are sustainability issues around that juice, which I'll talk about later.

'Anyway, I had my sandwiches and juice packed into my rucksack. But my father was still reading his paper, so I had to remind him that our class was going on an excursion to the national park and I needed to be there early.

'Now, I was looking forward to this trip, especially after the model UN meeting. It would be a chance to look into some of the issues we talked about there. And I was also looking forward to seeing Grandpa Robert. Maybe I was a bit nervous about it too because I've not seen him since he and my dad fell out a few years ago… But I wasn't going to mention that Grandpa Robert will be showing us around because my father would be likely to say something stupid about him. He always does.

'My father let go of his paper with great reluctance and looked up. And I was really expecting him to have another go at me, but he just kind of sighed and picked up the car keys and said "let's go".'

4

Role of transport in the economy

'So we got in the car and drove towards the city. It wasn't even a minute before we were in the middle of a queue of cars crawling long the motorway.

'You can imagine the atmosphere between us in the car and the congested traffic didn't help. Then my father apologised for being rude at breakfast. He said he was tense because he had an important meeting that day at his bank about "restructuring", which usually involves someone's head rolling – and he was afraid it could be his.'

Anne also remembers the half-smile on her father's face when they were driving towards the motorway. He enjoys driving, even when he says he's tense. In fact, he'd been driving that space ship in her dream, with the exact same smile.

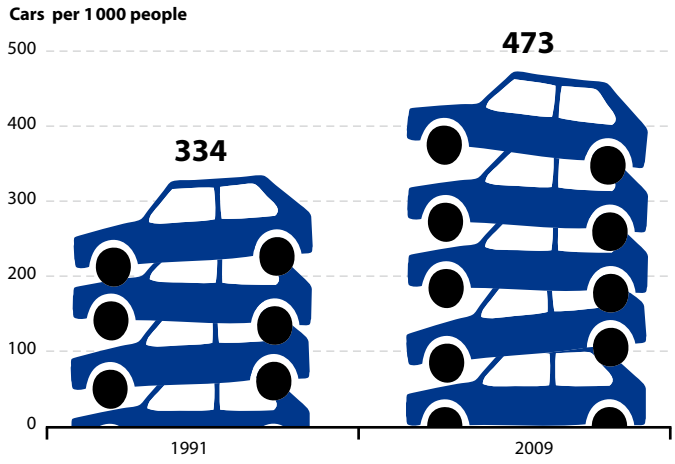
'I accepted his apology. Yes, I could see his concern about the meeting at work. After all, if he lost his job then how would I be able to enjoy school trips and croissants at breakfast and go to university? But to be honest, I wasn't in the mood to talk. I had a feeling that if we picked up our conversation in any way, we'd be hissing and spitting at each other again. And that wouldn't be at all pleasant in the confines of my father's car – even if it is a huge 4x4.

'I was also getting very anxious because time just seemed to flow by without the queue of cars moving forward much. This trip to the national park was becoming more and more important to me and I would've been be gutted if I'd missed it. Although I hadn't given much thought to the number of cars on our roads so far, it did seem to me that traffic was getting worse and worse.

4.1 **More and more cars on the road**

- The number of cars per 1 000 people has grown by 40 % since 1991
- Huge differences exist between Member States
- In nine Member States there is at least one car for every second person

Motorisation rate, EU-27



Source: Eurostat (online data code: tsdpc340)

Figures for the future: 20 years of sustainable development in Europe?

Anne switches to slide 4.1 of her presentation. 'That was why I looked for figures that could tell me whether this was the case – and see what I've found.

'This slide is about the number of cars we see about on the road. I've been advised to be careful with these figures because they only show the number of cars registered in the European Union and not whether and how they are actually used. But I'd still consider the trend remarkable. Since 1991, the number of cars per thousand people has grown from 334 to 473, which is an increase of more than 40 %!

'As with most of the indicators I will talk about today, there are huge differences between Member States. In 2009, car numbers per thousand inhabitants ranged from less than 200 in Romania to more than 600 in Italy and Luxembourg. There are nine Member States where there's at least one car for every second person.

'So is it any surprise that our roads are more and more jammed, and you find yourself stuck in traffic on a regular basis, especially when you have to get somewhere else in a hurry?' Some affirmative nods and quiet laughter in the audience tells Anne she's not the only one who thinks so.

'So… I was still sitting in the car with my father. Soon I couldn't keep quiet any longer. I burst out with a rant about the lack of public transport where we live. This led to my usual complaint about how I just can't go to visit a friend whenever I want because I have to be ferried by car. This was especially frustrating because I'd just met new people I liked at the model United Nations who didn't live in the same area. I'd want to get together and prepare papers with them, wouldn't I?'

Anne smiles, remembering how Marta had teased her about joining the model UN to meet boys. *We'll see how* that *goes at the social later.*

'But to my surprise, my dad agreed with me. He'd welcome better public transport with open arms, he said. Imagine… if he could take a train to work, he could simply get on, make himself comfortable and read his newspaper and not have to worry about getting where he has to go.

'Then I pointed out that reading the paper always aggravates him, this morning being a case in point. And he even laughed.'

So do a few people in the audience.

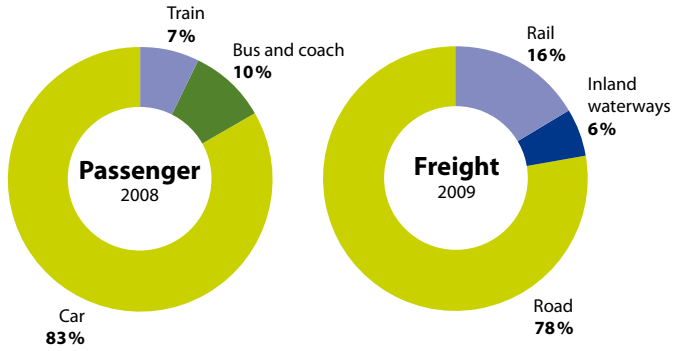
'But then the banker in him came through again,' Anne continues. 'And he started talking about how much more cost-effective road freight transport is compared with rail. Of course, there are also other factors behind the figures I'll show next, such as historical trends or investments in transport infrastructure. But I still think my father may have a point there, as we can see on slide 4.2.

4.2 **Transport of goods and passengers in the EU**

- Road is the most common method of transport in the EU
- Public transport accounts for less than 20 % of travel
- The share of road freight transport has grown since 2000 at the cost of rail

Modal split of passenger and freight transport, EU 27

% in total inland passenger-kilometre and freight tonne-kilometre



Source: Eurostat (online data codes: tsdtr210, tsdtr220)

Figures for the future: 20 years of sustainable development in Europe?

'Here you see what's called a "modal split" in passenger and freight transport. That is the share of the different transport modes in total transport movements. The 83 % figure in the left-hand chart on slide 4.2 tells us that most of the cars in the EU do actually seem to be used. By comparison, public transport by train and bus appear dwarfed, with a combined share of 17 %.'

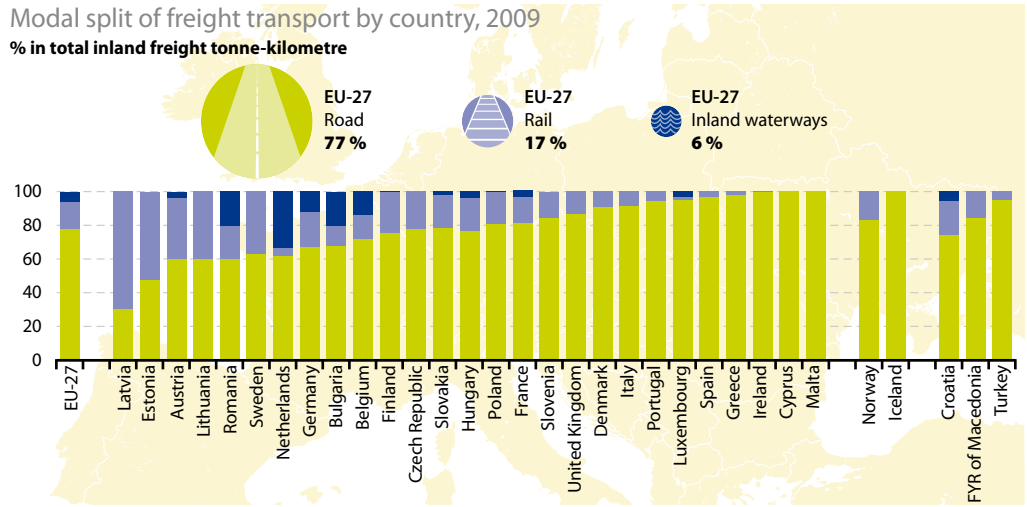
Again, Anne thinks about her own situation. She'll be 18 soon and Dad has already promised to give Anne her own car so he doesn't need to play taxi all the time. She and her father don't only make a perfect example of 'unsustainable living', soon she'll be able to add 'unsustainable driving', even if she doesn't end up driving a gas guzzler like his.

'The right-hand chart on slide 4.2 shows a similar picture, with road transport making up almost 80 % of freight transport in the EU. However, we can also see that the share of rail is much higher than in the chart on the left. A reason for this is that freight transport by rail still plays an important role in the "new" Member States that joined the EU in 2004 and 2007.' Anne switches to slide 4.3.

'As we can see, rail freight transport is particularly important in the Baltic countries, where it ranges from 40 % in Lithuania to almost 70 % in Latvia. From the "old" Member States, Germany and Austria as well as the Scandinavian countries Sweden and Finland show the highest proportions of rail transport.

'However, what we don't see from these slides is that the already big share of road in freight transport has risen since 2000, when it had been at about 74 %. This growth came at the cost of rail transport, whose share fell from 20 % to 16 % over the past decade.'

4.3 How Europe transports its freight



Source: Eurostat (online data code: tsdtr220)

Figures for the future: 20 years of sustainable development in Europe?

Catherine steps in. 'Your mood that day could also have influenced your perception of transport. You seem to be much less enthusiastic than a couple of minutes ago. Doesn't transport – and that includes road transport – also serve some good purposes?'

'I'm glad you asked that question.' Catherine has just given Anne a bridge to her next point about the role of transport.

'Transport of course addresses fundamental needs in our society. It allows us to go where we want to go… meeting friends and family, going shopping, going to work and school or taking a holiday. It brings food and clothes to the stores. It allows us to drink coffee from South America or tea from India.' Anne remembers the past few weeks when she was preparing her presentation. She *did* drink lots of coffee then. How many kilometres of freight transport went towards bringing that coffee to her table?

'As we'll see later, the ability to easily transport goods and passengers is one of the major forces behind globalisation. Most important, the availability of transport is essential for trade and economic growth.' With that, Anne puts on slide 4.4.

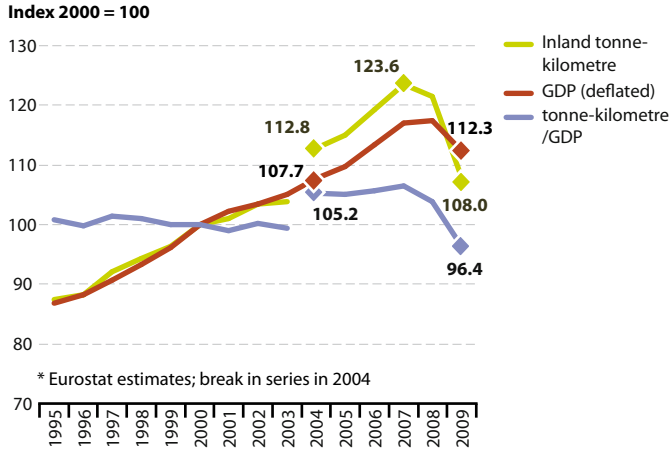
'In a growing economy, more and more goods are transported. This happened in the EU from 1995 to 2007. The "jump" we can see from 2003 to 2004 is due to a change in the way transport data are collected, but this shouldn't bother you. What is more interesting is the dramatic fall of transport volumes in 2008 and 2009 caused by the crisis. I remember a publication entitled "*Six years of road freight growth lost to the crisis*" ([1]) that I stumbled

([1]) Statistics in focus 12/2011: Six years of road freight growth lost to the crisis.

4.4 **Transport volumes linked to economic growth**

- Freight transport and economic growth are strongly linked
- No 'decoupling' between economic growth and the need for transport is visible

Volume of freight transport relative to GDP, EU-27*



Source: Eurostat (online data code: tsdtr230, nama_gdp_k)

Figures for the future: 20 years of sustainable development in Europe?

across when preparing this presentation.' *The crisis has eventually done something good*, Anne had thought at the time. Now, mentioning *that* would've stirred up a nice row with her father. She's not sure if she'd want to say that in the present company, either.

Anne points to the purple curve on slide 4.4. 'But this slide tells another interesting story. Sustainable development policies usually try to break the link between economic growth and the need for transport, with the aim of reducing its negative effects on the environment.

'This purple line shows the ratio of freight transport volumes and GDP. A fall in this curve, as we can see in 2008 and 2009, would indicate a break in the link between economic growth and the need for transport. This would be the case when GDP grows faster than freight transport or freight transport decreases while GDP is growing.' Anne looks around. She doesn't see too many strange looks, so her explanation seems to have been understandable, at least for part of the audience.

'I deliberately use the word "would", because what we see in 2008 and 2009 seems to be a temporary effect of the crisis rather than an actual turnaround in freight transport trends. With the economy contracting, transportation of goods fell as well. And most recent figures from 2010 and 2011 ([2]) indicate that road freight transport is slowly picking up again, like we've already seen for GDP.

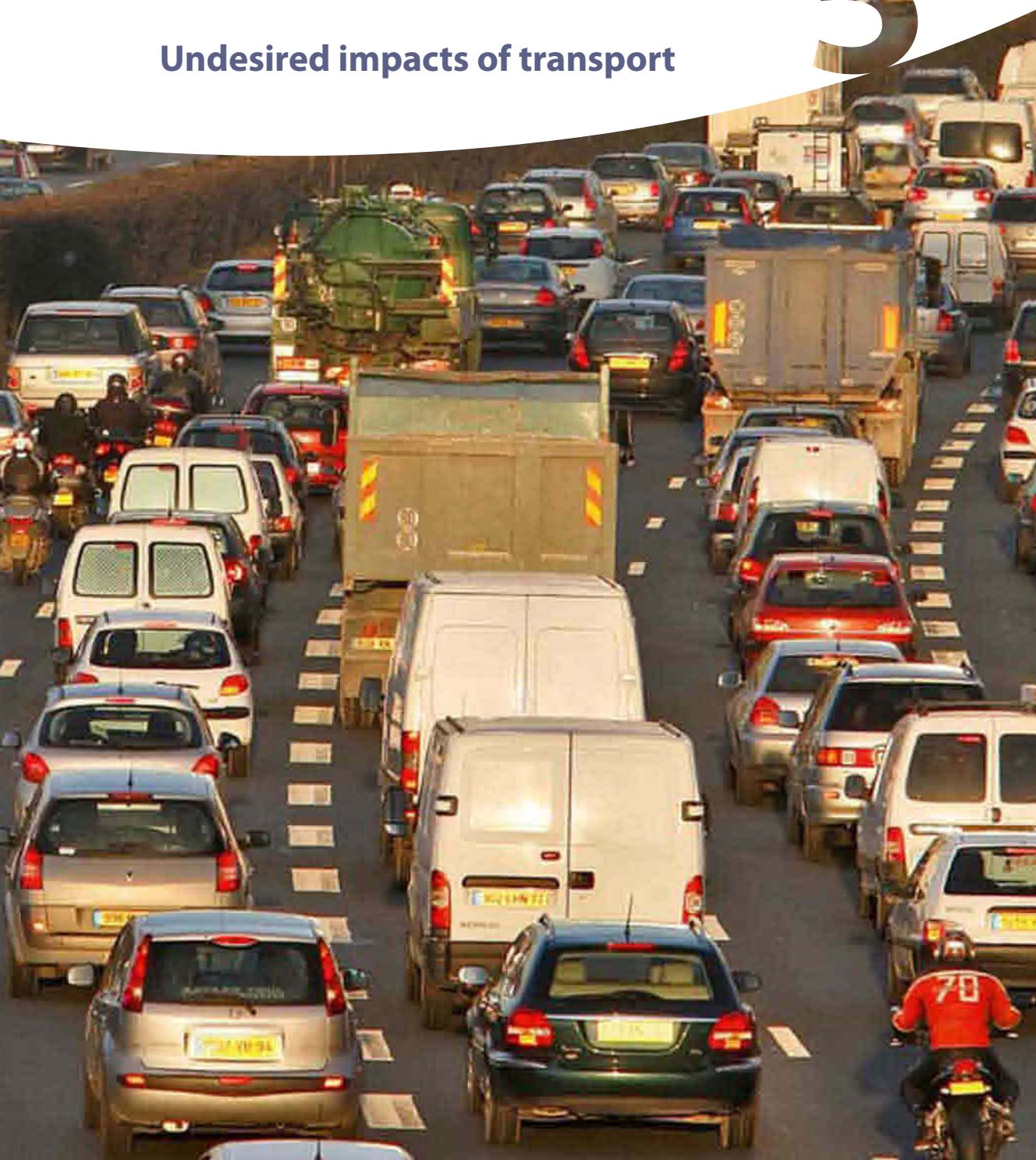
([2]) Statistics in focus 15/2012: Slow recovery in road freight transport in 2010.

'And that brings me back to the scene where I was still sitting in the car with my father. Even his little "I am driving" smile was gone, because we were going *nowhere*. Lorries and trucks had been joining our queue of cars and traffic was finally standing still. I opened the window to lean out and look if I could see the reason for the congestion. But all I saw was a great blast of exhaust from the lorry next to us. And I had to gag and cover my nose as air heavy with the fumes of spilled petrol filled the car.'

Now let's see what Catherine will say when I come to the *really* bad aspects of transport, Anne thinks.

5

Undesired impacts of transport

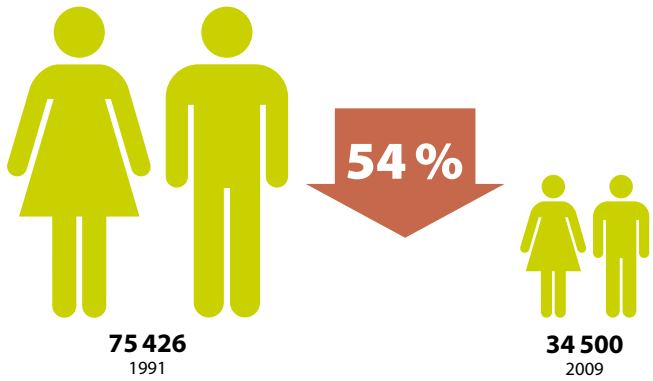


5.1 **Fewer road fatalities**

- Road transport deaths have fallen by 2 300 per year on average since 1991
- More than 60 % of deaths take place on rural roads and another 30 % in built-up areas
- Cars account for 60 % of deaths on rural roads and motorways

People killed in road accidents, EU-27

Number of people killed



Source: European Commission (CARE database), Eurostat (online data code: tsdtr420)

Figures for the future: 20 years of sustainable development in Europe?

'The queue of cars finally started moving again and I could see orange and blue lights flashing through the haze ahead of us. I realised there'd been an accident. Part of the motorway was blocked and the cars had to funnel through a narrow passage. So that was what had caused the congestion.

'When we drew closer, I could see two ambulances parked and waiting. Dark patches of oil stained the tarmac. So that was where those petrol fumes had come from. And then I saw a demolished car and a figure – presumably the driver – sitting on a stretcher, surrounded by paramedics. I still wonder how anybody could have survived in that car. Carmakers are obviously taking their job seriously.' With that, Anne puts on slide 5.1.

'This slide shows the number of fatalities in road accidents in the European Union. As we can see, the number of people killed has fallen by almost 55 % since 1991, which is about 2 300 fewer people per year. The driver of that car seems to be one of those 2 300.

'It's interesting to note that only a small share of transport deaths happen on motorways. More than 60 % of fatalities take place on rural roads and another 30 % in built-up areas. Cars account for about 60 % of deaths on rural roads and motorways, but over two thirds of road fatalities in built-up areas mainly involve pedestrians and motorbikes ([1]).

'Anyway, by the time we passed the accident it was clear I wouldn't make it in time for the school excursion. So I called the school and one of my teachers said she'd wait for me and we'd take the train together.' Anne gives Catherine a quick smile.

([1]) European Commission, Mobility and Transport DG, *Road Safety 2011 How is your country doing?*, 2011.

'When we finally reached the school, the bus with the other kids was already gone, as expected. I saw Catherine, my teacher, waiting for me and I was keen to get out of that car *fast*. I lurched out as soon as the car stopped, but then I had to steady myself. I was feeling dizzy. Maybe it was because of what I'd seen at the accident scene. Or maybe it was because of the petrol and the other chemicals I'd breathed in. Or both.'

And maybe she had felt that way because she was still angry with her father, Anne thinks. But she can't blame her father for everything, especially not in front of this audience, so she goes on with her presentation.

'But accidents are not the only thing I don't like about transport. The construction of roads and rail networks drives landscape fragmentation, as I will show later. And transport also causes a lot of noise pollution. You're probably aware that even moderate noise levels can lead to sleep disturbance, stress and increased blood pressure.

'Also, transport today is the number one energy consumer. And I assume you are all aware that fuel combustion, which happens in petrol- and diesel-powered cars and trucks, creates an array of pollutant emissions. These include one of the most important greenhouse gases, carbon dioxide or CO_2.'

'I don't like transport.' Is that really me saying that? Anne pauses and puts on the next slide, letting people get a good look at it. She should be used to those words after all her thought and preparation, but she really is startled now to hear that statement come out of her mouth, amplified through a microphone.

On one hand, she can't wait to get more independent from her dad once she has her own car. On the other, she doesn't like the negative effects of road transport. It seems like there are two voices in her head, fighting with each other.

She'd love to chat informally with a lot of people here about how they make decisions about sustainability in their personal lives. Everyone's so different. What about the delegate who raised the question about social movements in the Middle East? Or take her colleague from the neighbourhood near the docks. She's sure his parents can't afford to buy him a car, so he doesn't have the luxury of her own 'dilemma'. But then, he also lives in an inner-city area where public transport is plentiful. Perhaps he has other issues to work out and he hears other conflicting voices in his head.

But that conversation has to wait for the social event tonight. Anne points to the graph on slide 5.2.

'Here you can see the amount of CO_2 produced per kilometre by new passenger cars. Taken on its own, the picture doesn't look too bad, does it? We can see that cars have become "cleaner" over time, especially during the past few years.

'There are two reasons behind this trend. First, more and more cars use diesel instead of petrol, and diesel produces less CO_2 per kilometre for the same engine power. Second, carmakers are using more fuel-saving technologies, which improve energy efficiency. This means cars need less fuel for driving the same distance and that's also good for your wallet.'

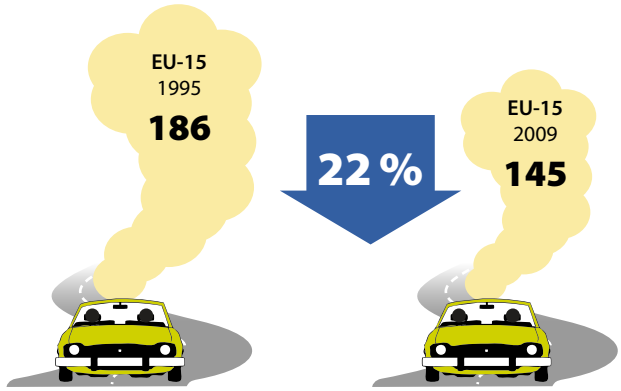
And will Dad pay for my petrol as well if he gives me a car? This is the first time Anne has thought about the running costs of her own car.

5.2 **New cars emitting less carbon dioxide**

- CO_2 emissions per kilometre from new passenger cars have been falling since 1995
- A switch from petrol to diesel and fuel-saving technologies have been the main drivers of this reduction

Average carbon dioxide emissions from new passenger cars

Grams of CO_2 per kilometre



Source: Eurostat (online data codes: tsdtr450)

Figures for the future: 20 years of sustainable development in Europe?

'However, as I have just shown you, there are more and more cars on our streets and freight transport is growing in line with economic growth. As with the "rebound effect" I mentioned in relation to electricity use, the improvements we see here have been offset by the growth in transport activities.' Anne moves to slide 5.3.

'CO_2 is one – and the most important – of six greenhouse gases that have been defined in the Kyoto Protocol. As I will show you later, greenhouse gas emissions have generally fallen since 1990 in the EU. However, transport stands out in this regard, because it is the only sector producing considerably more emissions than in 1990. Today, transport is the second largest "emitter" of greenhouse gases, responsible for a share of 20 %.

'Note that this only includes road, rail, shipping and aviation within EU territory. If we add emissions from international air and maritime transport, as I have done on this slide, the share of transport in total greenhouse gas emissions rises to 25 %.

'Now, I mentioned feeling dizzy when getting out of the car at school, so I sat down on the kerb and looked for something to drink in my bag. So this is where that juice I mentioned comes in again. I hope you still remember.' Anne's smile to the audience is greeted with chuckling. 'So I took out the juice, which was mango juice. I just happened to look at the picture on the carton, which showed a tropical scene with smiling people enjoying their great big juicy mangos. And after this morning's experience with transportation, I immediately had to think about how the mangos in the juice had been transported from this tropical setting to Europe – using planes or ships, I'd say.

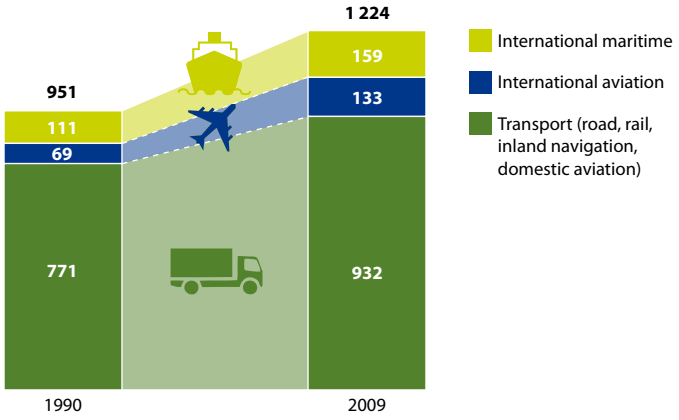
'And that brings me back to the slide I'm showing here. Emissions from international

5.3 More greenhouse gas emissions from transport

- Growth in car numbers and transport volumes has driven the rise in greenhouse gas emissions from transport
- Transport is the only sector in the EU emitting more greenhouse gas today than in 1990
- Emissions from international air and maritime transport have grown the fastest

Greenhouse gas emissions from transport, EU-27

Million tonnes of CO_2 equivalent



Source: European Environment Agency (online data code: tsdtr410)

Figures for the future: 20 years of sustainable development in Europe?

air and maritime transport are the fastest growing sources of greenhouse gas emissions. Since 1990, emissions from these two sources have grown by more than 60 %.'

Would it change anything if I drank apple juice instead? Anne asks herself again.

'It's also remarkable that, for the first time in 18 years, only the recent economic crisis has been able to achieve big cuts in greenhouse gas emissions from transport. This is because of dramatic falls in passenger and freight transport volumes in 2008 and 2009, which I've shown before. Therefore, we shouldn't leap to conclusions and interpret this as a turnaround in greenhouse gas emissions from transport. But a turnaround is what we need if we want to limit global warming to 2 °C.'

'I think stopping global warming needs much more than a "turnaround", doesn't it?' The girl in the back of the room who was about to add something to the discussion about energy has spoken up this time.

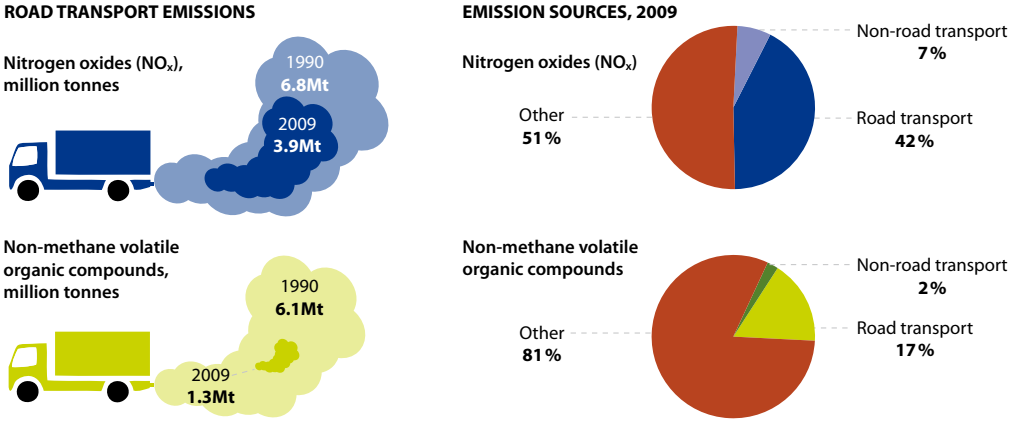
'You are right,' replies Anne. 'To limit global warming to 2 °C, industrialised countries have to cut their greenhouse gas emissions by 80-95 % by 2050 compared with 1990 levels ([2]). To do this, we need an emissions cut of at least 60 % from the transport sector ([3]).

'And this means we would need to see a trend that looks similar to these ones.' With that, Anne puts on slide 5.4.

([2]) Environment Council conclusions, EU position for the Copenhagen Climate Conference (7-18 December 2009), 14790/09.
([3]) Commission White Paper, Roadmap to a Single European Transport Area: Towards a competitive and resource efficient transport system, COM(2011) 144.

5.4 NO_x and non-methane VOC emissions falling

Transport emissions of nitrogen oxides and non-methane volatile organic compounds, EU-27



Source: European Environment Agency, Eurostat (online data code: tsdpc270, tsdtr430, tsdpc280)

Figures for the future: 20 years of sustainable development in Europe?

'Here we can see two other important pollutants emitted by cars. Like CO_2, the first one – nitrogen oxides or NO_x – is a by-product of fuel combustion. Almost half of total NO_x emissions come from transport, with road transport alone responsible for 42 %. The share of transport for the second pollutant I am showing here, with the rather complicated title "non-methane volatile organic compounds" or NMVOCs, is somewhat lower at about 20 %.

'There are two reasons why I am showing you these figures. The first one is that NO_x and NMVOC emissions contribute to the formation of ground-level ozone. Ozone is a highly reactive gas that causes or provokes respiratory problems in humans and animals.'

Anne has to look down at her notes. She'd told herself not to think about her mum when talking about these indicators. But those thoughts still flood into her mind, even though she'd stopped crying years ago.

She clears her throat. 'And ozone is also toxic to plants and can lead to leaf damage and defoliation. It can even damage buildings, which is particularly problematic for monuments and other things we regard as our cultural heritage.'

But suddenly, Anne feels tears beginning to rise again. Her mother died from a severe asthma attack when Anne was seven. And when she was reading about the damaging effects of these pollutants during her preparations for the model United Nations, Anne couldn't help but associate this with her mum's death.

'Anne? Everything's alright?' Catherine asks from her seat in the front row. The other

pupils in the audience are also looking at her. She must have been standing there for a minute or so without saying anything. 'Sorry, everyone – I was thinking about a loved one who I lost due to respiratory disease…'

Anne turns to her notes, so the others don't see her blinking back those tears. Then she remembers Marta's advice to draw on her experiences and bring them into her story. And all those experiences are a big part of *why* she is telling this story in the first place. Taking part in the model UN and getting involved in sustainability issues is about much more than getting good grades or advancing in her career, which is what her dad would like to believe, or even following in Marta's footsteps.

Instead of being embarrassed by this moment of sadness, why not turn it into a source of strength – just as her mum would have wanted her to? 'Perhaps other people here have lost loved ones to illnesses with an environmental component,' Anne says. Though she is speaking softly, the mic carries her voice throughout the room. 'This gives us all the more reason to seriously work towards sustainable development, which is all about sustaining *and* improving the lives of those who are still here.' Anne smiles at Catherine and her other colleagues before she moves on with the presentation.

'And this brings us to the second reason why I am showing you these figures. That is, as you can imagine, the rather successful declines we can see here. Since 1990, NO_x emissions from transport have fallen by almost 40 % and the fall for NMVOCs was almost two times as fast, with more than a 75 % drop. The introduction of catalytic converters in cars and stricter regulation of emissions from heavy goods vehicles has made this possible. So we can see that dramatic cuts *are* actually possible when we take the right measures.'

'But has the air quality in Europe really become better?' The girl at the back of the audience seems to be as concerned about air quality as Anne. Anne thinks she's another person she'd like to talk to after the presentation.

'I mean,' the girl continues, 'the newspapers are still full of people complaining about how high exposure to smog and particulate matter is nowadays and calling for more policy action about this.'

She looks at the guy from India. 'Like our colleague here, I've also read the recent "environmental outlook" from the OECD ([4]). It says air pollution, especially exposure to ground-level ozone and particulate matter, will become the world's top environmental cause of premature deaths by 2050.'

'Well… you're right,' says Anne. 'The reductions I've shown you haven't directly led to an improvement in air quality in Europe.' Anne puts on slide 5.5.

'Here, I'm showing how people in urban areas have been exposed to air pollution by ozone. The figures vary widely from year to year because of different climatic conditions. Heat waves in summer particularly boost exposure, as we see here for 2003 and 2006. Still, we can see a slight upward trend since 1997. This shows that air pollution by ozone is getting worse, although emissions from the biggest source – transport – have fallen.

'The same is also true for air pollution by particulate matter. Again transport, especially road transport, is an important "emitter" of particulate matter, or PM_{10}. And again a

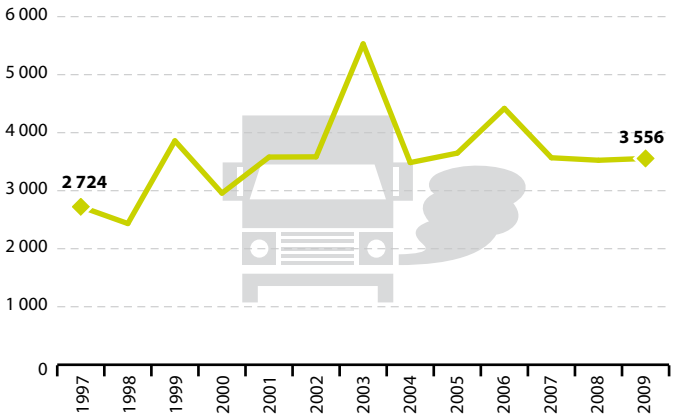
([4]) OECD, OECD Environmental Outlook to 2050: The Consequences of Inaction, 2012.

5.5 **Urban exposure to ozone air pollution fluctuates**

- Ground-level ozone causes respiratory problems in humans and animals
- Despite the cut in NO_x and NMVOC emissions, air pollution by ozone has not improved
- Heat waves can boost ozone exposure

Urban exposure to air pollution by ozone, EU-27

Micrograms per cubic metre per day



Source: European Environment Agency, Eurostat (online data code: tsdph380)

Figures for the future: 20 years of sustainable development in Europe?

falling trend in particulate matter emissions from transport since 1990 has not led to a similar falling trend in exposure to that pollutant.'

Anne points to slide 5.6. 'Although the figures here look somewhat better than the ones for ozone, the variations from year to year make it difficult to see a clear trend.'

Catherine raises her hand. 'Do you have an explanation for why the falling emissions have not led to an improvement in air quality?'

This is another question Anne had been asking herself while researching her presentation, so she is very prepared to answer. 'According to the European Environment Agency, this is due to a non-linear relationship between emissions and concentrations. In other words, cuts in emissions do not directly lead to an equivalent reduction in the "number" of pollutants in a certain area. Also, long-distance transport of air pollutants to Europe from other northern hemisphere countries is becoming more and more important ([5]).'

'So emissions need to be cut even more to improve air quality in Europe,' Catherine concludes.

'That's true. I was certainly aware of that the morning I was standing in the car park at my school. Pollution is not always visible and you can't always smell it either, but when I looked down the hill towards the motorway I could actually *see* the outlines of the haze hanging over the city. Perhaps it even seemed worse from where I was standing because I don't remember seeing a haze cloud like that before.

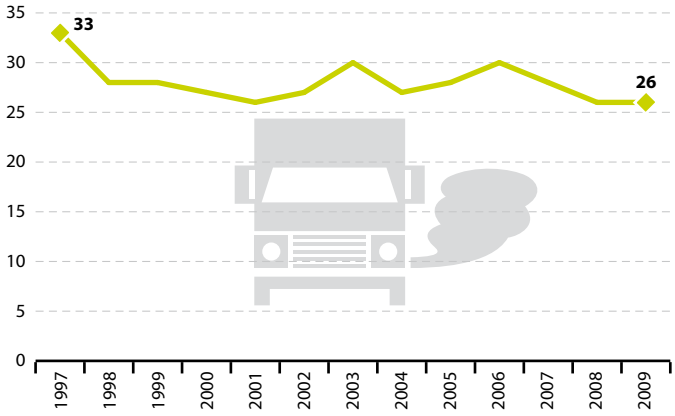
([5]) See http://www.eea.europa.eu/themes/air/intro

5.6 **Urban exposure to particulate matter pollution**

- Transport is a major emitter of particulate matter (PM_{10})
- Again, a falling trend in PM_{10} emissions has not led to a similar improvement in exposure to the air pollutant

Urban exposure to air pollution by particulate matter, EU-27

Micrograms per cubic metre per day



Source: European Environment Agency, Eurostat (online data code: tsdph370)

Figures for the future: 20 years of sustainable development in Europe?

'I was starting to feel better, though. Catherine joined us and told my father she'd be taking me on the train to meet the others at the park. She also mentioned getting a bus to the train station. And of course, my father offered us a lift. Catherine sat in the front with Dad, while I sat in the back.'

Anne looks at Catherine as she speaks. She's sure that Cat will have some further comments, but she seems happy for Anne to keep telling the story. 'When my teacher said that she'd been reading the paper while she waited for us, I was thinking *oh no*… Dad will show me up for sure. And it turned out that they'd been reading the same article. I heard Dad talk about projections on lagging economic growth and rising public debt… topics we've started to explore in this presentation. But given the concerns of many teachers about cuts in education spending, I had a feeling Catherine and my dad would have strong disagreements about solutions to this problem… But we arrived at the train station just in time to end *that* conversation.'

Anne remembers her sense of relief as she got out of the car and opened Catherine's door for her, casting her eyes towards the haven of the train station. She thanked Anne's father Nick for the lift and just as they were about to scoot off to catch their train, he shouted out the window: 'Bye bye. Have a good time. And Anne, say hello to that self-righteous stubborn old codger for me. Hopefully he won't fill your head with *more* nonsense.'

She doesn't repeat *that* to the audience, but she can easily recall how mortified she has been about the way her father talked about Grandpa Robert in front of Cat.

6

Regional disparities

'It was a bit of a scramble getting our tickets and getting on the train in time,' Anne continues. 'But we made it!'

And I was still absolutely *cringing* about Dad's parting words, Anne thinks. It seems funny now, but it certainly wasn't then. After all, Grandpa Robert had been Catherine's mentor during her first year as a teacher at her school and they were still friends. Anne remembers how she had rehearsed her apology: *Sorry about that. But don't mind my dad too much. He's a bit stressed about a meeting today, but he's alright really!*

'The train ran through the south of our city, where I don't go very often,' Anne continues. 'As the train slowed to pull into the next station I saw signs in unfamiliar languages, piles of unknown, colourful vegetables and fruit in lavish piles in front of shops. But I did recognise some mangos!'

Someone calls out: 'Think about those shipping emissions, mate!' It's her colleague, the one who comes from the docklands area. He's taken a strong personal interest in issues around shipping pollution because of where he lives.

Amid the laughter, Anne looks down and smiles. While she'd been worrying about what to say about her dad, Catherine had been chattering all about the route their train was taking and the efficiency of rail travel. Catherine said nothing about that fury-provoking farewell from Anne's father. So maybe she hadn't been listening, just concentrating on getting to their train.

'I certainly did think about those shipping emissions,' Anne replies at last. 'Especially when I got to smell some of them when the train stopped close to the harbour. As the doors opened I caught a whiff of oil and rotting fish. I also saw piles of rubbish on the waterfront and lots of graffiti on the station wall. I looked up and saw an office block with reflective windows looming over the station and the harbour. The contrast between the office block and the rest of the scene struck me immediately. And there was more to come…

'When the train got going again it between through rows of old houses, red-brick housing schemes and tower blocks. Then another twist of the tracks revealed a gleaming white warren of flats, which weren't finished yet: "luxury waterfront flats" it said on a billboard.

'Tidy townhouses faced these half-built flats. Maybe the houses weren't too different from the old ones we'd just passed, but they'd been repainted and they sported new doors and double-glazed windows. Shrubs and vines flowered in front gardens. One house even boasted a roof garden. Then those houses gave way to big rambling homes surrounded by their very own private parks.

Anne nods toward Catherine. 'I expressed surprise that wealth and poverty can exist so close together in the same area. Catherine here pointed out that some of this is due to "regeneration". Others might call it "gentrification". Meanwhile, I was starting to feel like a tourist in my own city observing the sights, even though I was born there.'

'Cities are always changing,' Catherine adds. 'That's what makes them exciting places to live. But what kind of changes do we want to see in a sustainable city? This question is relevant outside the cities, too. In the depressed area I come from, "luxury flats" may not be what we need.

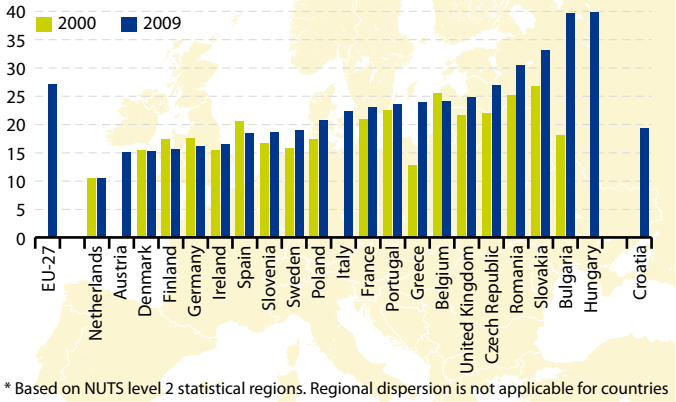
'While I was on the train with Anne I told her about a visit to my home town for a school reunion. The region's economy was based on mining and manufacturing, which has been

6.1 **Concentration of wealth**

- Regional disparities in the EU have fallen
- Dispersion is lower in the old Member States
- The economic catch-up in Eastern Europe has led to increasing disparities

Dispersion of regional GDP per inhabitant, in PPS*

% of national GDP per person



* Based on NUTS level 2 statistical regions. Regional dispersion is not applicable for countries with only one region at NUTS level 2 (Estonia, Cyprus, Latvia, Lithuania, Luxembourg, Malta)

Source: Eurostat (online data code: nama_r_e0digdp)

Figures for the future: 20 years of sustainable development in Europe?

in decline – we talked about those developments earlier. Of course, this has affected employment in all other sectors. Many of my old friends haven't found work yet. So we can also see the differences in wealth and poverty, which Anne just described in the docklands area of our city, between regions in the same country and between different parts of Europe.'

Anne thanks Catherine for her contribution. 'And that brings me to my next slide. I've just described what contrasts between wealth and poverty can *look* like. But I've also found out that there are statistical measures that can tell us even more about the differences between Europe's regions.' Anne switches to slide 6.1, the first of a series about regional disparities.

'I'll admit that this slide at first glance doesn't seem very descriptive in how it shows regional differences. I will show you something more illustrative in a minute, but first let's try to see what the figures here can tell us.

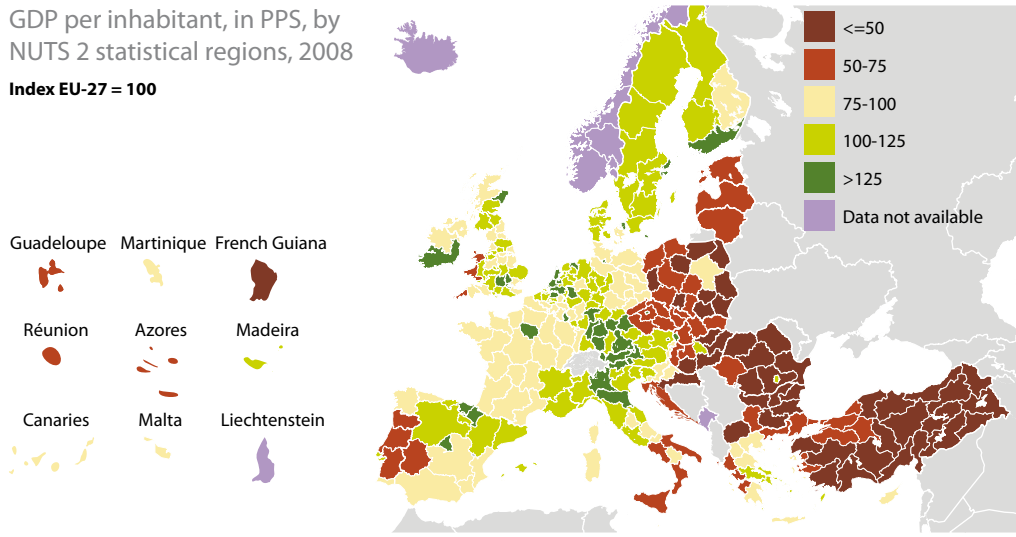
'I've already talked about gross domestic product or GDP at the start of this presentation. Here we have GDP again, but what this graph shows is the difference between each country's national GDP per person and the GDP per person of its regions. Dispersion of regional GDP is zero when the GDP per person in all of a country's regions is identical. The more that regional GDP per person varies from the national mean, the greater the "dispersion of regional GDP" figure we see here.

'Although it is not visible here, because data for the European Union as a whole is only available from 2007 onwards, there is a general downward trend of this dispersion. This

6.2 GDP per person by region

GDP per inhabitant, in PPS, by NUTS 2 statistical regions, 2008

Index EU-27 = 100



Source: Eurostat (online data code: nama_r_e2gdp)

Figures for the future: 20 years of sustainable development in Europe?

means that economic "wealth" is becoming more equally distributed across Europe's regions. However, we can also see clear differences between certain groups of Member States. Dispersion tends to be lower in the "old" Member States than in those that joined the EU in 2004 and 2007. And while dispersion has fallen in many of the "old" Member States, it has grown in the "new" ones. This means the economic catching-up process in Eastern Europe has so far gone hand in hand with rising regional disparities ([1]).

'Now, as I promised, here's something that will illustrate regional disparities in Europe more vividly.' Anne switches to slide 6.2, showing a colourful map of Europe's regions.

'Here we can see how GDP per person is actually distributed across the regions in Europe. The comparison is based on "purchasing power standards" or PPS, which allow us to compare countries that have different currencies and different price levels. In 2008, the EU had an average GDP per person of 25 100 PPS. Regions highlighted in green have a higher GDP per person than the EU average and regions in red or brown a lower one.'

'The top ten regions in the EU include only two from "new" Member States'

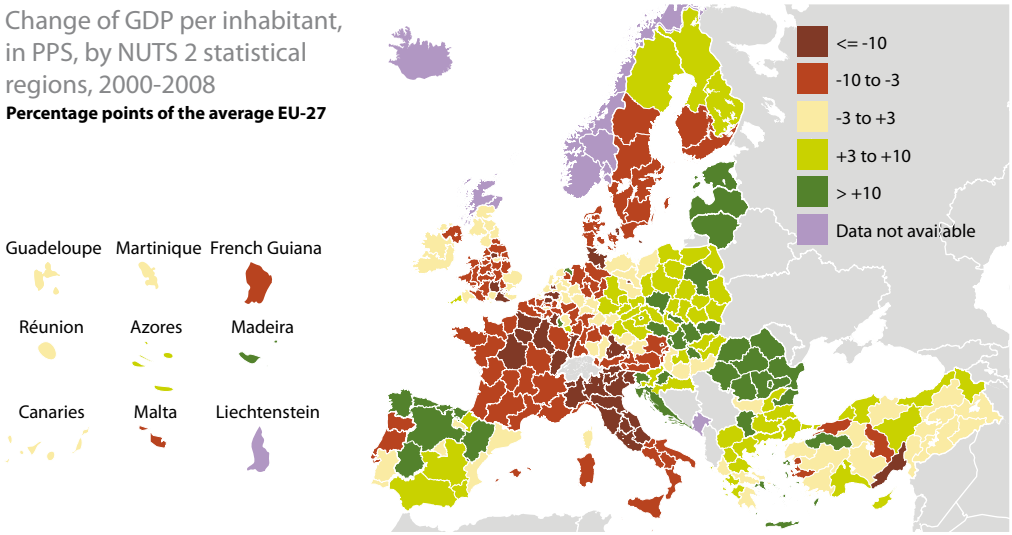
Anne looks at her notes. 'The regions with the highest per person GDP are in southern Germany, the southern part of the United Kingdom, northern Italy and Belgium, Luxembourg, the Netherlands, Austria, Ireland and Scandinavia. This also includes many capital regions. The weaker regions are concentrated in the southern, south-western and south-eastern periphery of the EU, in eastern Germany and the new Member States. It's worth noting that the top ten regions in the EU include only two from "new" Member States: Praha and Bratislavský kraj.'

([1]) Eurostat, *Regional Yearbook 2011*.

6.3 **Change in GDP per person by region**

Change of GDP per inhabitant, in PPS, by NUTS 2 statistical regions, 2000-2008

Percentage points of the average EU-27



Source: Eurostat (online data code: nama_r_e2gdp)

Figures for the future: 20 years of sustainable development in Europe?

She looks up at the rows of faces in front of her, wondering what the delegates from these countries and regions are thinking when she refers to where they live. Well, that's another thing to talk about this evening at the party. She really is looking forward to it. She smiles at a boy from Bulgaria, hoping he won't take her next comment as bad news.

'In 2008, the region with the lowest GDP per person within the EU was Severozapaden in Bulgaria with 6 500 PPS or 28 % of the EU average. On the other hand, GDP per person was highest in the capital region of inner London in the UK, with 85 800 PPS or 343 % of the EU average. This means the "richest" region had a GDP per person of more than 13 times as high as in the "poorest" region ([2]).

'But, as we can see on slide 6.3, the "poorer" regions are catching up.' The screen flickers. A new map appears with the greens and browns reversed: many of the brown regions have turned green and many of the green ones brown.

'This map shows how GDP per person has changed since 2000 in relation to the change of the average EU GDP per person. The regions highlighted in green have experienced a faster growth of GDP per person than the EU average, while those highlighted in orange or red have lagged behind.

'We can see that the most economically dynamic regions are in the south-western, eastern and northern peripheral areas of the EU. Among the "new" Member States, only one region – Malta – fell back compared with the EU average growth. On the other hand,

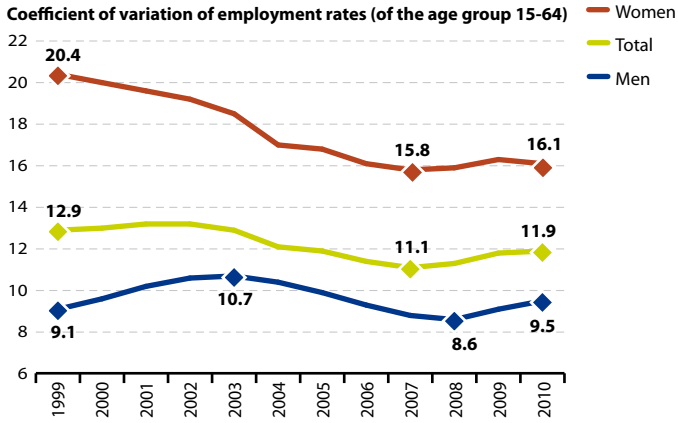
'The most economically dynamic regions are in the south-western, eastern and northern peripheral areas of the EU'

([2]) Eurostat, *Regional Yearbook 2011*.

6.4 **Differences in regional employment rates**

- Disparities in employment have fallen in the EU
- Dispersion rates are higher for women than for men
- But women are catching up with men due to a stronger decline in dispersion rates

Dispersion of regional employment by gender, EU-27, NUTS level 2



Source: Eurostat (online data code: tsdec440)

Figures for the future: 20 years of sustainable development in Europe?

it is interesting to see that not a single region in Italy and France achieved the EU average growth rate during the eight years from 2000 to 2008 ([3]).'

'Can we conclude that regional disparities are being reduced?' Catherine asks.

'The "poorest" regions with a GDP per person of less than 50 % of the EU average have made some solid progress'

'Well… from what I've learned, this looks like a valid conclusion. In particular, the "poorest" regions with a GDP per person of less than 50 % of the EU average have made some solid progress. Many of these regions are found in Bulgaria and Romania.

'But if we want to draw a more complete picture, we need to look at other figures. One set of figures concerns employment.' Slide 6.4 appears.

'Here's a statistical measure that tells us about employment levels in different regions. Similar to the "dispersion of regional GDP" indicator shown before, the dispersion of regional employment rates is zero when all regions have the same employment rate and it rises with increasing employment differences between regions.

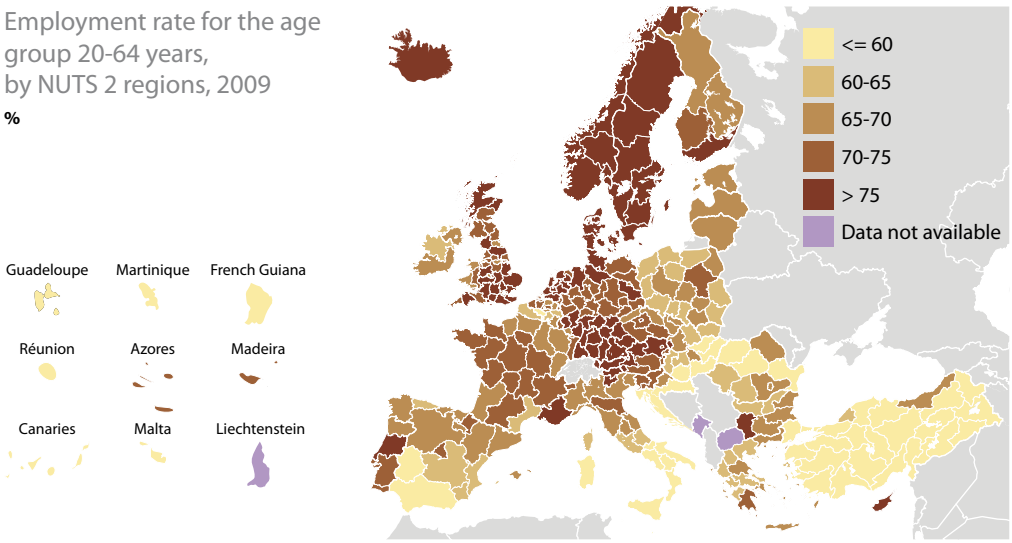
'We can see two interesting things on this slide. First, dispersion of employment is higher for women than for men. But, similar to the employment indicator I showed before, we can see women are catching up because the dispersion of women's employment rates has fallen faster than that of men. Second, disparities in employment between regions are now generally lower than about 10 years ago. However, there are still remarkable differences between the EU's regions, as you can see here.' Anne puts on slide 6.5, showing another coloured map.

([3]) Eurostat, *Regional Yearbook 2011*.

6.5 **Employment rate by region**

Employment rate for the age group 20-64 years, by NUTS 2 regions, 2009

%



Source: Eurostat (online data code: lfst_r_lfe2emprt)

Figures for the future: 20 years of sustainable development in Europe?

'This map shows the regional differences in employment rates across Europe. The darker a region's colouring, the higher its employment rate. Regions highlighted in the darkest colour have already achieved the employment target of 75 % that was set out in the Europe 2020 strategy ([4]).'

Anne turns to her notes. 'The lowest employment rates were recorded in regions in the south of Spain, the south of Italy, Greece, Poland, Hungary, Bulgaria, Romania and Malta. On the other hand, the northern EU regions, comprising regions in the Netherlands, the United Kingdom, Denmark, Sweden and Finland, recorded relatively high employment rates. So did a cluster of regions right in the centre of Europe. This cluster includes southern Germany, Austria and the north Italian region of Provincia Autonoma Bolzano-Bozen, the Czech capital region of Praha and the Slovakian capital region of Bratislavský kraj ([5]).

'Finland's Åland region had the EU's highest employment rate with 83.9 % in 2009. The lowest was recorded in Campania in Italy with 44.8 %. It is therefore not surprising that Italy had the highest dispersion of regional employment rates in the EU.

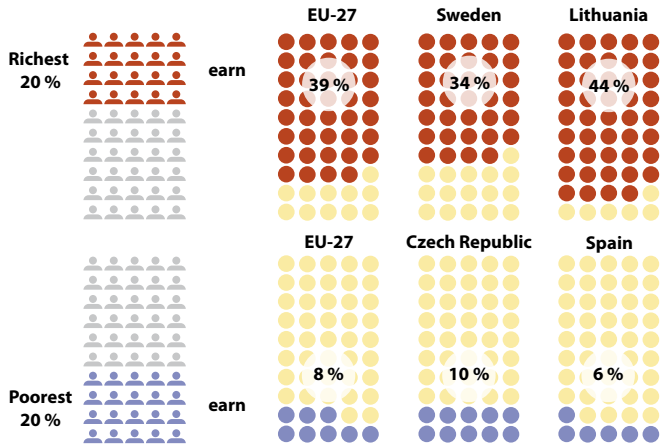
'But I'd also like to mention another trend I've been very interested in, which you've surely noticed: 2009 was the first time when two regions – Lithuania and Länsi-Suomi (Finland) – saw a higher employment rate for women than men ([6]).'

([4]) Commission communication, *Europe 2020. A European strategy for smart, sustainable and inclusive growth*, COM(2010) 2020.
([5]) Eurostat, *Regional Yearbook 2011*.
([6]) Eurostat, *Regional Yearbook 2011*.

6.6 **Income is not distributed evenly**

- Income inequalities have not decreased in the EU
- The richest 20 % of the population earn about five times more than the poorest 20 %
- Income distribution differs greatly among EU Member States

Inequality of income distribution



Source: Eurostat (online data code: tsdsc260, ilc_di01)

Figures for the future: 20 years of sustainable development in Europe?

Although Anne had mulled over these figures for quite a while when preparing her presentation, she's still astonished at how living conditions vary across Europe. You tend to forget that when talking about the EU as a whole.

'So… I've shown you how diverse economic and working conditions can be in different EU regions. But there are not only disparities between regions, there are also inequalities between different population groups, in particular between rich and poor. That's why I'd like to show you another slide. It is about income and how it is distributed among the members of our society.' Slide 6.6 appears.

'There are several ways to measure inequalities in how income is distributed across individuals and households. One way is to compare the income of the "richest" part of the population with that earned by the "poorest" part. By "rich" and "poor" I don't mean "wealth" in terms of what a person owns, but how much income he or she receives. You could also call them "high-income earners" and "low-income earners".

'In the EU, the richest 20 % of the population earn 39 % of the total income. By contrast, the poorest 20 % only earn 8 %. This means the income of the high-income earners is about five times greater than that of the low-income earners.

'If we again step down from the EU level, we can see that income distribution among EU Member States differs greatly. For example, low-income earners in the Czech Republic earn 10 % of the total national income. Income inequality is therefore somewhat lower than in Spain, for example, where the low earners only have about 6 %. Another country with rather high income equality is Sweden, where high earners have 34 % of the total

income. By contrast, Lithuania's high earners get a considerably higher amount, 44 % of the national income.'

'I'm sorry to interrupt you once more, but again I have the feeling you are ignoring the situation in other parts of the world.' Anne had already expected the guy she associated with India to step into the discussion. 'Income in high-income countries like those from the EU…'

'…is about five times higher than in middle-income countries.' Anne finishes the sentence for him. She's done her homework for this one and she's more than prepared to keep this discussion on track. 'And it is 30 times higher than in low-income countries. I am aware of that. I'm also aware that the average country-level income inequality increased by about 20 % from 1990 to 2005, which means that the gap between the rich and the poor has widened over the past 20 years ([7]).'

The guy has sat down in the meantime. He doesn't seem to want to say anything else, so Anne continues.

'We can also look even more at the extremes and compare the richest 10 % of the population with the poorest 10 %. At the global level, the richest 10 % earn about nine times more than the poorest 10 % ([8]). In the EU, inequality between these groups is slightly lower, with an eight-fold difference between the richest and the poorest.'

'At the global level, the richest 10 % earn about nine times more than the poorest 10 %. In the EU, inequality between these groups is slightly lower'

Anne first saw some of these figures when she was on that train with Catherine. Her teacher had taken out a folder and showed Anne some print-outs. Cat told her that any trip home to see her parents and old friends would put flesh on such numbers and give them human faces.

Now she tries to imagine her father's face on the figure for the richest 10 %. Is that what it really looks like? For all her studies in statistics she isn't sure exactly where her own family fits in. But if it isn't in the top 10 %, it's certainly getting there.

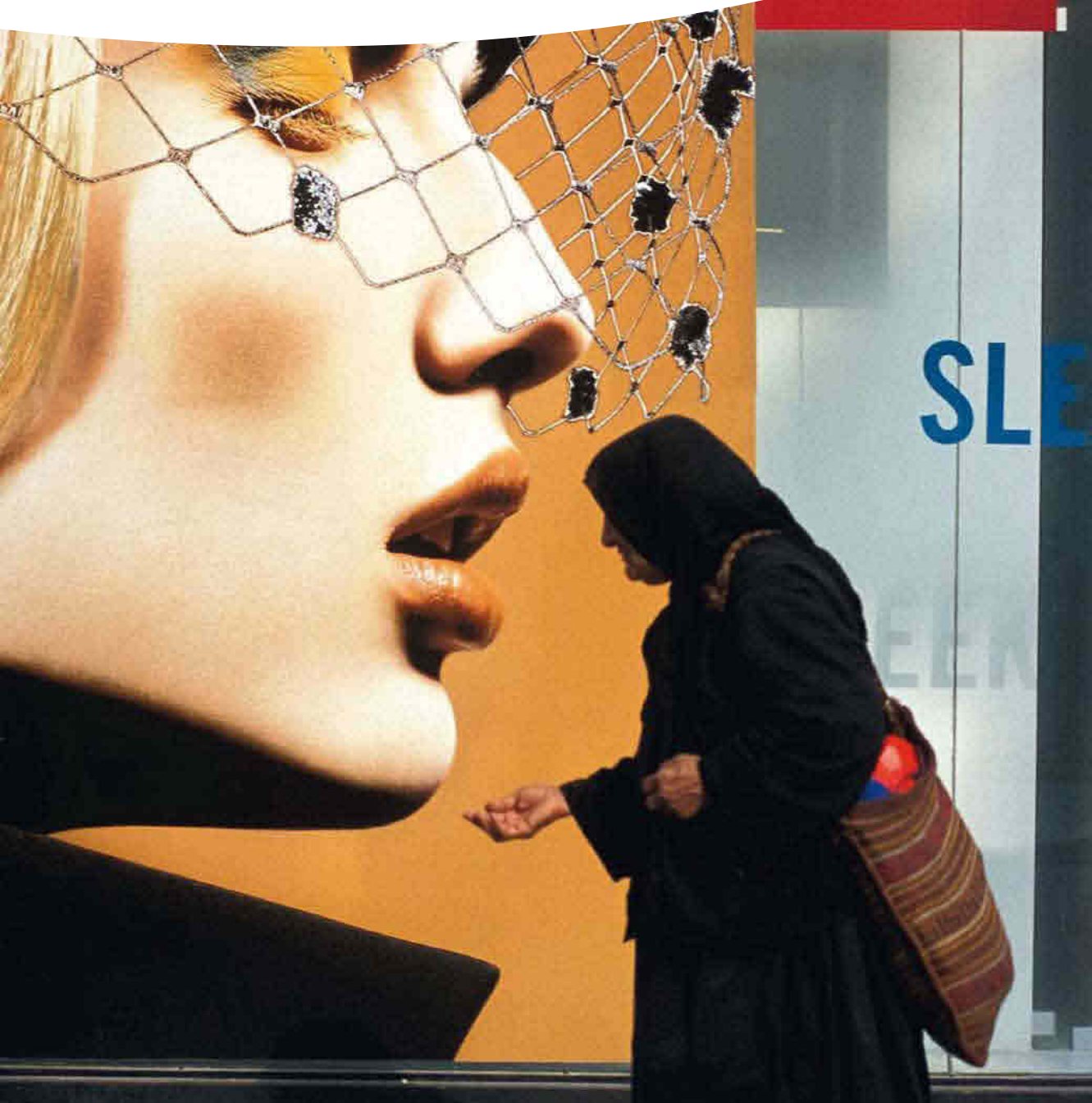
She remembers Cat's description of her school reunion. Cat had talked about how much older her school friends looked, as if worn down. Many of them were bored and restless in their declining region where so much was shutting down. Many were depressed, some severely so. Others were thinking of leaving to look for work and new lives.

Though Cat has always been Anne's favourite teacher, there was a moment on that journey when the distance between them had seemed much greater than the little table between their seats on the train.

([7]) United Nations Secretary-General's High-level Panel on Global Sustainability, *Resilient People, Resilient Planet: A future worth choosing*, 2012.
([8]) See previous footnote.

7

Poverty and social exclusion in Europe

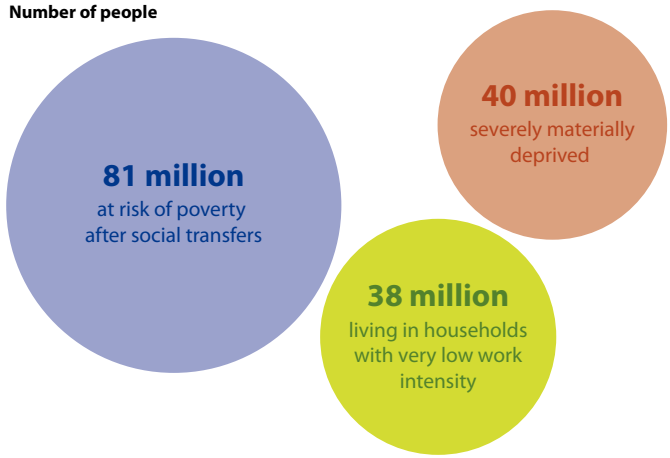


7.1 Dimensions of poverty

- Monetary poverty, material deprivation and lack of access to jobs are the key dimensions of poverty in the EU
- Almost 81 million EU citizens live in monetary poverty
- Some 40 million are regarded as severely materially deprived. About 38 million are living in households where the adults work much less than they could

People at risk of poverty or social exclusion, 2010

Number of people



Source: Eurostat (online data codes: tsdsc100, tsdsc270, tscsc280, tsdsc310, tsdsc350, ilc_pees01)

Figures for the future: 20 years of sustainable development in Europe?

How 'qualified' am I to talk about social exclusion and poverty? Anne has asked herself this question throughout her preparations. She's had no experience of either. And as she takes a deep breath before carrying on with her presentation, she asks herself that same question again.

She'll just have to do her best. After all, she needs to learn from other people's experiences and expand her perspective beyond her own circumstances. Isn't that what statistics and indicators are for… getting the bigger picture?

'In response to Catherine's question, I'll now start to talk about indicators that may seem rather abstract at first, given that poverty often appears to us with a very concrete, sometimes strikingly tangible face. But I've tried to do something creative with these indicators and I hope this will illustrate my points as well as the maps I've just shown.'

'Monetary poverty is the most widespread dimension of poverty in the EU. It affects almost 81 million people'

Anne puts on slide 7.1, showing three separate bubbles. 'European statistics on poverty and social exclusion address and combine three dimensions: monetary poverty, material deprivation and lack of access to jobs.

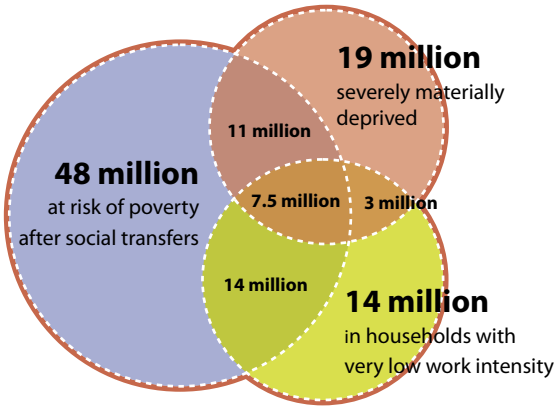
'Monetary poverty is shown here as "people at risk of poverty after social transfers". "Social transfers" are benefits provided by national or local governments. They include benefits relating to our education, housing, pensions or refer to unemployment.

'Monetary poverty is the most widespread dimension of poverty in the European Union. It affects almost 81 million people, which is about 16 % of the total EU population. About half of this number, more than 40 million people, are regarded as severely materially

7.2 Dimensions of poverty

- 116 million people in the EU were at risk of poverty or social exclusion in 2010
- People can be affected by more than one dimension of poverty at the same time
- Some 80 million people were affected by one dimension of poverty, 28 million by two dimensions and almost 8 million by all three dimensions at the same time

People at risk of poverty or social exclusion, 2010
Number of people



Source: Eurostat (online data codes: tsdsc100, tsdsc270, tscsc280, tsdsc310, tsdsc350, ilc_pees01)

Figures for the future: 20 years of sustainable development in Europe?

deprived, while some 38 million people are living in households where the adults work much less than they could. I will talk about what this means and how these figures vary across Europe shortly.

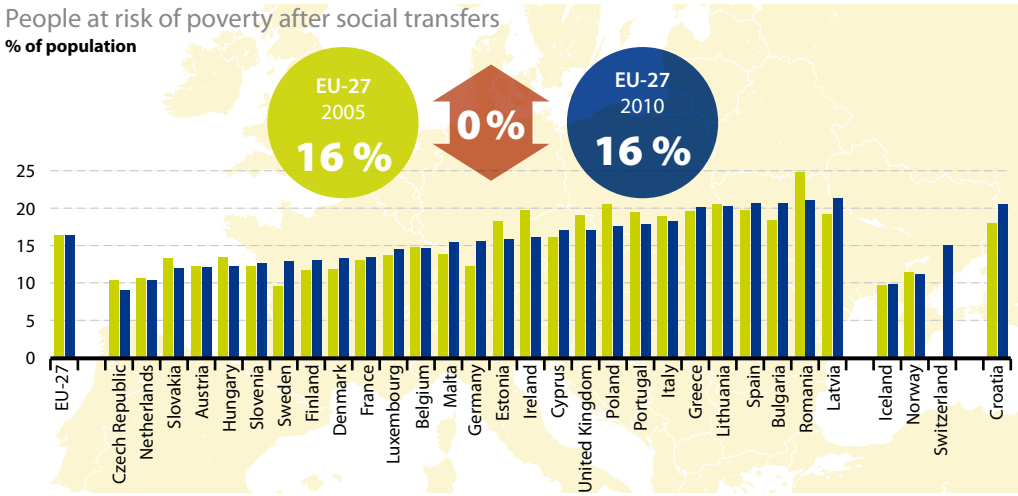
'But let's stay on this overall picture for another minute. As you imagine, people may be confronted with more than one of these faces of poverty at the same time. Somebody who has problems finding a job is likely to be short of money or at risk of monetary poverty, and can live in material deprivation at the same time. Eurostat, the statistical office of the EU, has therefore created a "synthetic" indicator that combines these different dimensions into one figure, which is called "risk of poverty or social exclusion"."

Anne makes the bubbles on the screen move towards each other, until they show an overlapping figure.

'Slide 7.2 shows the degree of overlap between the different dimensions of poverty and social exclusion. Adding up all the numbers in the intersections gives us a total of about 35 million people who are affected by at least two of the three dimensions. About 7.5 million of these people even have to deal with all three conditions at the same time. Hence they are the most severely hit by poverty and social exclusion.

'This slide also shows us that we cannot simply add up the figures of the three dimensions. We have to consider the overlaps between the bubbles. Taking these intersections into account, there were about 116 million people in the EU affected by at least one form of poverty or social exclusion. This is almost a quarter of the total EU population.

7.3 **Monetary poverty is the most common form of poverty**



Source: Eurostat (online data code: tscsc280, tsdsc350)

Figures for the future: 20 years of sustainable development in Europe?

'As you can imagine, the number of people at risk of poverty or social exclusion varies widely across Europe, as does the "contribution" of the three dimensions to overall poverty in a specific country. Rather than confuse you with too many numbers, I'd like to go through the three dimensions separately before we take a concluding look at the overall situation of poverty and social exclusion in the EU.

'Let's start with the highest figure: "people at risk of poverty after social transfers"'. Anne puts on slide 7.3.

'As I've said, 81 million people or 16.4 % of EU citizens are considered at risk of monetary poverty. This means they have an income less than 60 % of their country's "median disposable income". It is also called the "risk of poverty threshold". Here, "disposable income" means the amount of money that households have available for spending and saving after they've paid income taxes.

'Before we look at how the risk of monetary poverty varies across countries, I'll point out that this is a "relative" measure. It is based on comparisons, it is country-specific and it changes over time. So in the case of monetary poverty, the income of a person in a specific country is compared with the "risk of poverty threshold" of that country. Thus, poverty is defined by finding where a person with low income stands relative to the middle-income earners in their country.

'So you see, the outcome of these income comparisons depends on the local context of the specific country. For example, in 2010 the risk of monetary poverty threshold for single-person households was 19 400 euros in Luxembourg, while it was 1 222 euros in

Romania. This means that someone who is considered at risk of poverty in Luxembourg would be a high-income earner if they received the same income in Romania.

'So you see, when measuring monetary poverty the EU statistics take into account whether someone's income is adequate for a standard of living considered "normal" in his or her country. I also want to go back to my previous point that measuring monetary poverty pays attention to changes over time. Comparing most recent data from 2010 with those from the year before, we see that the actual value of the monetary poverty threshold for single-person households in Luxembourg rose from 19 059 euros in 2009 to 19 400 euros in 2010. In Romania, on the other hand, it *decreased* from 1 297 euros to 1 222 euros over the same period.'

Anne pauses, waiting for comments. She imagines that the young man who questioned her about living standards in Europe and developing countries might have a thing or two to say here. And she is dealing with concepts other people are likely to question. After all, any discussion of poverty can stir strong emotions. She remembers her long conversation with Cat on the train. When Cat spoke about her visit to her home town, Anne had a clear sense of her teacher's deep concern for the classmates she left behind.

But so far, no one is making any criticism. Perhaps people are saving their reflections for a more informal setting, like tonight's social. Anne moves on.

'So, to summarise briefly, this example of treating income poverty in relative terms is very specific to the EU. It differs from the United Nation's concept of extreme poverty, which refers to people who are living on less than one dollar a day ([1]).This is a threshold common for all countries and does not change with time.'

Anne turns to the graph shown on the projector. 'So… there are two things I'll highlight here. First, we can see that the situation in the EU as a whole has not changed over the past years. As in 2005, the combined risk of monetary poverty rate of all EU Member States was 16.4 % in 2010. But coming to my second point, there have been changes in the poverty levels of the different Member States. The risk of monetary poverty increased in 13 countries but fell in 14 others.

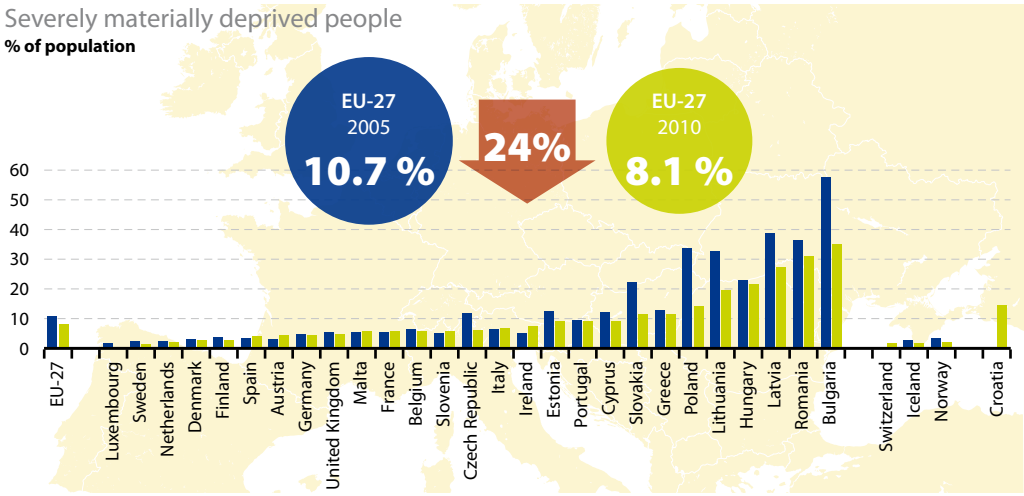
'Risk of monetary poverty increased in 13 countries but fell in 14 others'

'As I've already pointed out, the actual value of the threshold for risk of monetary poverty used in the EU does change over time. This is mainly because of fluctuations in the national income. So a falling trend in these figures doesn't necessarily mean an improvement in people's personal situations. It could also result from a falling threshold, meaning that people's incomes were suddenly above the 60 % threshold, although they didn't actually increase much. This was actually the case in a few countries, for example in Estonia ([2]).'

A tall African girl speaks up for the first time. 'So what's the point in using this relative measure when, as you say, the poverty threshold differs so much between countries and this measure portrays an improvement in poverty levels on paper when there's none in reality? Wouldn't it make more sense to use absolute measures instead, like the UN's one-dollar indicator?' Anne thinks the girl might come from West Africa, judging from her accent.

([1]) See the UN Millennium Development Goals, Target 1.A: 'Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day'
([2]) Statistics in focus 9/2012, *23 % of EU citizens were at risk of poverty or social exclusion in 2010.*

7.4 **Severely materially deprived people**



Source: Eurostat (online data code: tscsc270)

Figures for the future: 20 years of sustainable development in Europe?

'Thanks for asking.' Anne is happy that more and more people from the audience are taking part in her presentation.

'To cover such shortfalls Eurostat is using absolute figures too. As you can imagine, the indicator from the UN about extreme poverty is not really relevant for Europe. But we have something else, which brings me to the second dimension of poverty that I wanted to show you.' Anne puts on slide 7.4.

'About 40 million people in the EU, or 8.1 % of the population, are facing severe material deprivation. This means their living conditions are severely affected by a lack of resources. For example, people may not be able to afford to heat their homes, pay their rent or go on holiday once a year. There's a list of nine common items used in the EU. People are considered severely materially deprived if they cannot afford at least four of these ([3]).

This list brings Anne back to her conversation with Catherine on the train a few weeks ago. As a child, Cat wouldn't have dreamed she'd have access to most things on this list. Now she does. Does that mean living standards in Europe are a lot better now? On that note, Anne goes on to her next point. 'In contrast with the risk of monetary poverty indicator I just showed you, this measure is an absolute one, since the reference list is a common standard for all EU countries.'

([3]) The severe material deprivation rate represents the proportion of people who cannot afford at least four of the nine following items: 1) (arrears on) mortgage or rent payments, utility bills, hire purchase instalments or other loan payments; 2) one week's annual holiday away from home; 3) a meal with meat, chicken, fish (or vegetarian equivalent) every second day; 4) unexpected financial expenses; 5) a telephone (including mobile phone); 6) a colour TV; 7) a washing machine; 8) a car and 9) heating to keep the home adequately warm.

Anne turns to the projector. 'And this slide here… shows us differences over time and between countries. We see that conditions of severe material deprivation have improved in the EU since 2005, when more than 10 % of Europeans were affected by this situation. We can also see major differences between Member States. In Luxembourg, only 0.5 % of people were severely materially deprived in 2010, while more than 30 % of Bulgarians and Romanians were suffering a lack of basic material resources.

'In 19 Member States less than 10 % of the population was considered materially deprived in 2010. However, we can also see that the most progress has been made in countries facing the highest deprivation rates. I've learned that severe material deprivation is often associated with low levels of economic activity. As the maps showed earlier ([4]), the economic catch-up was very strong in countries and regions with low GDP levels per person. This may explain the gains we see here for material deprivation rates, especially in Eastern Europe.'

'In 19 Member States less than 10 % of the population was considered materially deprived in 2010'

Anne has a sip of water and takes a good look around the hall before she goes on with the third dimension of poverty and social exclusion. The Bulgarian boy is nodding, as if in agreement. The girl from Africa seems to be thinking over Anne's points. One or two people seem to be talking quietly between themselves and comparing notes. Anne takes that as a sign that her points have sparked off some discussion. People seem to find her presentation interesting and understandable so far.

Even the man who challenged her about living standards in developing countries is listening. Still, her mind keeps furnishing likely critiques on his behalf: *how can we describe people as deprived if they don't go on holiday, while women in other parts of the world have to walk miles to find clean water?*

Despite her initial defensiveness, perhaps Anne should thank him for prodding her into asking these questions and taking a global perspective. As if he's read her mind, he gives her a short nod. No doubt they'll have some words at the party later on, but for now she feels encouraged as she continues her talk.

Anne puts on slide 7.5. 'Now, let's look at the third dimension of poverty and social exclusion in Europe: "very low work intensity".'

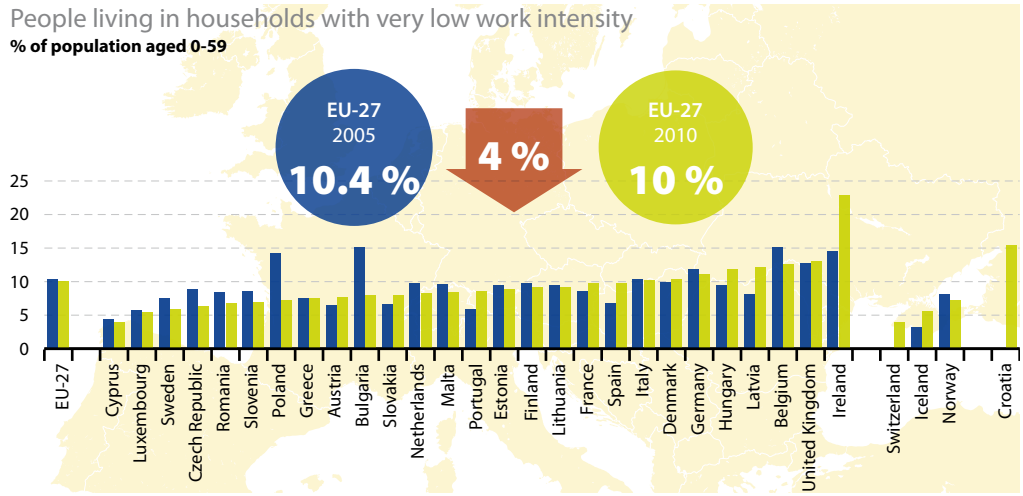
'"Very low work intensity" is about how much people have worked during a year compared with how much they could have worked. Somebody is considered as living in a household with very low work intensity when the adult members worked less than 20 % of their working capacity during the past year.

'As we can see here, this situation affected about 38 million people, or 10 % of EU citizens, in 2010. This can be considered a slight improvement compared with 2005. However, the situation has actually worsened compared with 2009, when the number of people living in very low work intensity households was 3.5 million lower. This increase – as we can see here – was particularly strong in Ireland and very likely caused by the economic crisis. As I told you in the beginning, the crisis had a strong impact on the job market. This is also reflected here, since "working less than 20 % of one's working capacity" also includes people who are not working at all any more.'

'Has the crisis made a similar impact on the other indicators you've just shown us?'

([4]) See chapter 6: 'Regional disparities'.

7.5 **Low work intensity**



Source: Eurostat (online data code: tscsc310)

Figures for the future: 20 years of sustainable development in Europe?

Catherine picks up on Anne's point about the crisis. Anne wonders if she's also thinking back to her last visit to her home town.

'So far I've not seen a similar trend for the other indicators,' Anne replies. 'Also the combined indicator "risk of poverty or social exclusion" – I've shown you the individual dimensions of that indicator – hasn't changed much from 2009 to 2010. However, I did indicate that the employment rate took a while to show the effects of the crisis ([5]). So there might be a similar time lag before we see the full impact of the crisis on poverty and social exclusion in Europe.

'And that brings me back to the overall situation of poverty and social exclusion in the EU.' Anne switches to slide 7.6.

'I've mentioned a "synthetic" indicator that combines the three dimensions of poverty and social exclusion. You do remember the slide with the overlapping bubbles, don't you? Here I'm showing you the same data, but in a different form, for the 27 Member States.

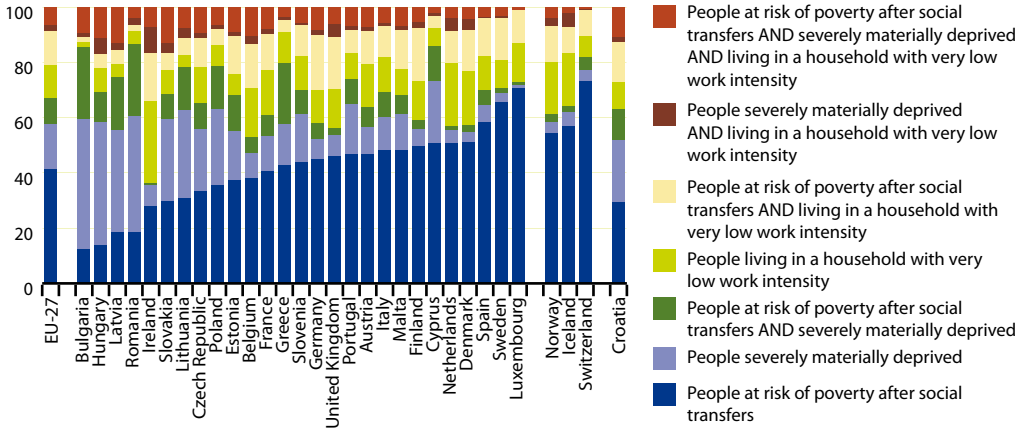
'There are about 116 million people in the EU who are affected by at least one of the three dimensions of poverty and social exclusion. About 40 % of them are considered at risk of poverty without having to face the other two conditions: material deprivation and very low work intensity. Another 16 % are considered severely materially deprived without being in any of the other two states. If you add these two conditions together, about

([5]) See chapter 2: 'Growth, jobs, and the crisis'.

7.6 **Poverty and social exclusion differ across Europe**

People at risk of poverty or social exclusion, 2010

% of population



Source: Eurostat (online data code: ilc_pees01)

Figures for the future: 20 years of sustainable development in Europe?

two thirds of the people at risk of poverty or social exclusion are affected by shortage of money or 'material deprivation' or both.

'The "contribution" of the three dimensions varies between the Member States. In a few Eastern European countries, severe material deprivation, either alone or in combination with monetary poverty, is the main issue. Ireland is an exception, with very low working intensity the most important dimension. However, the countries you can see on the left side are also those with the highest shares of people at risk of poverty or social exclusion.

'But the "poorest" people are those belonging to the red parts of the bars, because they are affected by all three conditions – monetary poverty, material deprivation and very low work intensity – at the same time. For the EU as a whole, this is the case for 6.5 % of the people at risk of poverty or social exclusion. In a few Member States, such as Belgium, Latvia, Hungary and Slovakia, this share is near or above 10 %.'

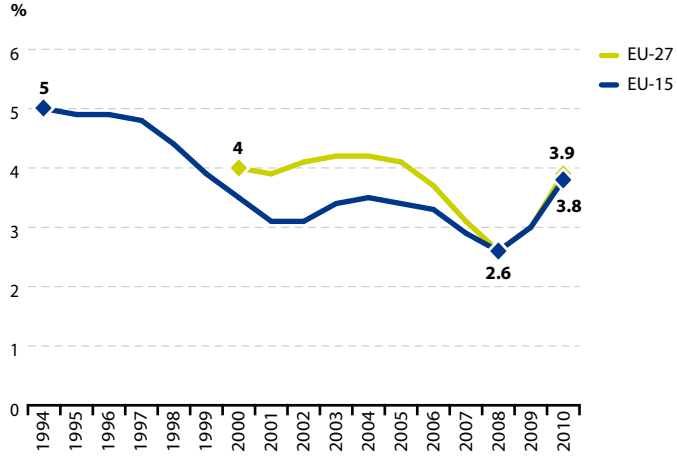
'I'm sorry to interrupt you again.' The African girl speaks up again. 'You mentioned that the economic crisis may still have further effects on poverty and social exclusion in Europe. Can you explain that a little more?'

'Well… I'll give it a try,' says Anne. 'An important issue about poverty and social exclusion is whether people can find work. The more people work, the less they depend on social transfers. As we've seen, employment has risen more or less in line with economic growth. As GDP growth stalled during the economic crisis, employment levels also fell. Governments responded to the crisis by spending a lot of money on economic recovery plans to fight the damaging effects on GDP and job markets. This in turn caused public

7.7 **Long-term unemployment trends**

- People unemployed for more than a year are considered long-term unemployed
- From 1994 to 2008 long-term unemployment has shown a falling trend in the EU
- People who lost their jobs at the onset of the crisis will increasingly join the ranks of the long-term unemployed

Total long-term unemployment rate



Source: Eurostat (online data code: tsdsc330)

Figures for the future: 20 years of sustainable development in Europe?

debt to rise and governments are now adopting austerity packages to cut their deficits. This means cuts in public spending, which also includes social transfers. So we end up with employment *and* social transfers going down.'

Anne is surprised at how pessimistic her explanation has become. Is this really me or is it my father speaking through me? Again, she feels like she is hearing conflicting voices in her head – those of her father, grandfather, Marta, Catherine, other people in this room. Anne clears her throat, as if it will help her find her own voice when she speaks again.

'I want to point out another feature of "European poverty" – its intrinsic connection with the idea of social exclusion. It is not by chance that the title of the combined indicator contains the words "risk of poverty or social exclusion". These belong in that title because the EU's approach is much broader than monetary poverty.

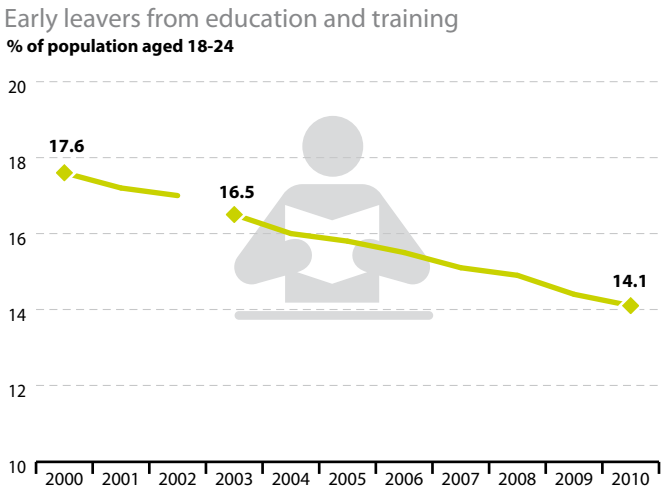
'I'll quote a Eurostat publication ([6]): "Social exclusion encompasses multidimensional and cumulative processes which are affected by a spectrum of different factors like poverty and access to labour markets, education, decision making, social and community networks." So when we try to describe the situation in Europe, we're not only talking about how much money someone makes for a living. We're also trying to understand how someone is doing in terms of their ability to take part in the community, to lead a full social life.

'And being long-term unemployed definitely does not help us do that.' Anne switches to slide 7.7.

([6]) Statistics in focus 58/2011, *Is the EU on a Sustainable Development Path?*

7.8 **More people staying longer at school**

- School drop-out rates fell fairly steadily in the EU
- There is a clear link between education and the risk of poverty
- People with low education levels experience the highest risk of poverty



Source: Eurostat (online data code: tsdsc410) Note: Break in series in 2003

Figures for the future: 20 years of sustainable development in Europe?

'Long-term unemployment describes the situation of people who have been unemployed for longer than a year. People affected by long-term unemployment usually find it harder to get a job than those who are unemployed for shorter periods. Those who are long-term unemployed thus face a high risk of social exclusion.'

Long-term unemployment. Cat had talked about that on the train, but in much more personal terms. The conversation started with Anne telling Cat a bit about her argument with her father over breakfast and she mentioned the suicide of his bank colleague. Then Cat said she'd also heard of suicides among former classmates in her home town. Cat had talked some more about people she knew who hadn't been able to find work for years and now faced further pressure over housing and benefits.

As Cat was telling Anne about this, the train stopped at a rural station near a weir. Anne looked over at the rushing water and the luxurious growth of ferns and woodland surrounding it. This landscape seemed so far from their sombre conversation.

Anne drinks some more water, trying to keep those woodland images in her mind so she can feel positive.

'We can see that the trend over the past 10-15 years was rather encouraging, at least until the economic crisis kicked in. In 2008, we saw the lowest long-term unemployment figure for years, with just 2.6 % of the economically active population unemployed for longer than a year. But this share leaped up in 2009 and 2010. And long-term unemployment is expected to grow even further as more and more people who lost their jobs since the start of the crisis join this category.'

'But I also want to show you more promising figures on poverty and social exclusion. They are about education.' Slide 7.8 appears.

'Education is important for gaining work and it can influence whether you are at risk of poverty or not. This is ever more important in today's knowledge-oriented society. Although I don't have a slide for it, data show a clear link between risk of poverty and education in the EU. People with the highest education levels have the lowest risk of poverty. In contrast, people who left school at an age of about 15 years show risk-of-poverty rates of almost 25 %, which is well above the average.

'On the slide here we see that the share of 18-24-year-olds in the EU who have not completed lower secondary education has fallen continuously.'

Then Anne adds: 'Most of the people in this room are contributing to this decline.'

People are looking at each other as if they're wondering what they could have done wrong. Hmmm… perhaps that attempt at tongue-in-cheek humour has fallen a bit flat, Anne thinks. Her audience hasn't at first taken their contribution to a 'decline' as being a good thing!

But soon a few people seem understand and oblige with a chuckle, so Anne continues. 'Pupils' literacy skills also seem to be improving and the share of adults with low educational attainment has fallen over the past decade. There's also been progress on the global level. According to the UN, in the world's poorest countries 52 million more children enrolled in primary school from 1999 to 2008. But on a global scale, poverty still kept 67 million children of primary school age out of school in 2009. About 16 % of the world's adults – and two thirds of these 793 million people are women – still lack basic literacy skills ([7]).'

Catherine stands up. 'I think I can illustrate some of these points about education with changes in my own life.'

Anne is glad that Cat is contributing again. Perhaps she can compensate for some of the gaps in her own experience.

'In fact, I've been around schools all my life,' Catherine says. 'My father used to be the caretaker in a school and my mother worked in the school canteen. When I became a teacher, my folks liked to joke: you've moved up in the world, but not too far. But still, through education I moved on from a poor background to a lifestyle that isn't bad at all. But…'

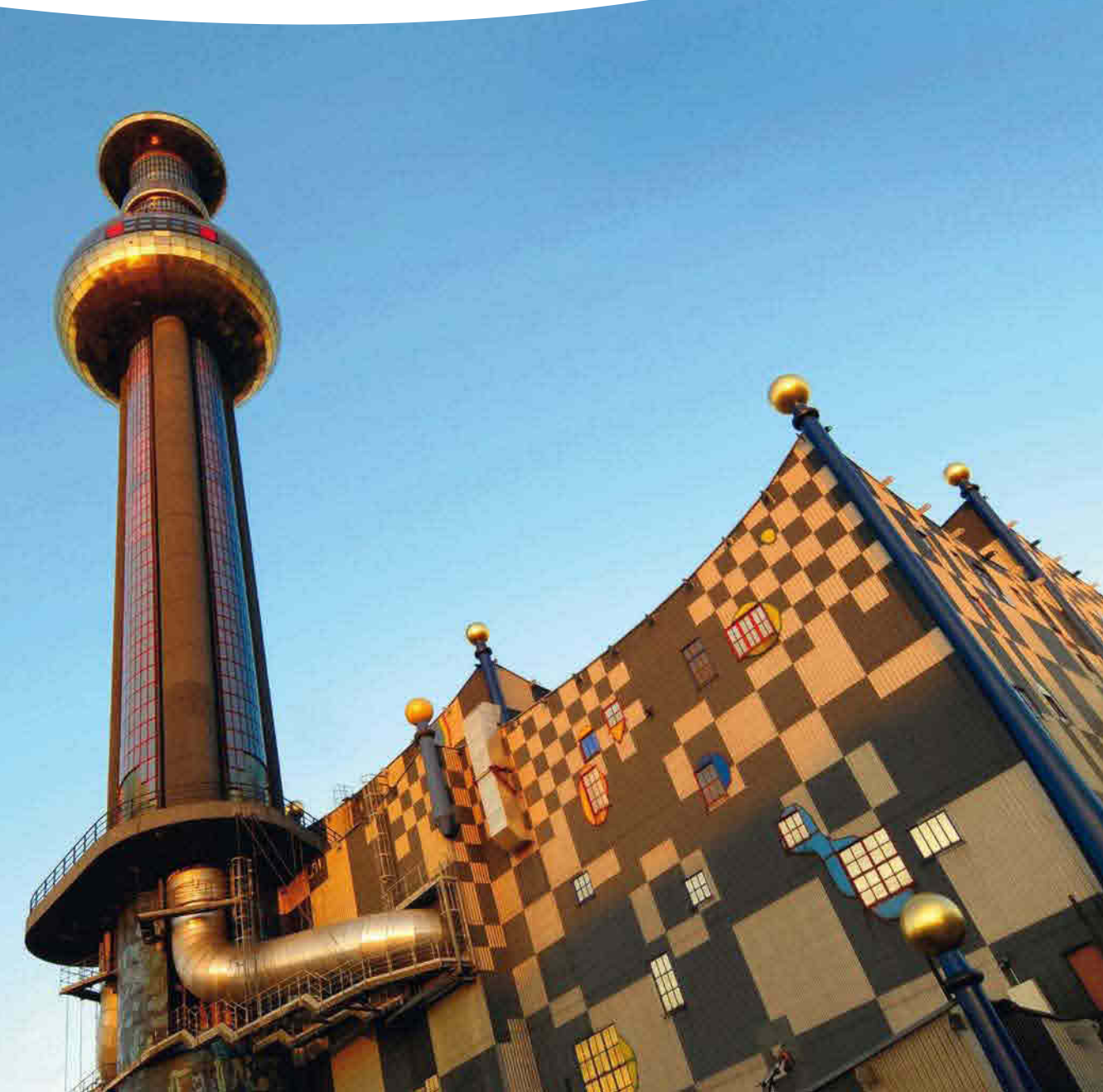
Cat pauses. 'I wonder how open this route will be in the future, in view of the austerity policies that Anne mentioned, which could affect access to education. Perhaps we can investigate the figures on that over the next few years.'

When they were on the train, Cat had also expressed similar concerns for future generations of disadvantaged pupils who might not have the same opportunities. While they were talking about this, the train was passing along open fields containing rows of busy wind turbines. Beyond the fields, a shading of deep green showed on the horizon. They were approaching the forest and the national park.

([7]) United Nations Secretary-General's High-level Panel on Global Sustainability, *Resilient People, Resilient Planet: A future worth choosing*, 2012.

8

The waste problem (and how it can be solved)



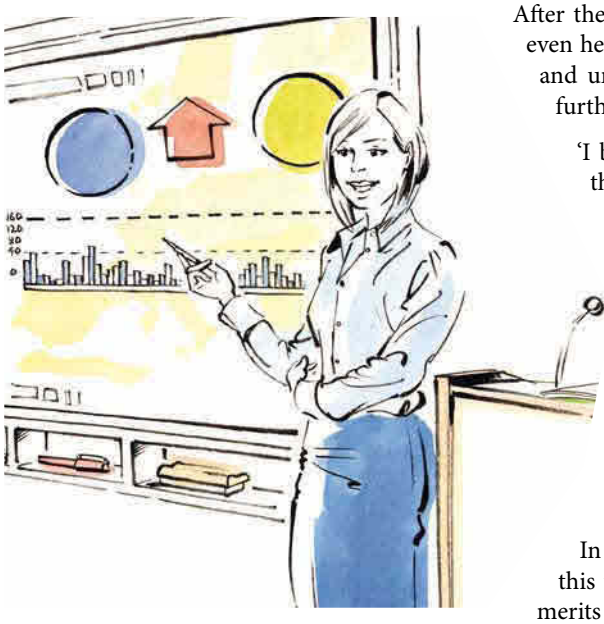
'The next thing I'll talk about is waste. Rubbish. Garbage. There's a lot of it about…"

Is that barely audible rustle the sound of empty crisp packets being put away?

'The subject of rubbish may seem like a big lurch away from our conversation about inequalities and exclusion. But remember, we need to take a holistic approach if we want to achieve sustainability. All the issues in this presentation are related to each other and we'll try to fill in any gaps when we conclude.

'Meanwhile, let's return to that day a few weeks ago. I was sitting on the train with Catherine. We were talking about poverty and exclusion as we left the city and sped through the countryside.

'We finally arrived at the train station, which was just on the edge of the national park we were visiting. I was expecting a noisy bunch of schoolmates and one ranger, my Grandpa Robert, to be waiting for us. Instead, everything was quiet. After the train left the station, it was so quiet I could even hear the wind and random rustlings in the trees and underbrush, and even the sound of that river further away.



'I breathed in the air. It was full of the scent of the forest and there was something familiar about it. Then I realised… it was a lot like the wonderful air that rushed into the spaceship in my dream. I smiled a little, pleased that good air quality doesn't have to be confined to dreams after all!

'I was also pleased that we'd arrived faster than the bus, which could have been delayed by the same traffic congestion I'd encountered when my father was driving me to school.'

In fact, Anne had made a mental note to mention this to her father next time they talked about the merits of different kinds of transport. Trains *do* get you there faster.

'While we were consulting Catherine's map to find our way to the main park entrance, a pick-up truck pulled into the station car park.'

And Cat had exclaimed: *'So here comes that stubborn old codger now!'*

Anne smiles at the memory. At the time, she'd been mortified all over again to know that Cat had heard her dad's rude farewell after all. And then she was extremely relieved, because Cat was laughing. And of course, Anne joined in. She's tempted to laugh again now, but she picks up the thread of her story instead.

'So my Grandpa Rober stopped the truck and urged us to get in. I might've mentioned that my dad and my grandfather haven't been getting on. So I was a little anxious about seeing him after so many years. Well, I did see him on TV a couple of years ago. He was

being interviewed for a news report on cuts in national park provision; he was very active in a group that was campaigning against the sale of national forest land.'

Anne doesn't mention that her dad had been watching with her and had greeted the sight of his father-in-law with a groan: 'What kind of trouble is that cantankerous old hippy stirring up now?'

She had noticed that her grandfather's white hair was cropped short, perhaps shorter than it had been on TV. He was wearing a ranger's uniform and looked very 'official'. She had considered taking a photo on her phone to show her father, but decided against it. *What's Dad talking about? Grandpa Rob is certainly no hippy*.

'Robert told us that the bus was delayed, so he decided to come and pick us up at the train station. He had some business to do anyway along the road and we'd meet the others at the entrance to the national park. "Get in, girls", he said. So we got into the car.

'To my relief, Grandpa Robert didn't go on about how I'd grown since he'd last seen me. And he said nothing about Mum and Dad either, just greeted us both in a friendly way.'

Anne smiles when thinking about that. Her father could certainly learn some lessons about being tactful from his father-in-law.

'He greeted me and asked how I'd managed to persuade my whole class to visit him in the national park.' Anne smiles at Catherine. After all, it had been Cat's idea to go on that excursion.

In the truck Grandpa Rob asked Cat about any news and gossip from the school, where he used to teach. He'd quit his job as a teacher and moved away from the city shortly after Anne's mother had died.

'I told him about our involvement in the model United Nations and that our excursion was part of an "environmental studies" programme. My grandfather then pointed to the back of his truck, which was filled with bags, some black and others yellow. "You can learn something from this load of waste we have in the back," he told us. After a few minutes' drive, we stopped at a waste facility.

'When we got out, he told us waste had been increasing in the park. A few years ago, he even thought he'd need a bigger truck. But since they introduced waste separation, the situation has improved. He was happy he could keep the same truck, which he calls Vivian.'

'That's a strange name for a truck,' someone interrupts.

'I wasn't aware there's such thing as a *normal* name for a truck,' Anne answers. A computer, though, *that's* indeed worthy of a name. Anne's computer is called Sophie, after the Greek goddess of wisdom and the 19th century Russian mathematician Sophia Kowalewskaja.

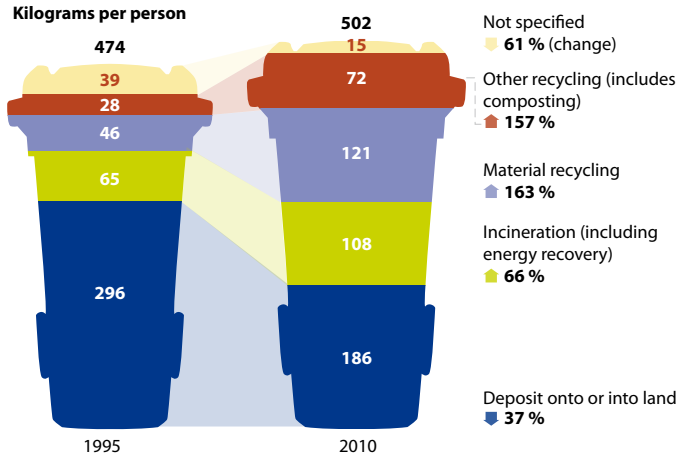
'But my grandfather did explain to us that he'd named his truck after a founder of the… *ahem*…' Anne suddenly is seized by an irresistible need to giggle madly. For all her anxiety over things that could go wrong with this presentation, she never thought *this* would be a problem. '…a founder of… of the Bonzo Dog Band.'

Now that the room rockets with laughter Anne feels free to let go of her own laugh. Funny, though she remembered a lot of Grandpa Rob's music, the name of this band didn't ring a bell. Perhaps her father had never allowed their recordings in the house.

8.1 More and more waste being generated

- Waste generation rose from 1995 to 2002 but has remained stable since
- Waste treatment by incineration, recycling and composting has risen remarkably
- Therefore less waste needs to be buried in landfill

Municipal waste generation and treatment, EU-27



Source: Eurostat (online data code: tsdpc240)

Figures for the future: 20 years of sustainable development in Europe?

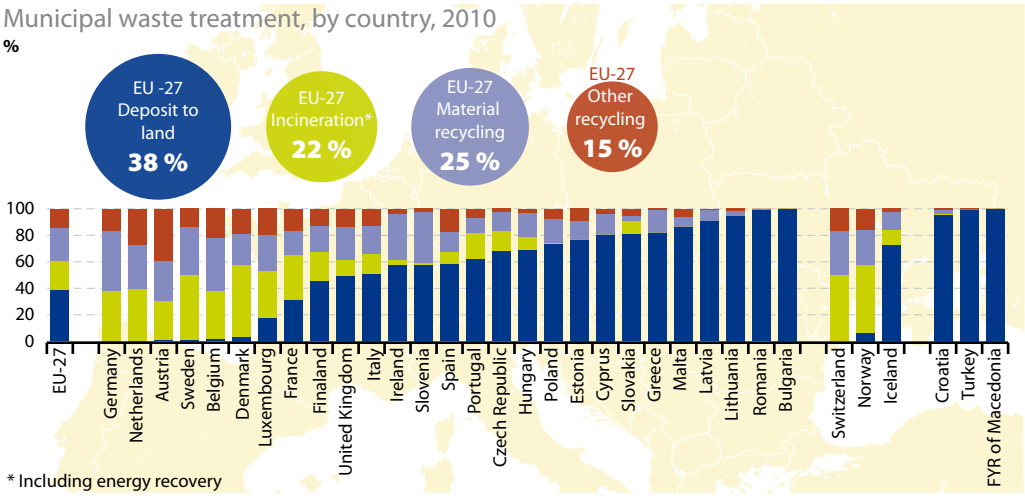
Once she gets her breath back and the audience quiets down, Anne returns to her presentation. 'So… Grandpa Rob patted the fender of his battered but sturdy machine, then asked us to help him put the waste bags in the facility's bins. And this is a good point to stop and have a closer look at what will happen to this – and other – waste.' Anne puts on slide 8.1.

'This shows us how much "municipal" waste is generated and how it is treated. Municipal waste mainly comes from households, and from small offices and public institutions. As we can see here, the amount of waste produced per person has grown since 1995, when an average European citizen produced 474 kilograms of waste. This was 1.3 kg of waste per person per day in 1995, compared with 1.4 kg per person per day in 2010. However, waste generation has stalled since 2002 and we can even see a falling trend over the past few years. Similar to what we've seen for energy use and transport, this could be another result of the economic crisis ([1]).

'Keeping the scarcity of some resources in mind, waste is increasingly seen as an important source of raw materials. And this is where waste treatment comes in. The practice of burying waste in landfill, which has the worst impact on the environment, has seen a steep drop. While 15 years ago more than two thirds of municipal waste was disposed of this way, this share fell to less than 40 % by 2010. By contrast, recycling and composting has recovered more and more waste. In 2010, the same share of waste was recycled or composted as was landfilled. Recycling and composting are considered

([1]) European Commission Press Release from 16 April 2012, *Environment: Getting gold from garbage – how some Member States are making waste a resource*, IP/12/369.

8.2 **Waste treatment by country**



Source: Eurostat (online data code: tsdpc240)

Figures for the future: 20 years of sustainable development in Europe?

greener than landfill or waste incineration, which includes burning waste to generate energy – or just to get rid of it.'

'Not wasting anything would be even more environmentally sound, wouldn't it?' Catherine adds.

'Yes… but I'm afraid we still have a long way to go before we get there', Anne replies. 'In the meantime, we have to increase recycling and composting to reduce the impact of waste on the environment.'

'Excuse me… what exactly do you mean by "recycling" and "composting"? They've become buzzwords, but I'm not sure if everybody's clear about what they involve.' Somebody at the back of the audience – Anne hasn't seen who – has asked that question.

'*Recycling* means that waste materials are recovered so that they can be reused for something else. And *composting* means treating biodegradable matter so it can be used as fertiliser. Putting it simply, we're talking about reusing and not *wasting* the waste. And this means that we need less extraction activities such as mining and quarrying to satisfy our need for raw materials.' Anne switches to slide 8.2.

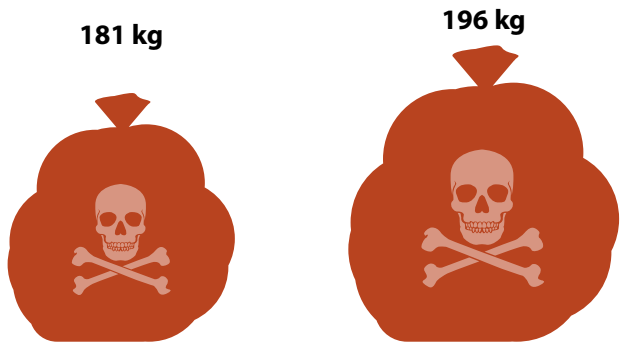
'There are big differences in waste management between Member States. The most advanced six Member States – Belgium, Denmark, Germany, Austria, Sweden and the Netherlands – landfill less than 4 % of their municipal waste. At the other extreme, nine Member States are still burying more than 75 % of their municipal waste. We can see that this is also true for the candidate countries. There has been continuous progress in

8.3 **Hazardous waste generation is rising**

- Almost half of hazardous wastes come from manufacturing (26 %) and construction (21 %)
- Growth from 2004 to 2008 was driven by more hazardous wastes from the construction sector
- 2 % of hazardous wastes come from households

Generation of hazardous waste, EU-27

Kilograms per person



Source: Eurostat (online data code: tsdpc250)

Figures for the future: 20 years of sustainable development in Europe?

some of the "new" Member States, where recycling rates are rising rapidly. Municipal waste generation has also declined in several countries, probably due to the economic downturn ([2])." Anne pauses so the students in the audience can follow her explanations on the slide.

'But there is more. Not every waste is the same; some wastes are more dangerous than others. The most dangerous ones are called "hazardous wastes"." Anne puts on slide 8.3.

'Hazardous waste includes chemical wastes, acids, alkaline and saline wastes, or contaminated soils. Many of those wastes come from manufacturing and construction. But mining and quarrying, as well as water supply, also generate a lot of hazardous substances.

'A small proportion also comes from households. This includes things we use almost every day, like lead acid batteries or fluorescent tubes.

'Creation of hazardous waste has risen over the past few years. The amount of hazardous waste grew from 181 kg per person in 2004 to 196 kg per person in 2008.

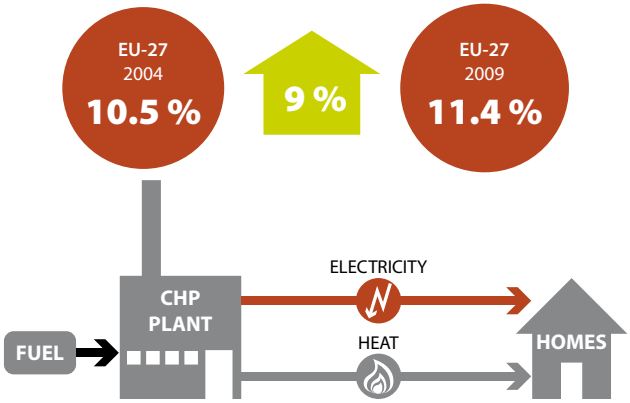
'Now, let's go back to when we were taking those bags of waste out of the truck… I mean *Vivian*.' Anne imagines her grandfather wouldn't want her to refer to his beloved machine in an impersonal way, though she still has to suppress an urge to chuckle. And yet… they all might laugh, but is it really such a bad idea to form a bond with goods you

([2]) European Commission Press Release from 16 April 2012, *Environment: Getting gold from garbage – how some Member States are making waste a resource*, IP/12/369.

8.4 **Combined heat and power generation**

- Combined heat and power generation ('cogeneration') produces electricity and heat at the same time
- The share of electricity from CHP plants has increased slightly since 2004
- CHP plants can be powered by a variety of fuels, such as natural gas, biofuels, biomass or waste

Combined heat and power generation, EU-27
% of gross electricity generation



Source: Eurostat (online data code: tsdcc350)

Figures for the future: 20 years of sustainable development in Europe?

use for your livelihood? That could be a part of the ethos of taking care of things, making them last and not wasting them.

'Of course, these bags didn't contain hazardous waste. Some of this waste was left by visitors to the forest; another portion was the result of pruning, clearing underbrush, uprooting invasive plant species… all the by-products of maintaining a public forest. Grandpa instructed us to put the black bags in one bin and the yellow ones in another. He told us that the waste in black bags goes into landfill, but the stuff in the yellow bags goes to an incineration plant that produces heat and electricity for the city. And this is what my last slide on waste – slide 8.4 – is about: combined heat and power or "cogeneration".

'Combined heat and power generation or CHP is a technology that produces electricity and heat at the same time. This is usually more efficient than producing them separately because less fuel is needed to produce the same amount of useful energy. CHP plants can range from very small ones used in single-family homes to big facilities that can supply whole city districts with electricity and heating.

'This slide shows you a schematic illustration of how this works. The figures refer to how much of the electricity generated in the EU comes from CHP plants. They show that the share of CHP has grown slightly over the past few years, reaching just over 11 % in 2009. However, there is wide variation in CHP use across EU Member States, with shares ranging from zero to 45 %. Three Member States – Denmark, Finland and the Netherlands – generate more than one third of their electricity from CHP plants.

'CHP plants can be powered by a variety of fuels, such as natural gas, biofuels, biomass or waste – as in the case of the incineration plant outside my city. That's where the yellow bags we offloaded from my grandfather's pick-up truck will be delivered. As I learned during my preparations, incineration plants in some cities were considered "heavy polluters" for a long time. But others have become tourist attractions, like the one in the Austrian capital Vienna. This was designed by the Austrian artist Friedensreich Hundertwasser ([3]).'

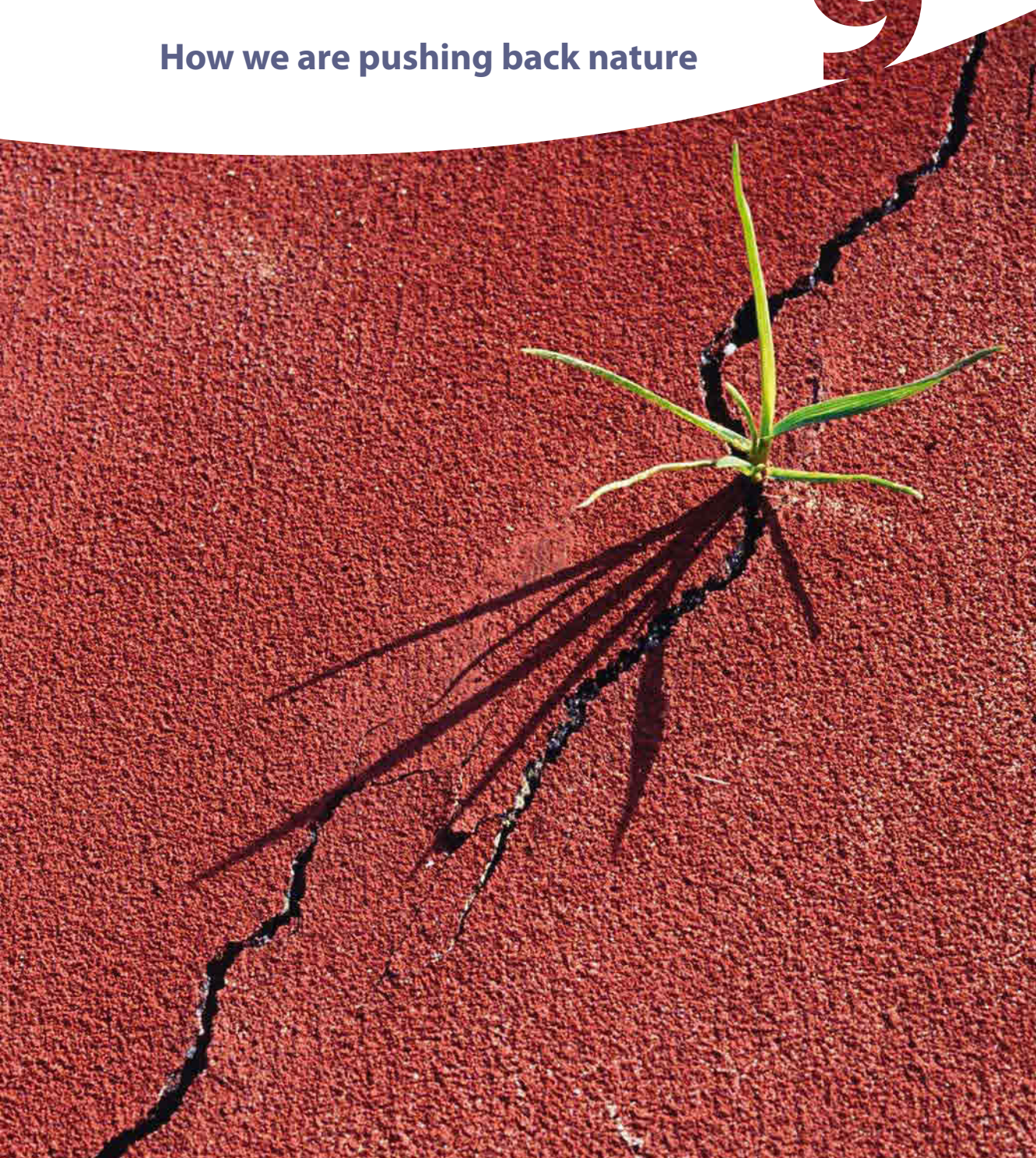
'Do you really think burning our waste for producing energy is *the* solution?' The student from India obviously has his doubts about that.

'Certainly not. Perhaps my way forward to protect nature involves not wasting things at all. And that doesn't only refer to waste. It also includes land and biodiversity, which adds another vital piece to the sustainability puzzle.'

([3]) See cover photo of this chapter.

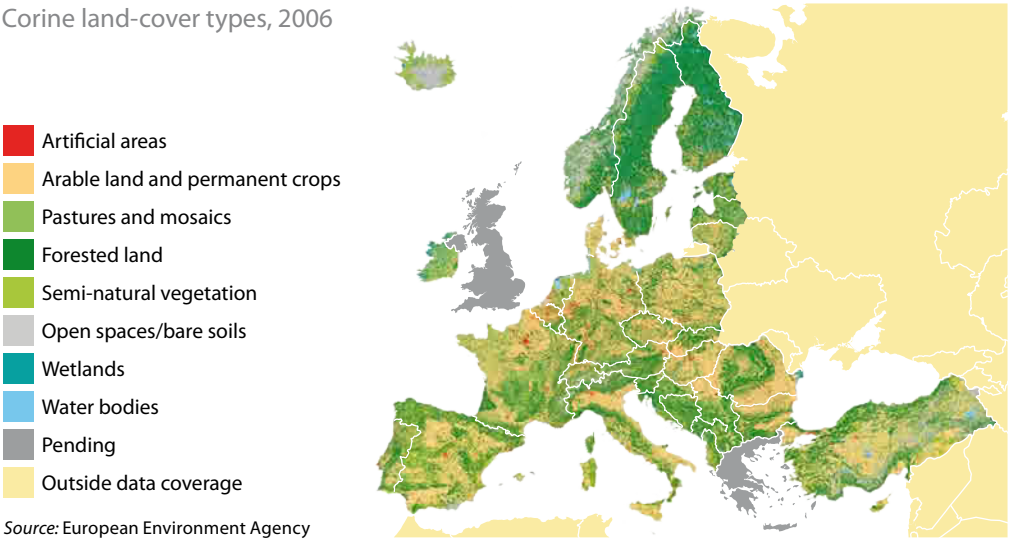
9

How we are pushing back nature



9.1 **Land cover in Europe**

Corine land-cover types, 2006



Source: European Environment Agency

Figures for the future: 20 years of sustainable development in Europe?

'So… I told you it was very quiet in the forest. But that ended when the bus with my classmates pulled up. I said hello and all, but most of the time I focused on my surroundings and what I could learn for my new project...'

Anne stopped short. She might as well come out and say she's just a geek who's not joined any of the cliques in school and would rather hang out with her teacher and her grandfather. Then she shrugs. *So what's wrong with that?*

'After arranging to meet up with our bus driver again in the afternoon, we started off on our walk. And Grandpa Robert declared: *"Every inch of this ground has to be fought for!"* He told us that the park is under constant pressure to lose land for urban development.'

Though her grandfather doesn't seem to be the kind of guy who goes out looking for an argument, Anne could see he's a… *determined* kind of person. So what's the difference between being determined and being *stubborn*?

'And here's something else my grandfather said to us by way of introduction: "Forests are an important habitat for many animals. They're a place where people go to relax and enjoy themselves. They also provide raw material for making furniture and building houses, and we're even using waste from forests for fuel. Forests are the main producers of the oxygen we breathe. So if anyone ever tells you that parks and forests are just for tree huggers and hippies, tell them to… well, just tell them they are wrong.

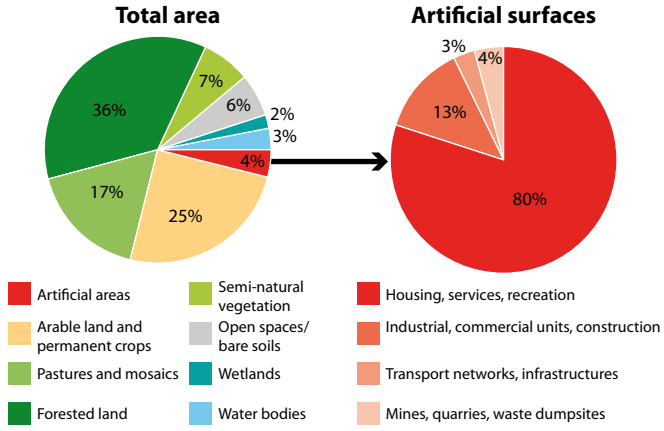
'So my grandfather's remarks about forests and his campaign to preserve the park bring us to the broad issue of land use. The way land is used affects human health and

9.2 **Share of land-cover types in Europe**

- Agricultural land (arable land, permanent crops, pastures and mosaics) covers more than 40 % of Europe
- Forested land is second with 36 %
- Artificial areas cover only 4 %, but they are home to most of Europe's population and they host most of its economic activities

Share of land-cover types in Europe, 2006

%



Source: European Environment Agency

Figures for the future: 20 years of sustainable development in Europe?

wellbeing. Land use has impacts on climate, biodiversity and ecosystem services. It can also cause degradation and pollution of water, soil and air ([1]).' Anne puts on slide 9.1, which shows a colourful map of Europe.

'This is another map I've found. But this one is different because it does not illustrate the regional differences of economic and labour market conditions in the European Union. It is about environmental conditions, namely land cover.

'I have to admit it doesn't look as green as I remembered from that dream I told you about. This is mainly because of the red and yellows areas, which indicate human influence. The bigger red spots indicate capitals and other big cities, and the areas in orange are those used for more intensive agriculture. Areas shown in the light green colour are used as pastures or show more varied agricultural areas, called mosaics.

'This map shows the broad-brush categories of landscape features, such as boreal forests in the north, the densely populated area stretching from Amsterdam to Milan, open spaces related to mountain massifs and the mixed landscapes of south-east Europe and Iberia. Areas of arable land concentration are also visible ([2]).

'But we have more than maps that leave you guessing how much of Europe's surface is covered with artificial and agricultural areas – there are also figures for that.' Anne moves to slide 9.2.

([1]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Land use*, 2010.
([2]) See previous footnote.

'The pie chart on the left shows you the share of land-cover types in Europe. We can see that land used for agriculture has the biggest share, covering more than 40 % of Europe. Forested land is second, with a share of 36 %. In comparison, the other categories cover just less than a quarter of Europe.

'However, the small red piece in the pie on the left represents one of the most important categories of environmental impacts. Only about 4 % of Europe is covered by artificial surfaces, which are mainly cities that also include green urban areas. However, this 4 % is home to most of Europe's population and hosts most of our economic activities. This requires the constant exchange of resources and emissions with surrounding areas. And this puts great pressure on the environment ([3]).

Anne feels like she's been talking for a long time and drinks some water. She'd expected some more questions. At the beginning of their walk Grandpa Rob told their group: 'If you want to ask something, just shout it out. You're in the woods, so we don't stand on formalities. You don't need to raise your hands like good little boys and girls.'

Perhaps Grandpa's less orthodox approach to teaching may have been one reason why he quit his job at her school. She can still remember him bouncing her on his knee when she was little, while he sang along with Pink Floyd's 'Another Brick in the Wall'.

And perhaps Anne should also remind people here to just 'shout it out'. But a glance at her audience confirms they are still engaged, so she continues.

'Only 1 % of the wider European area can be considered relatively untouched by humans. We'll find big wilderness areas mainly in parts of Finland, Sweden, Norway, Ukraine and Western Russia, together with bordering states. There are also some wilderness remnants in Central and Southern Europe ([4]).

'So… as we see here, land is used in many ways. This includes production – mining minerals, harvesting timber, growing food – and many social and economic activities such as construction, infrastructure, recreation and services. However, land is a limited resource. So these activities compete for land and growth in one category means a decline in another. So, let's look at how the "face" of Europe has changed since 2000.' Anne puts on slide 9.3.

'We can see that artificial surfaces have experienced the biggest changes in land cover in Europe, both in net area and in percentage change since 2000. About 630 000 hectares of land were converted into artificial surfaces between 2000 and 2006. That equals the size of about one third of Slovenia or half of Montenegro!

With a rise of 3.4 %, built-up areas have grown faster than Europe's total human population, indicating an increasing claim for space for each person ([5]). Increases in artificial land cover are almost always irreversible. They can result in the "sealing" of land, which means nothing can grow there any more. And expansion of artificial land cover can fragment ecosystems. It is a major threat to habitats and biodiversity and the ecosystem services they provide.

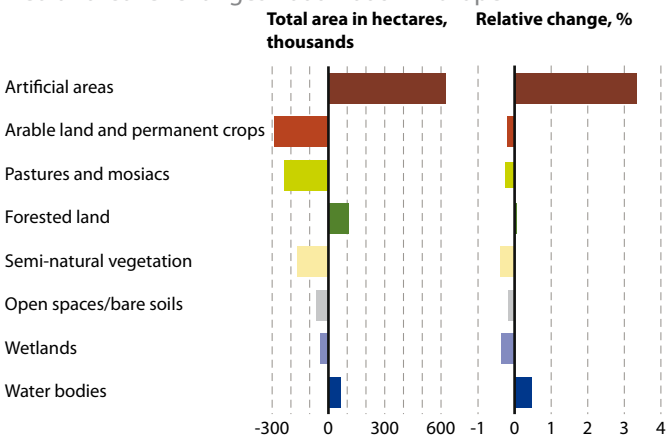
'Growth in building sites and road and rail networks has given a big boost to this increase

([3]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Land use*, 2010.
([4]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Biodiversity*, 2010.
([5]) See previous footnote.

9.3 How land cover has changed

- 630 000 hectares of land were converted into artificial surfaces between 2000 and 2006
- Growth in building sites and road and rail networks was the main driver behind this change
- Agricultural land is shrinking, while forests are expanding continuously

Net land-cover changes 2000-2006 in Europe



Source: European Environment Agency

Figures for the future: 20 years of sustainable development in Europe?

in artificial surfaces. The linear structures of road and rail networks are a main cause of landscape fragmentation, which occurs when continuous habitats become parcelled into small islands isolated from each other by cropland, pasture, pavement or even barren land. This puts pressure on biodiversity because animals have less opportunity for migration, breeding or finding food.'

Back when Anne was on that train journey with Catherine, she only observed the countryside as it went by. At the time, this was just scenery to her. But if she made that trip again, would she be more aware of the fences and walls, the pieces of green that had once been part of a whole? Once you start learning, you look past the surfaces and first impressions. She hopes she can get her audience to do the same.

'Except for forested land and water bodies, all other land-cover categories have been shrinking since 2000. And the total area covered by water has increased because new artificial lakes and reservoirs have been created by infrastructure development and mineral extraction works. The area covered by these new bodies of water overtook the loss of natural water bodies ([6]).

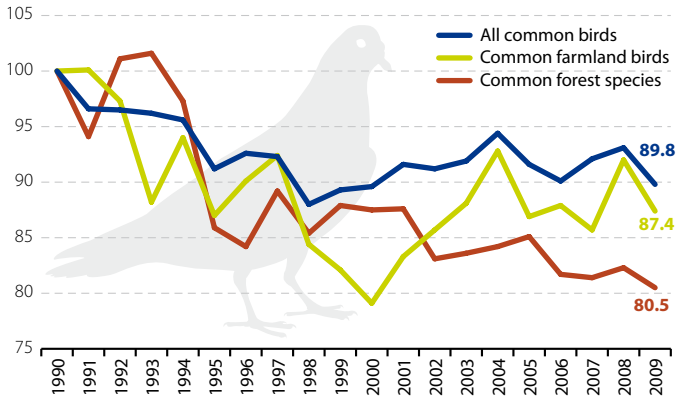
'Forests, on the other hand, have been expanding continuously for more than 60 years in the EU. But we have to see this in light of the historic removal of large parts of Europe's original forest cover due to demand for land, timber products and energy. Most EU forests now include semi-natural stands and plantations of indigenous or introduced species, and it's suggested that many forests are now made up of only one to three tree

([6]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Land use*, 2010.

9.4 **Changes in bird numbers**

- Bird populations fluctuate naturally from year to year
- But the longer-term trend shows a decline in biodiversity
- The decline was particularly strong for farmland birds due to agricultural intensification

Common bird index, EU
Index 1990 = 100



Source: Eurostat (online data code: tsdnr100)

Figures for the future: 20 years of sustainable development in Europe?

species ([7]). Only 5 % of European forests are currently considered to be undisturbed by humans, with the biggest areas of old-growth forests in the EU located in Bulgaria and Romania ([8]).

'The increase in forest area partly comes from the creation of forests on former farmland. However, the planting of new forests on abandoned farmland has led to a loss of pasture and other managed open areas. This is usually linked to a loss of biodiversity and landscape features connected with such areas ([9]).

'So… I've mentioned "biodiversity" a couple of times now, and I bet you are expecting some figures on it. Unfortunately, the data on biodiversity points to a situation that's not so good. The best information available is for birds. So let's see what the data can say about threats to bird populations.' Anne switches to slide 9.4.

'You have to know that bird populations fluctuate from year to year due to interactions with other species and environmental factors such as food supply and climatic conditions. So we need to look at the longer-term trend.

'All three indices shown here have fallen since 1990, which means that biodiversity has declined. The index for all common birds, which includes some 130 bird species, fell by more than 10 % between 1990 and 2009. The other two indices show subgroups of more specialised birds. We can see that they have fallen even more. The strong decline

([7]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Land use*, 2010.
([8]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Biodiversity*, 2010.
([9]) See footnote 7 above.

in farmland birds by almost 20 % compared with 1990 is connected to intensified agricultural practices and the deterioration of suitable habitats ([10]).

'On the global level, over-harvesting is known to have caused the extinction of 50 bird species since 1500. Nearly 30 % of globally threatened birds are endangered by over-exploitation for human use, mainly through hunting for food and trapping for the cage-bird trade ([11]).

'However, European bird populations appear to have been stabilising over the past ten years and the status of some threatened bird species is improving because of conservation actions ([12]). Increased populations have been reported for some specialist forest species, such as the blackcap, as well as for the Eurasian collared dove, the common buzzard and the common raven ([13])

'In fact, while we were walking in the woods my grandfather pointed out a blackcap, a little grey bird with a distinctive black patch on the top of its head. It had a robust song for such a small creature, which ended with a very emphatic fluting warble. So I'm glad we'll be hearing more of that particular tune.

'However, the outlook isn't as good for another group of animals: fish. Now, our walk in the national park also involved fish. Initially we were walking along the river through a mixture of moorland and woodland. The river was pretty full from recent rain. Robert talked about the floods a few years ago and pointed out that healthy woodland cuts down on the risk of flooding. All those trees like a lot of water and absorb it, and that delays the passage of flood waters. Woodland ground also has a sponge effect.

'I saw a flash of movement in the water as a fish came to the surface and plunged down. The water was in fact bubbling with fish and one leapt in the rapids. Other kids noticed and pointed to the fish. "There's my lunch!"

'But my grandfather pointed to a sign that said "no fishing", followed by a list of heavy penalties. "Just because you see lots of fish in there doesn't mean you should haul them out and eat them all. Part of this park's mission is protecting the fish stocks in its rivers and lakes," he said.

'And then he told us that we'd just have to "catch" our lunch later in the canteen. On that note, let's investigate the subject of fish.' Anne puts slide 9.5.

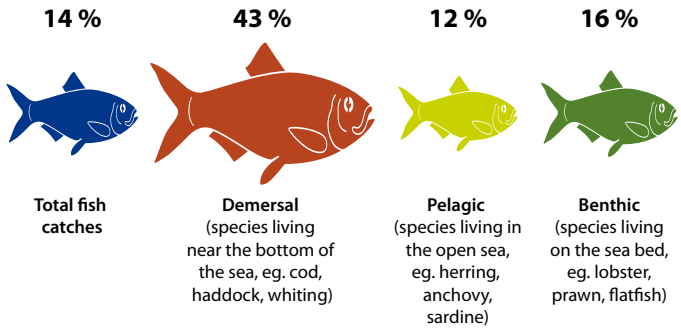
'The figures here refer to EU-managed waters in the North-East Atlantic, where more than 70 % of the EU's fish catches

([10]) BirdLife International, *Europe-wide monitoring schemes highlight declines in widespread farmland birds*, 2011.
([11]) BirdLife International, *State of the world's birds*. 2004; see also European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Biodiversity*, 2010.
([12]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Biodiversity*, 2010.
([13]) Pan-European Common Bird Monitoring Scheme, *The state of Europe's common birds 2007*, CSO/RSPB, Prague, 2007.

9.5 **Over-fishing of endangered fish stocks**

- There has been continuous over-fishing in EU-managed waters since 1994
- Demersal species (living near or at the bottom of the sea) are under most pressure
- Over-fishing also poses economic risks for the fishing sector

Fish catches from stocks outside safe biological limits: Status of fish stocks managed by the EU in the North-East Atlantic, 2010



Source: European Commission services, ICES (online data code: tsdnr110)

Figures for the future: 20 years of sustainable development in Europe?

come from ([14]). Similar to birds, fish illustrate the problem of over-exploitation by humans.

'Currently, most fish stocks are exploited at levels well past their "maximum sustainable yield". By this, we mean the highest volume of catches that can be taken each year without threatening the capacity of fish stocks to reproduce in the future. In 2010, about 14 % of total fish catches were taken from stocks outside safe biological limits. We can see that this share varies between the different kinds of fish stocks.

'Like bird populations, fish stocks vary naturally from year to year because of interactions with other species in the food web, or what some of you might call the "food chain". However, data show us that over-exploitation has occurred continuously since 1994. This not only causes severe damage to marine ecosystems, it also poses high economic risks for the whole fishing sector. There are 140 000 people working in the fisheries sector, most of them in Spain, Italy and Greece ([15]). You may remember these countries from my first slides about public debt. A collapse of fisheries is surely the least these countries need in these times.

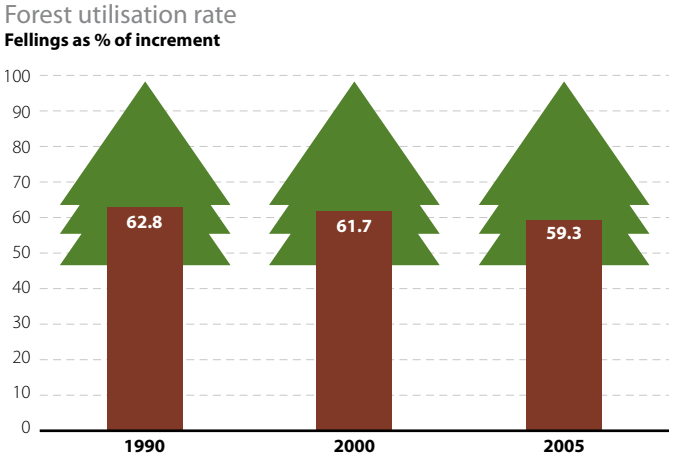
'But something that has already been achieved in the forestry sector may point to a way out for fishing.

'The figures in slide 9.6 show the "forest utilisation rate". They show that total wood harvests in European countries have stayed well below annual regrowth, indicating that

([14]) European Commission, Maritime Affairs and Fisheries, *Facts and figures on the Common Fisheries Policy*, 2010.
([15]) See previous footnote.

9.6 More sustainable forest management

- Total wood harvests in European countries have stayed well below annual regrowth
- This indicates they are being managed sustainably
- Forests store carbon, making them important 'sinks' for greenhouse gas emissions



Source: Ministerial Conference on the Protection of Forests in Europe (MCPFE) (online data code: tsdnr520)

Figures for the future: 20 years of sustainable development in Europe?

the total resource is being managed sustainably ([16]). This means the mass of the trees in our woods is growing. And this is not only crucial for the forestry industry and future timber availability. It is important for climate change, which I'd like to talk about in a minute.

'I've mentioned that forests fulfil important functions. As my grandfather pointed out at the beginning of our excursion, forests act as the "lungs" of our planet. Trees, like all other plants, take carbon dioxide from our atmosphere, keep the carbonate for themselves and release the oxygen back to the atmosphere. The carbonate is therefore "stored" in the trees and released again when we fell and burn wood.

'Now, I've mentioned that carbon dioxide or CO_2 is an important greenhouse gas. Forests, because of their "storage" function, are important "sinks" for greenhouse gas emissions.

'Slide 9.7 shows us the amount of greenhouse gases that are removed from the atmosphere due to patterns of land use, land-use change and forestry practices. Planting trees and improving forest management helps take greenhouse gas emissions out of the atmosphere. If we stop deforestation, that also contributes to a cut in greenhouse gas emissions. Land use, land-use change and forestry practices together cut the EU's greenhouse gas emissions by about 430 million tonnes in 2009.'

Catherine steps into the discussion. 'I'm sorry to interrupt. But before we completely move from biodiversity to climate change, I want to ask something. As far as I know, there have been internationally agreed targets for biodiversity. Have these been met?'

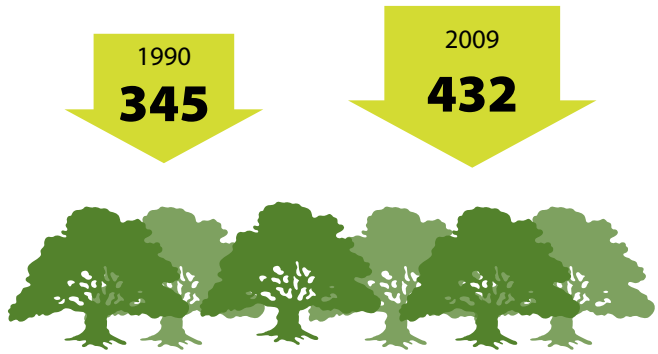
([16]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Biodiversity*, 2010.

9.7 **More greenhouse gases absorbed by forests**

- Planting trees and improving forest management helps take greenhouse gas emissions out of the atmosphere
- Since 1990 more than 300 million tonnes of greenhouse gases have been removed from the atmosphere each year by land use, land-use change and forestry

Greenhouse gas emissions from land use, land-use change and forestry, EU-27

Million tonnes, CO_2 equivalent



Source: European Environment Agency

Figures for the future: 20 years of sustainable development in Europe?

Anne looks at her notes. 'You're referring to the target agreed in the Convention on Biological Diversity in 2002, "to achieve by 2010 a significant reduction of the current rate of biodiversity loss".'

Then she thinks for a moment. 'Well… all in all, we have to acknowledge that this target has not been achieved,' she concludes. 'Most habitats in the world are in decline and extinction of species appears to be happening even faster ([17]). Globally, terrestrial biodiversity is expected to fall by a further 10 % by 2050. Land-use change, expanding commercial forestry and human encroachment of land, and the break-up of natural habitats are the main pressures driving this loss. However, until 2050 the most rapidly growing threat to biodiversity will be climate change ([18]).'

([17]) United Nations Secretary-General's High-level Panel on Global Sustainability, Resilient People, Resilient Planet: A future worth choosing, 2012.
([18]) OECD, OECD Environmental Outlook to 2050: The Consequences of Inaction, 2012.

10

Global climate change

'I've just talked about how forests can draw greenhouse gases from the atmosphere and how efforts to expand forest cover helped cut carbon dioxide. But now I'll return to my trip to the national park and show you how climate change has affected this particular forest.

'Our group began walking away from the river, further into the woods. Soon we were deep in the forest, where it is dominated by evergreens. Our footfalls on the pine needles became softer. People in our group had been chatting and joking about, but all that quieted in the hush of the forest. Need I say that the air was fragrant with pine?

'Our path took us up a steep hill, which was getting rocky. I was walking a bit ahead of my classmates – not everyone had worn the right shoes for this terrain! I was enjoying being alone with my thoughts, the high conifers towering above me.

'Then Grandpa Rob said: "Once we get over the crest of the hill, things will look very different. I just thought I should warn you."

'I wondered what he could be warning us about. I also had a feeling it wouldn't be pretty. But I walked on ahead anyway.

'And when I reached the top of the hill… I saw a scene of desolation spread out below, the burnt skeletons of the trees gathered like gaunt spectres. Stumps from larger trees that had been cut down filled another section of the hillside. Grey and black ash still coloured the ground. I stopped and waited for the others to catch up. When they did, they became even more subdued as they looked into the valley below.

'My grandfather reminded us that two seasons of floods had been followed by a dry spring and a long summer of drought. Under those circumstances, any forest can become a tinderbox. To a certain extent forest fires are natural events that clear the way for new growth, but they've been happening on a much bigger scale due to the man-made event of global climate change.'

'The decade from 2001 to 2010 was 0.46 °C warmer than the 1961-1990 mean, making it the warmest ten-year period ever recorded

Anne puts on slide 10.1. 'So, let's look into some historical background. This slide shows how much warmer or colder it has been on Earth each year since 1850. It proves what has already been published in several studies and reports: the warming of the climate system is undeniable ([1]). Though the three curves in slide 10.1 indicate that some uncertainty is associated with temperature measurements, we can still see that the average global surface temperature has risen over the past 150 years. Since 1986, each year has been warmer than the average temperature of the 1961-1990 reference period. According to the World Meteorological Organisation, the decade from 2001 to 2010 was 0.46 °C warmer than the 1961-1990 mean, making it the warmest ten-year period ever recorded ([2]).

'Notably, the temperature rise is not equal across the globe. Warming is much greater over land than over the oceans. The temperature rise over the northern hemisphere, where most of the Earth's land area is located, is therefore higher than over the southern hemisphere. As a result, Europe too has warmed more than the global average.

'We can already feel the effects of this warming in Europe. High-temperature extremes – hot days, tropical nights, and heat waves – have become more frequent. Meanwhile,

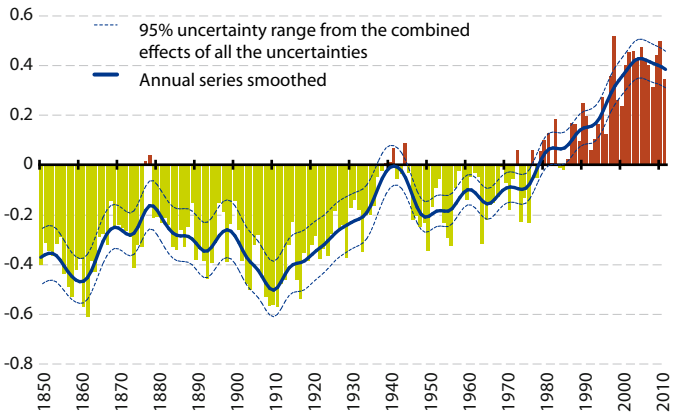
([1]) Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. and Miller, H.L. (eds), *Climate Change 2007: the physical science basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, 2007.
([2]) World Meteorological Organization, *2010 equals record for world's warmest year*, Geneva, WMO Press release No. 906, 20 January 2011.

10.1 **A warming planet**

- Global warming is undeniable
- The decade from 2001-2010 has been the warmest ten-year period ever recorded
- Warming is greater over the northern hemisphere where most of the Earth's land area is located

Global annual mean temperature deviation

Temperature deviation in °C, compared with 1961-90 average



Source: Climatic Research Unit, University of East Anglia and the UK Met Office Hadley Centre

Figures for the future: 20 years of sustainable development in Europe?

low-temperature extremes – cold spells, frosts – have become less common. The average length of summer heat waves over Western Europe doubled over the 1850-2009 period and the frequency of hot days almost tripled ([3]).

'The further outlook for Europe is even more dramatic. The annual average temperature in Europe is projected to rise during this century, with the most warming over Eastern and Northern Europe in winter, and over Southern Europe in summer. Summer temperatures could rise by up to 7 °C in Southern Europe and 5 °C in Northern Europe by 2080-2100 compared with 1961-1990. Across Europe, high temperature extremes such as heat waves are expected to become more frequent, intense and longer during this century. Meanwhile, further declines in winter temperature variability and the number of cold and frost extremes are expected ([4]).

'So – what's behind this warming? There's wide consensus among scientists that the man-made emissions of greenhouse gases, especially from burning fossil fuels such as oil, coal and natural gas, are responsible for the rising temperature on Earth.

'I'm sure you know there's a "natural" greenhouse effect that makes Earth inhabitable. Putting it simply, energy in the form of radiation from the sun "hits" the Earth and gets "trapped" between the Earth's surface and the atmosphere. Changes in the atmospheric concentrations of greenhouse gases and aerosols – a mixture of particles and gases – as

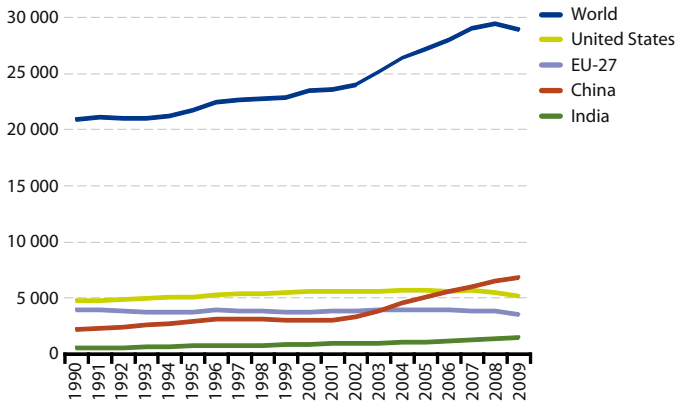
([3]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Understanding climate change*, 2010.
([4]) See previous footnote.

10.2 Global CO_2 emissions continuing to rise

- Global CO_2 emissions have grown by almost 40 % since 1990
- In 2007 China overtook the United States as the biggest emitter
- Electricity and heat generation are responsible for the major part of global CO_2 emissions

Global CO_2 emissions from fuel combustion

Million tonnes of CO_2



Source: International Energy Agency

Figures for the future: 20 years of sustainable development in Europe?

well as land cover and solar radiation alter the energy balance of the climate system. These changes drive climate change.

'During the past 150 years, human activities have transformed the concentration of greenhouse gases and aerosol particles in the atmosphere. The atmospheric concentration of CO_2 – the most important greenhouse gas – reached 387 parts per million or ppm in 2009, which is 38 % above the pre-industrial level of 278 ppm. This increase was almost entirely caused by human activities: about two thirds by fossil fuel use and one third by land-use change and deforestation ([5]).

'While some aerosols have a cooling effect, the combined effect of greenhouse gases and aerosol emissions is an obvious warming. Temperature rises of more than 1.5-2 °C above pre-industrial levels are likely to cause social and environmental turmoil in many regions. According to studies, atmospheric CO_2 levels must be stabilised at 350-400 ppm for a 50 % chance of limiting global mean temperature increase to 2 °C above pre-industrial levels ([6]). And I'm sure you all know what this means: cutting greenhouse gas emissions.'

Nodding heads greet Anne while she puts on her next slide, 10.2. It's only now that she's beginning to feel that her presentation is pulling together, heading towards a conclusion. She remembers Marta's advice as she regards her audience: encourage everyone here to take part in drawing that conclusion.

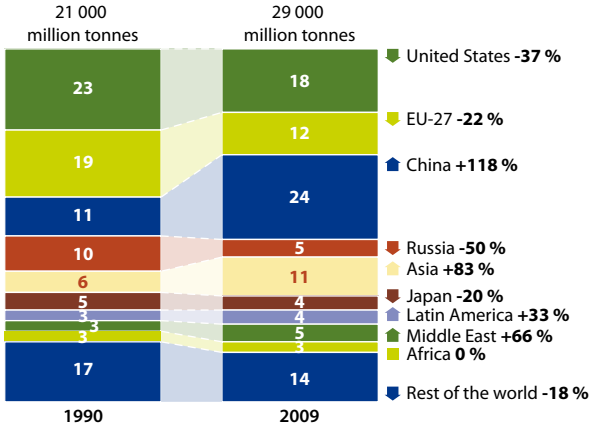
([5]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Understanding climate change*, 2010.
([6]) See previous footnote.

10.3 Changes in share of global CO_2 emissions

- CO_2 emissions from China more than doubled over the past 20 years
- Emissions from the rest of Asia (including India) have grown as well
- In contrast, CO_2 emissions from the EU and Russia have fallen

Share in global CO_2 emissions from fuel combustion

% of total global emissions



Source: International Energy Agency

Figures for the future: 20 years of sustainable development in Europe?

'However, we have to admit that the trend over the past 20 years has been in the opposite direction. Global carbon dioxide emissions have grown by almost 40 %, from 21 000 million tonnes in 1990 to 29 000 million tonnes in 2009. Electricity and heat generation emitted the most CO_2 and was responsible for 41 % of the world CO_2 emissions in 2009. Throughout the world this sector relies heavily on coal, the most carbon-intensive of fossil fuels, and this amplifies the sector's share in global emissions. Transport, which comes second in the emission sweepstakes, represented 23 % of global CO_2 emissions in 2009, followed by industry with 20 % ([7]).

'Over the past decade, growth in global CO_2 emissions has been pushed upwards by rising emissions from emerging economies like China, while emissions have stayed stable or declined in industrialised countries. Since 2000, carbon dioxide emissions from the OECD countries have fallen by almost 5 %, while global emissions have grown by more than 20 %. In 2000 the OECD countries were responsible for almost 55 % of global CO_2 emissions from fuel combustion, but their share fell to about 42 % in 2009.'

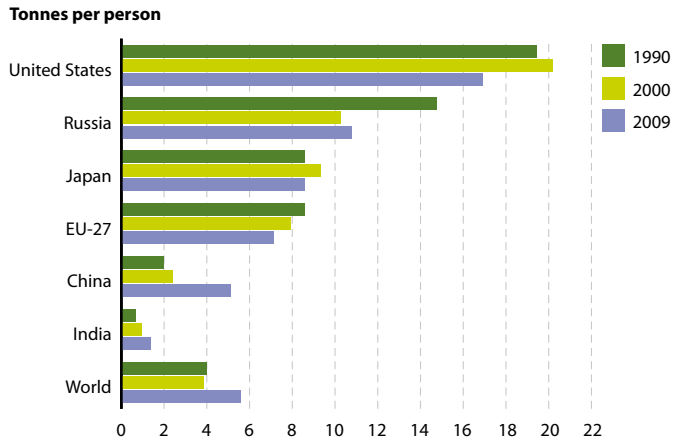
They were all talking about this as they walked through the burnt-out section of the forest, weren't they? Grandpa Rob seemed worried that climate change has been made worse by the efforts of developing countries to 'catch up' with European living standards. Catherine thought her grandfather could be 'blaming' the wrong people for this global problem. Anne hopes Cat will contribute her thoughts on this issue later.

([7]) International Energy Agency, *CO_2 emissions from fuel combustion. Highlights*, 2011.

10.4 CO_2 emissions per person

- CO_2 emissions per person have fallen in the USA, Russia and the EU
- Emissions per person have grown in China and India, but their levels are still well below those of industrialised countries
- Since 2007, China's CO_2 emissions have been above the global average of 4.3 tonnes per person

Global CO_2 emissions per person from fuel combustion



Source: International Energy Agency

Figures for the future: 20 years of sustainable development in Europe?

'On slide 10.3, we can see how the share of individual countries, regions and continents in total carbon dioxide emissions has changed since 1990. In 2007 China overtook the United States as the single biggest emitter of carbon dioxide. While USA emissions rose by about 7 %, emissions from China more than doubled over the past 20 years. Emissions from the rest of Asia also grew remarkably, especially in India.'

Anne pauses here, waiting for comments. The emissions of industrialised countries and developing countries have been a hot issue at just about every climate summit. She imagines their particular version of a summit will be no exception, so she should be prepared for this.

However, the field seems clear for her to continue. 'In contrast, emissions from the second and fourth biggest emitters in 1990, the European Union and Russia, fell over time. While the EU and Russia accounted for almost one third of global CO_2 emissions in 1990, this position is now occupied by China and the rest of Asia.

'However, the picture changes when we switch the view from total emissions to CO_2 emissions per person, shown here on slide 10.4.'

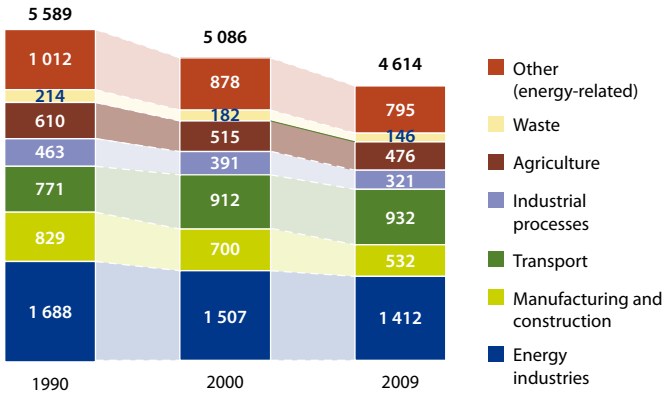
'Despite reductions, the USA is still emitting one of the highest amounts of CO_2 per person. In 2009, its per capita emissions were about 3.3 times higher than China's and more than 12 times as high as India's. Carbon dioxide emissions per person in the EU were still about 40 % above levels in China, but remained well below those from Russia and Japan.

10.5 **Transport emissions on the rise while others fall**

- Greenhouse gas emissions in the EU have fallen by more than 17 % since 1990
- There has been a sharp drop in 2009 because of the economic crisis
- The reasons for the longer-term decline include more efficient use of energy and a switch to low-carbon fuels

Greenhouse gas emissions by sector, EU-27

Million tonnes CO_2 equivalent



Source: European Environment Agency (online data code: tsdcc210)

Figures for the future: 20 years of sustainable development in Europe?

'Notably, China did not only overtake the USA as the biggest carbon dioxide emitter in 2007. Since then, Chinese per capita CO_2 emissions are also above the global average of about 4.4 tonnes of CO_2 per person.'

'Isn't the increase in Chinese emissions also a result of outsourced "dirty" industries from Europe?' An Asian-looking lad steps in. He probably didn't like Anne putting China in the bad corner.

'You are right that China has become a main trade partner of the EU, as I will show you soon. So Europe may be partly responsible for some of the emissions generated elsewhere to satisfy EU consumption. However, a share of Europe's own emissions can be traced to use of European goods by some of the EU's main trading partners. To get a clear picture of the real shares of "exported" and "imported" emissions, we need to understand the energy and carbon intensity of producing goods and services in industrialised *and* developing countries better than we do now ([8]). So I'm afraid I can't show you more information about that. But I can show you data about greenhouse gas emission trends in the EU.

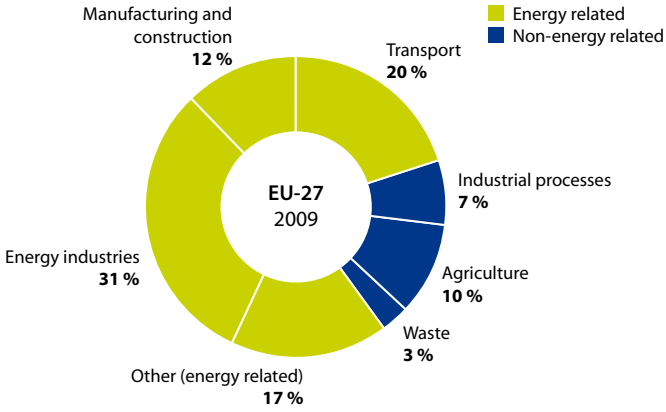
'Slide 10.5 shows us how greenhouse gas emissions in the EU have changed over time and where they came from. I've already shown you a part of this chart when talking about greenhouse gas emissions from transport ([9]). Here, we see the contribution of all sectors to EU emissions.

([8]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Mitigating climate change*, 2010.
([9]) See chapter 5: 'Undesired impacts of transport'.

10.6 **Energy-related activities are the major emitters**

- More than three quarters of the EU's greenhouse gas emissions come from energy combustion
- Since 1990, major emission cuts have taken place in manufacturing and construction

Greenhouse gas emissions by sector, 2009
%



Source: European Environment Agency (online data code: tsdcc210)

Figures for the future: 20 years of sustainable development in Europe?

'Overall, greenhouse gas emissions in the EU have fallen by more than 17 % since 1990. As with other indicators, the drop was pronounced in 2009 because of the economic crisis. But more efficient use of energy has also contributed to declining greenhouse gas emissions since 1990. I'll show you data on this towards the end of my presentation.

'Another reason – which I've already shown you – was the switch from high-carbon fuels like hard coal and lignite to low-carbon fuels like natural gas. The carbon content of fuels determines how much carbon dioxide is emitted during combustion. A switch from high-carbon to low-carbon fuels means fewer emissions, while the amount of energy generated stays stable or even increases. This was the case in the EU ([10]). And while we've seen the switch from high- to low-carbon fuels has increased Europe's dependence on imports, we now see that this switch has led to a drop in EU greenhouse gas emissions.'

The guy from Bulgaria asks: 'So this means Europe can depend less on energy imports *or* have less greenhouse gas emissions. But we can't have both at the same time?'

'Well… luckily, both are possible. A switch to renewable energy sources leads to less dependence and fewer greenhouse gas emissions at the same time. Now you see why I was so keen about renewable energy when showing you the relevant slides.

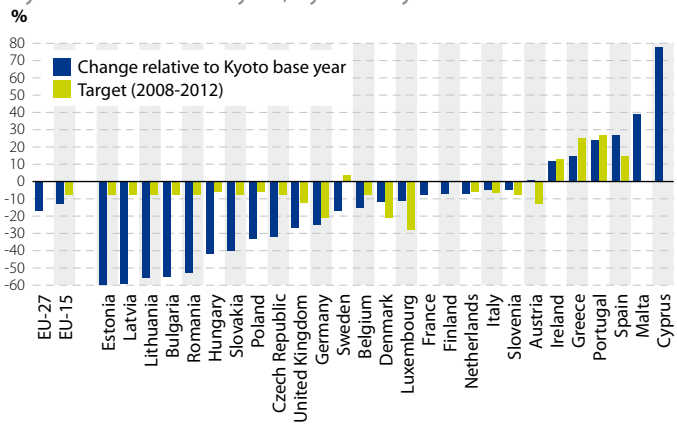
'But coming back to the current slides, 10.6 shows that more than three quarters of the EU's greenhouse gas emissions come from energy combustion in industry, transport and other sectors. I've already mentioned that transport has been the only sector

([10]) See chapter 3: 'Energy: increasing consumption, increasing dependence'.

10.7 **Some large emissions cuts have been achieved**

- Eastern Europe has experienced dramatic cuts in greenhouse gas emissions since 1990
- Economic restructuring led to emission cuts in many "new" Member States during the 1990s
- Since 2000, more and more energy and climate policies have directly targeted emissions

Greenhouse gas emissions in 2009 relative to the Kyoto Protocol base year, by country



Source: European Environment Agency (online data code: tsdcc100)

Figures for the future: 20 years of sustainable development in Europe?

showing a rise in greenhouse gas emissions over the past 20 years. All other sectors cut their greenhouse emissions, while the most notable cut – in absolute numbers and in percentage change since 1990 – took place in manufacturing and construction. In 2009, emissions from this sector were 35 % below 1990 levels. Another important cut took place in energy industries, with a drop of more than 16 %.

'But reductions were not only different between sectors, but also across countries.

'Slide 10.7 shows how greenhouse gas emissions have changed across the EU over the past 20 years. There have been dramatic cuts in Eastern Europe, while emissions have grown in some Southern European countries. Most of the cuts, especially in the "new" Member States, happened during the 1990s. These countries – including the reunified Germany – experienced a massive restructuring in their economies after the collapse of the Soviet Union. In the energy and industry sectors, many of the most polluting plants were closed and the structure of the agricultural sector changed radically ([11]). So economic factors had made a major contribution to the fall in greenhouse gas emissions – similar to the effects we see now with the recent economic crisis.'

The girl from Africa joins the conversation again. 'Does this mean emissions will rise when the economy "picks up" again, as you showed in the beginning?'

'Well… provisional data from the European Environment Agency show that EU greenhouse gas emissions actually rose in 2010. But emissions are not only influenced by

([11]) European Environment Agency, *Greenhouse gas emissions in Europe: a retrospective trend analysis for the period 1990–2008*, EEA Report No 6/2011.

economic factors. Particularly since 2000, we've had more and more energy and climate policies that directly targeted emission trends. Any projections for further emissions trends take these into account.

'Projections suggest that EU emissions will not see major reductions until 2020 without extra measures. But a reduction will be needed if we look at the targets beyond 2020. I've mentioned that industrialised countries must cut their greenhouse gas emissions by 80-95 % by 2050 to limit global warming to 2 °C ([12]). There's not much information about what Member States intend to do after 2020. Existing and currently planned measures are still not enough to bring the EU on-course to achieving long-term emission reductions, according to the European Environment Agency ([13]).

'Studies point out that without new policies, global greenhouse gas emissions will rise by up to 50 % until 2050'

'And the world-wide picture is even worse. Studies point out that without new policies, global greenhouse gas emissions will rise by up to 50 % until 2050 – an increase propelled by a 70 % growth in energy-related CO_2 emissions, especially from transport and electricity production. Atmospheric CO_2 levels will be much higher than that 350-400 ppm "safety range", reaching up to 685 ppm by 2050. This in turn means the global average temperature is likely to be 3-6 °C higher at the end of the 21st century ([14]).

'And these sobering statistics bring me back to the view from the top of a hill in the national park. That devastated swathe of land struck me as… post-apocalyptic, you might call it. Perhaps a film company would find it a suitable location to shoot a few science fiction movies along those lines. It felt like that especially when the wind came up, unhindered by the tall trees that once grew there.

'My grandfather was explaining that drought, fires, floods and other extreme weather caused by global warming has made a huge impact on vegetation and animals in this park. "'This area might as well be an alien planet to the animals that once made their home here," he told us.'

Catherine speaks up: 'So obviously we need more intensified action to avoid the vision your grandfather showed us up on that hill, don't we?'

Perhaps the fact that Cat had been standing beside Anne on that hill, looking upon the same damage, has given her conclusion even more urgency.

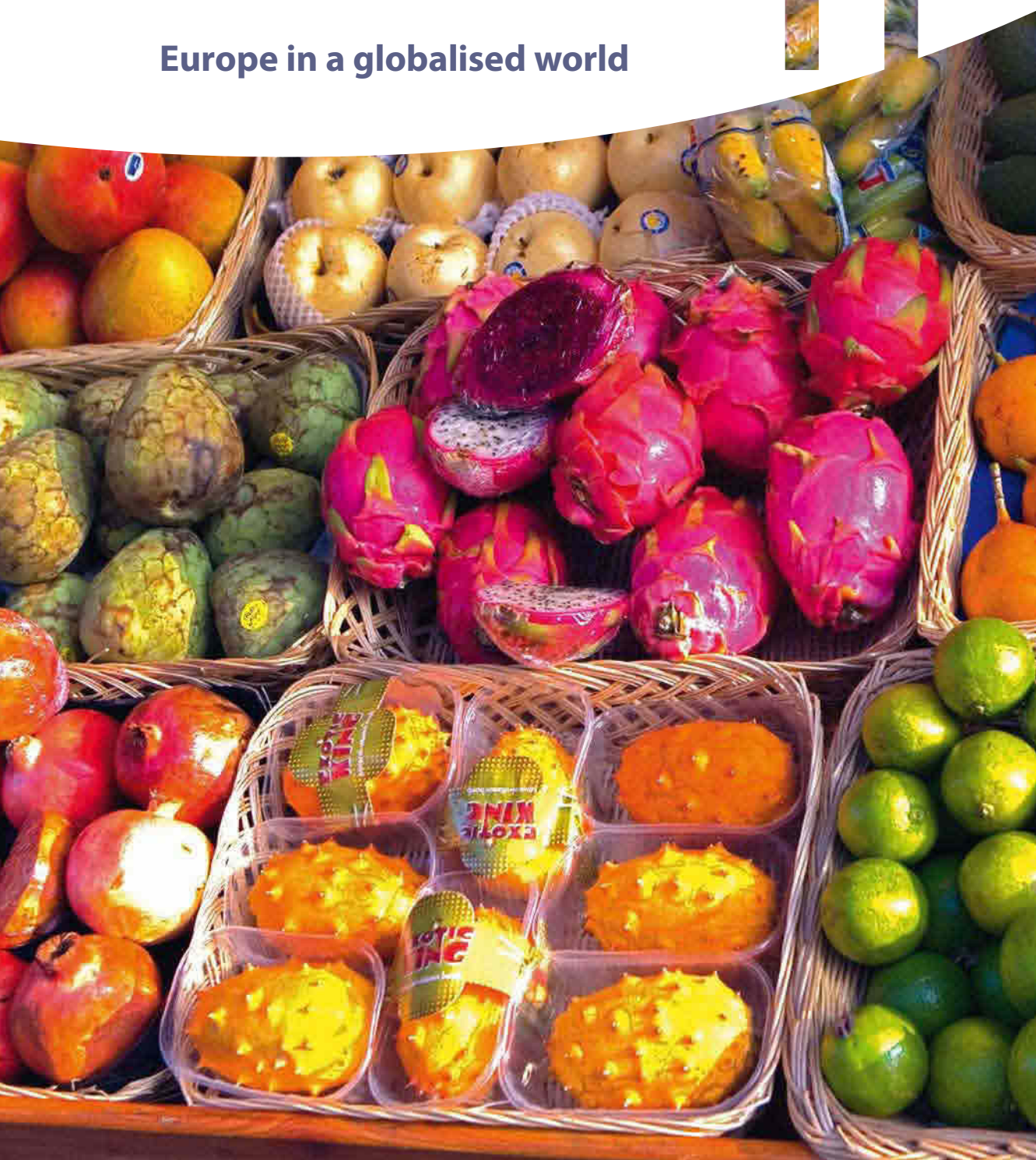
Anne nods. 'It does seem so, yes. I've learned that energy efficiency measures play a vital role in cutting global greenhouse gas emissions. This means using less energy and reducing our use of traditional fossil fuel combustion, which would cut emissions of air pollutants such as nitrogen oxides and particulate matter as well ([15]). So fighting climate change will also improve air quality, which is a problem throughout the world, not only in Europe.

'And that brings me back to some of the global considerations we've been touching on. They address the increasing interconnections and dependencies between Europe and the rest of the world. This is called "globalisation".'

([12]) See chapter 5 'Undesired impacts of transport'.
([13]) European Environment Agency, *Greenhouse gas emission trends and projections in Europe 2011. Tracking progress towards Kyoto and 2020 targets*, EEA Report No 4/2011.
([14]) See European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Mitigating climate change*, 2010; International Energy Agency, *CO_2 emissions from fuel combustion. Highlights*, 2011; United Nations Secretary-General's High-level Panel on Global Sustainability, *Resilient People, Resilient Planet: A future worth choosing*, 2012; OECD, *OECD Environmental Outlook to 2050: The Consequences of Inaction*, 2012.
([15]) European Environment Agency, *The European Environment. State and Outlook 2010. Thematic assessment: Mitigating climate change*, 2010.

11

Europe in a globalised world



'Globalisation means greater interdependence and linkages between nations, the increasing mobility of people and the growing flow of products, ideas and raw materials.

'I started to grasp this idea of interdependence as I stood on top of that hill, looking at the charred landscape below. It amazed me how small things we do every day, or what someone does on the other side of the world, could play a part in a chain of events that ends with that forest fire… or result in floods that drown whole city districts and hectares of land. It's a kind of *butterfly effect*, where a small change or action in one part of an interdependent system can result in huge differences elsewhere. So if a butterfly flaps its wings, it can start a chain reaction that ends with a hurricane a few weeks later in another part of the world.

'You might have guessed that I read a lot of science fiction, so I'd come across the idea before. But this was real life and real ashes beneath my feet. How do actions in another part of the world affect what happens here and how do our actions affect people in other parts of the world?

'These thoughts on inter-relations and chain reactions also resonated with the conversation going on between Catherine and Grandpa Rob as we walked down the hill among the stumps and ashes. I'll try to summarise this rather… *spirited* discussion.'

Anne glances at Cat, who is now giving her a clear thumbs-up.

Anne continues. 'Cat said: "I don't like that stuff about people in developing countries *catching up* with Europe and cranking up those emissions on the way. It's acknowledged that it's not possible for everybody to live the way Europeans live. Yet this catching-up question often carries the assumption that the way we live in Europe is the best and only way. But isn't it up to Europeans to reduce the impact of how we live? And at the same time, why shouldn't people in developing countries seek a better standard of living?"

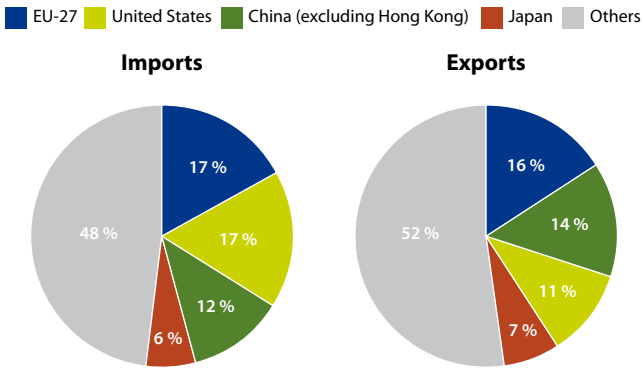
'My grandfather replied: "But those increased emissions don't necessarily involve a better standard of living. More and more products are produced in factories outside of Europe, which also increases greenhouse gas emissions from developing countries. But think about the working conditions in those factories. Perhaps Europeans like to import goods from those countries because they're cheaper than locally produced goods. This helps to keep prices down in the supermarket."

'Then he suggested to our group: "Maybe you should have a look at where products come from next time you go shopping."

11.1 Europe has the largest share of global trade

- The EU is the biggest importer and exporter of goods in the world
- Together, the EU, the USA, China and Japan were responsible for about half of world trade in 2010
- China has become a major global trader in recent years, overtaking the USA as the second biggest exporter in 2007

Share of world imports and exports, 2010
%



Source: Eurostat (online data code: ext_lt_introle)

Figures for the future: 20 years of sustainable development in Europe?

'So I did look at the origins of products when I went shopping over the next couple of weeks. And I also looked at official statistics about the globalisation of trade.' Anne puts on slide 11.1.

'The EU is the leading trader in the world. It is the biggest importer and exporter of goods, followed by the United States, China and Japan. Together, these four countries were responsible for about half of world trade in 2010.

'The value of imports into the European Union was about 1 500 billion euros and exports from the EU were worth about 1 350 billion euros. Aren't these incredibly high figures? In relation to the EU's population this would mean that in 2010 each EU citizen theoretically imported 3 000 euros worth of goods and exported goods worth 2 690 euros.'

'In 2010, each EU citizen theoretically imported 3 000 euros worth of goods and exported goods worth 2 690 euros'

Anne thinks about her father's gift for her last birthday, the computer she calls *Sophie*. Together with new clothes and shoes she bought last year, Anne is sure that she has fulfilled her 'import quota' of 3 000 euros.

'China has become a major global trader in recent years. In 2007, China overtook the USA as the second biggest exporter in the world. Isn't it a coincidence that – as I've shown (1) – this was the same year when China overtook the USA as the world's biggest greenhouse gas emitter?

'Now, let's look closer at the EU and its main trading partners. The USA has traditionally been the EU's major trading partner, but its relative importance has declined in recent

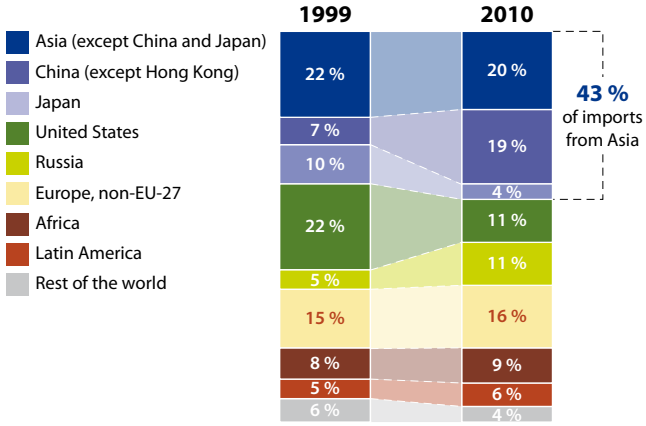
(1) See chapter 10: 'Global climate change'.

11.2 **China becoming a major trading partner**

- The relative importance of the USA as a trade partner for the EU has declined in recent years
- EU trade with China has more than quadrupled since 1999
- Most imports into the EU come from Asia, while shares for Africa and Latin America remain low

Extra-EU imports, by partner

%



Source: Eurostat (online data code: ext_lt_maineu)

Figures for the future: 20 years of sustainable development in Europe?

years. In contrast, EU trade with China has more than quadrupled since 1999 ([2]).' Anne puts on slide 11.2.

'Here we see where EU imports came from in 2010. China was the single biggest country, with a share of 19 % of all imports into the EU. It was followed by the USA and Russia with 11 % each.

'We can also see the combined share of countries from other regions and continents. If we include China and Japan, about 45 % of all imports into the EU come from Asian countries. Meanwhile, the shares for Africa and Latin America are much lower at 9 % and 6 %.

'Over the past ten years or so, there have been major changes in the countries and regions that trade with the EU. In 1999, the USA and Japan accounted for the biggest shares of imports into the EU, with about 22 % and 10 %. China only had a share of 7 %. As we see on this slide, the picture changed completely by 2010. While the total value of imports into the EU doubled, imports from the USA didn't change and imports from Japan fell by more than 10 %. By contrast, the value of Chinese imports rocketed up more than five-fold and Russian imports quadrupled. It's no wonder that the EU now has the biggest trade deficits with these two countries ([3]).

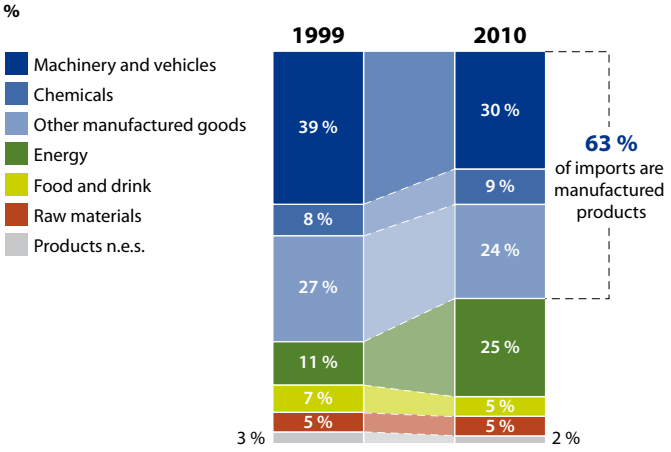
'Now, let's have a look at *what* the EU is importing.' Anne puts on slide 11.3.

([2]) Eurostat, *External and intra-European Union trade - Data 2004-09*, 2011.
([3]) See previous footnote.

11.3 **EU energy imports rising**

- 63 % of the imports into the EU are manufactured products (machinery and vehicles, chemicals, and other manufactured goods)
- However, imports of primary products are increasing
- In 2010 imports of energy products were four times higher than in 1999

Extra-EU imports, by product group



Source: Eurostat (online data code: ext_lt_intratrd)

Figures for the future: 20 years of sustainable development in Europe?

'The EU mainly imports manufactured products. That includes machinery and vehicles, chemicals and other manufactured goods. These three product groups together had a share of more than 60 % in 2010. However, their relative importance has dwindled since 1999, when manufactured goods made up almost three quarters of all EU imports.

'This change took place because the EU started importing more and more primary products. These products include energy, raw materials and food. Energy product imports have grown rapidly, with imports now four times higher than in 1999. I've already highlighted Europe's growing dependence on imported energy ([4]); this is proof.

'Imports from developing countries into the EU have almost tripled since 1999'

'Also, note the structural differences in the main trade partners for the different product groups. China and the USA are the EU's main trading partners for manufactured products, with roughly 40 % of imports coming from these two countries. But Russia and Norway play this role for energy products.

'So… having seen the EU's global role, we come closer to the topic that brought us all here: sustainable development. Twenty years ago the "Earth Summit" in Rio de Janeiro acknowledged open trade's contribution to sustainable development. Since then, international declarations have stressed the need for developing countries to take a greater share of world trade, with the aim of helping to lift their people out of poverty.

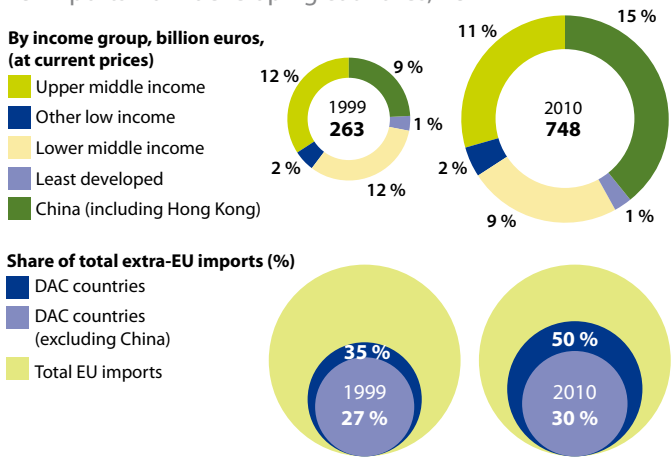
'So let's look at some figures on how developing countries take part in EU trade.' Anne puts on slide 11.4.

([4]) See chapter 3: 'Energy: increasing consumption, increasing dependence'.

11.4 **Imports from developing countries rising**

- Imports from developing countries into the EU have almost tripled since 1999
- In comparison, total imports into the EU have 'only' doubled
- Almost half of total EU imports in 2010 came from developing countries (including China)

EU imports from developing countries, EU-27



Source: Eurostat (online data code: tsdgp210, tet00038)

Figures for the future: 20 years of sustainable development in Europe?

'Imports from developing countries into the EU have almost tripled since 1999. They've grown much faster than total imports into the EU, which doubled over the same period. Developing countries account for a growing share of total EU imports, rising from about 35 % in 1999 to almost half of total EU imports in 2010.

'By "developing countries" I mean the countries on the OECD's Development Assistance Committee list. The OECD Development Assistance Committee, or DAC, is a unique international forum of the major aid funders ([5]). The DAC list also includes China, and I've shown you the massive increase in China's share of EU imports. If we "correct" the picture by excluding China, we see that the growth of EU imports from developing countries was much less pronounced, but still slightly faster than total EU imports. In 2010, 30 % of EU imports came from these countries.

'On slide 11.4 you see developing countries further split up by income groups according to the World Bank classification ([6]). The poorest countries are those classified as "least-developed countries", or LDCs.' Anne looks around, wondering if anyone from the audience comes from one of these countries.

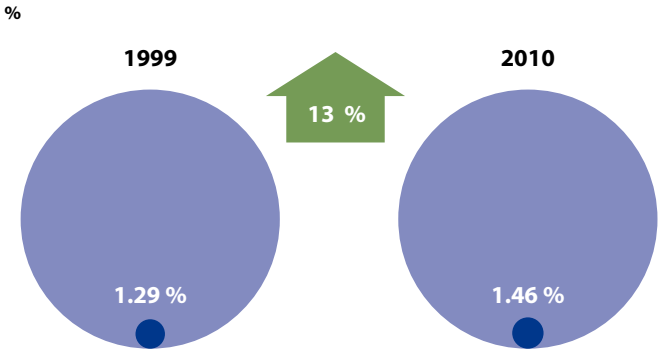
'The UN definition characterises LDCs by low income, humanitarian challenges related to nutrition, health, or education, and economic vulnerability ([7]). There are 48 countries on this list: 33 of them from Africa, 14 from Asia and one from the Caribbean ([8]).'

([5]) See http://www.oecd.org/document/1/0,3746,en_2649_33721_46662849_1_1_1_1,00.html
([6]) See http://data.worldbank.org/about/country-classifications
([7]) See http://www.unohrlls.org/en/ldc/164
([8]) See http://www.unohrlls.org/en/ldc/25

11.5 **Imports from least developed countries still low**

- Least-developed countries host about 12 % of the world's population but account for less than 2 % of the world's GDP and about 1 % of global trade in goods
- In 2010, out of total EU imports worth 1 500 billion euros only 22 billion euros worth came from LDCs

Share of imports from least-developed countries in total extra-EU imports, EU-27



Source: Eurostat (online data code: tsdgp210, tet00038)

Figures for the future: 20 years of sustainable development in Europe?

Anne pauses. Could this Caribbean country – Haiti – be where her mango juice came from? A simple carton of juice has come to mean a lot over the past few weeks. She'd *love* a swig of it now, but water will have to do.

'These countries represent the poorest and weakest segment of the international community. They comprise more than 880 million people – about 12 % of the world's population – but account for less than 2 % of the world's GDP and about 1 % of global trade in goods ([9]).' Anne switches to slide 11.5.

'We see a similar situation when we look at LDC imports into the EU. Although LDCs' share of total EU imports has risen since 1999, it is still almost insignificant at 1.5 % in 2010. From the 1 500 billion euros of total EU imports that I mentioned earlier, only 22 billion euros of imports came from LDCs. Or put it this way: from the 3 000 euros each EU citizen paid for imports in 2010, only 45 euros went to LDCs.'

'From the 3 000 euros each EU citizen paid for imports in 2010, only 45 euros went to LDCs'

'But we should see this figure in light of the EU's "Everything But Arms" regulation ([10]). This grants duty-free access to imports of all products from LDCs, except arms and ammunition, without any quantitative restrictions. So the small share of imports from LDCs does not result from the EU's reluctance to import more from those countries, but is determined by the amounts of goods produced there.

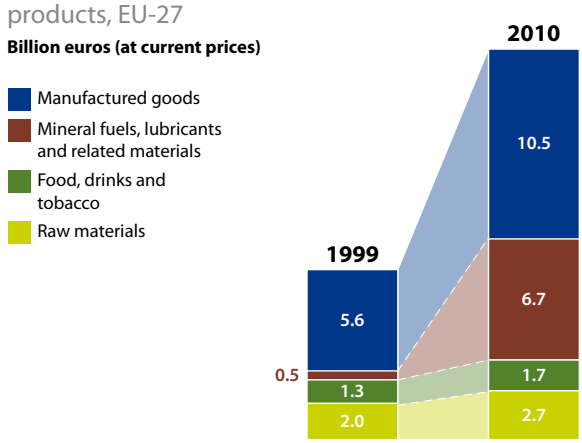
'Slide 11.6 shows us the kind of products that the EU imports from LDCs. One half of imports in 2010 were manufactured goods and the other half were primary products, in

([9]) See http://www.unohrlls.org/en/ldc/25
([10]) See http://ec.europa.eu/trade/wider-agenda/development/generalised-system-of-preferences/everything-but-arms/

11.6 **Energy products from least developed areas growing**

- One half of imports from LDCs in 2010 were manufactured goods, the other half primary products
- The EU's 'Everything But Arms' regulation grants duty-free access to imports of all products from LDCs, except for arms and ammunition

Imports from least-developed countries by group of products, EU-27



Source: Eurostat (online data code: tsdgp230)

Figures for the future: 20 years of sustainable development in Europe?

particular, energy. All in all, this picture isn't very different from the structure of total EU imports, where manufactured products account for about 60 %. The rapid growth in energy products is also reflected here, with energy imports from LDCs growing more than 13-fold from 1999 to 2010.

'Now, I mentioned the importance of open trade, which could help increase developing countries' share of world trade. So let's look at the obstacles that currently stand against open trade. I have found an indicator that can tell us something about one of these obstacles. It is called the "aggregated measurement of support for agriculture". Anne switches to slide 11.7.

'Trade barriers make it harder for developing countries to access EU markets. In slide 11.7, I'm showing how much money the EU spends on supporting agricultural production. Agricultural subsidies make EU agricultural products cheaper, so it's harder for producers outside the EU to compete. The World Trade Organisation or WTO regards these subsidies as "trade distorting" ([11]).

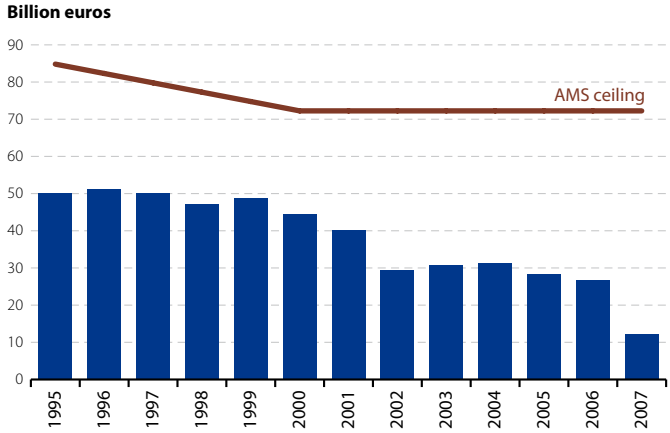
'The EU has gradually cut agricultural subsidies since 1995. The "aggregated measurement of support for agriculture" came to about 50 billion euros in 1995, but this was cut to about a quarter in 2010. EU agricultural subsidies show a growing distance to the not-to-be-exceeded ceiling under the WTO's Agreement on Agriculture. Changes in EU agricultural policy, which have been decoupling subsidies from yields, have driven this trend.'

([11]) See United Nations Conference on Trade And Development, *Green Box Subsidies: A Theoretical and Empirical Assessment*, UNCTAD, 2007.

11.7 **EU agricultural subsidies falling**

- Trade barriers make it harder for developing countries to access EU markets
- The EU has gradually cut trade-distorting agricultural subsidies since 1995
- The distance between the ceiling set under the WTO's Agreement on Agriculture and EU support for agriculture is growing

Aggregated measurement of support for agriculture, EU-27



Source: EU Commission services, World Trade Organisation, Eurostat (online data code: tsdgp240)

Figures for the future: 20 years of sustainable development in Europe?

Anne takes another drink.

'Now, let's go back to our walk in the forest. It brings us to a point where I began to think some more about these trade issues.

'So… we came out of the burnt part of the forest. We were relieved to walk among the trees again and hear the song of those black-capped warblers. Soon we arrived at the more "civilised" part of the park, where there were public conveniences, a canteen and a visitor's centre. My grandfather pointed out the recycling bins and reminded everyone to put their rubbish in them.

'We stopped at the canteen for refreshments and to wait for our bus. I remembered my grandfather's suggestion that we find out where our shopping comes from. I knew *that* wouldn't work if I went shopping with Dad. He'd only look for the best value-for-money products in the supermarket and origin wouldn't matter to him. So how about if I check out the shopping right here?

'Signs in the canteen advertised locally produced food and fair-trade coffee, chocolate and other goods. So this was hardly a typical case! But it was still worth investigating.

'I tossed my mango juice carton into the recycling bin and I looked for something to drink with my packed lunch. I bought a mug of coffee and asked the woman serving at the counter about the coffee's origins. She showed me a packet, which informed me that the coffee had been produced by a peasants' cooperative in Chiapas, Mexico. I also bought a carton of juice, containing some locally produced apple juice, for the bus journey.

'So, will buying fair trade goods help improve working conditions in developing countries? I certainly enjoyed my co-operatively produced coffee, but I was also aware that it cost more than a "normal" cup of coffee.

'Thinking back to that visit, I now wonder if the cuts in EU agricultural subsidies will result in more imports from developing countries… especially fair-trade products like the coffee I enjoyed in the park canteen. Will such products become available in more places than specialist cafes? I have no figures for this, but I think it's a question well worth raising.

'Soon our bus pulled up outside the canteen and I said goodbye to Grandpa Rob. He invited me to ring him any time I need help with my project or information about forest environments. He also surprised me – pleasantly – by suggesting that my father contact him too.'

Anne chuckles to herself as she remembers how she startled Grandpa Rob in turn when she passed on her father's regards just before she got on the school bus… leaving out the bit about the 'old codger', of course.

12

Is Europe living up to its international commitments?

'We were going home on the bus, everyone a bit tired. People were hunched over their phones, reading or talking softly. I think a lot of people – including me – were surprised by our walk through that burnt out part of the forest. Not exactly the jolly outing we were expecting, was it? But it did make me think.

'In fact, I didn't really want to go home. My dad would be picking me up later and who knew what kind of mood he'd be in after his meeting!

'Catherine sat down next to me and asked if I enjoyed the outing. She also brought up the discussion she had with my grandfather about developing countries and rising emissions, and why she had such a strong reaction.

'Cat also told me some things about herself, which I didn't know about or even suspect. Earlier in this presentation I told you about land-sealing and landscape fragmentation, and how I started to look at landscapes with a different and deeper understanding. When I was on that homeward-bound bus, I realised that the same insight applies to social landscapes and to people.'

As planned, Cat now speaks. 'My parents originally came from a very poor part of the world,' says Cat, 'So that's one reason I have such passionate feelings when this subject comes up. My family would also be considered poor in this country. But here they were still able to find secure, if low-paid, jobs, which also offered a decent pension after their years of employment. Eventually they moved into secure social housing, settling into the flat where I grew up. All that would have been unlikely in their home country.'

Cat adds: 'There are complex historical reasons why certain parts of the world are so much poorer and many views on them. In any case, my relatives who stayed behind in a developing country have a much lower standard of living than my parents or anyone in my home town – and that is in a very poor region within Europe. So while our previous topic of *trade* is very important, we need to take more active steps to address global gaps in living standards.'

Anne waits for Cat to say a bit more, but her teacher sits down. Well, it is my presentation after all, she thinks. But it's great that Cat is bringing a more personal element to this discussion, just as she did when they were talking about exclusion.

After all, Cat has one foot in Europe and another in the developing world. That was one of the new things she'd learned about Cat while they were talking on the bus a few weeks ago.

'Thanks, Cat,' Anne says. 'My colleague's comments bring us to the concept of "global partnership", which was devised in the world of development co-operation. "Developing a global partnership for development" is one of the eight Millennium Development Goals. This aspiration aims to create a roadmap for achieving the other seven goals, which are about poverty reduction, education, health and environment ([1]).

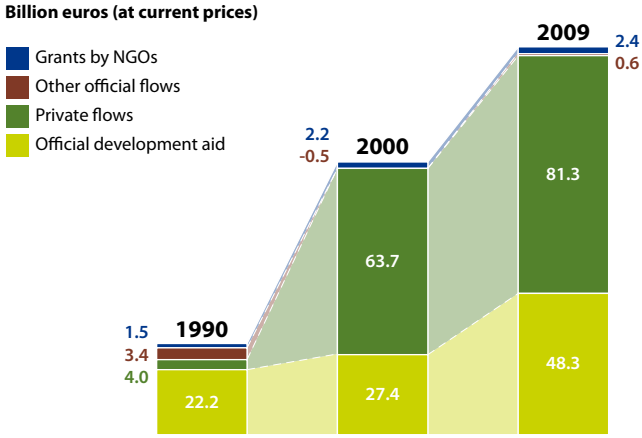
'Global partnership is based on the idea that developed and developing countries are mutually responsible for achieving the Millennium Development Goals. This is even more necessary for sustainable development as a whole. I've started to show you how our globalised world is now intertwined – economically, socially and environmentally. Sustainable development won't succeed if the EU or industrialised countries pursue it

([1]) See http://www.un.org/millenniumgoals

12.1 **Where does EU financial support come from?**

- Official development assistance (ODA) and private flows are the most important financial flows to developing countries
- Financial flows from the EU to developing countries have risen four-fold over the past 20 years
- While ODA flows have grown constantly, private flows fluctuated from year to year

Financing for developing countries, by type, EU-15



Source: OECD, Eurostat (online data code: tsdgp310)

Figures for the future: 20 years of sustainable development in Europe?

alone. It needs collective action from all countries throughout the world, given that we're all sitting in the same boat.

'Many reports and declarations, such as the famous "Brundtland Report" ([2]) – one of the most important publications about sustainable development ever written – have recognised the urgency of meeting the essential needs of the world's poor to achieve sustainable development. As Catherine has pointed out, this means going beyond trading with these countries. It means directly supporting developing countries to allow them to improve their living standards.'

Anne hopes the Indian student thinks she is at least beginning to address the issues he brought up at the beginning of her talk. She puts on slide 12.1.

'I want to talk about this financial support now, summarised in the graph titled: "Where does EU financial support come from?"

'Here we see the money the EU has been putting towards support for developing countries. In contrast to the slides I've shown so far, I am now talking mainly about the "old" Member States – the EU before its 2004 enlargement. The EU had 15 Member States then instead of our current 27, so many of the labels in the slides will show you the abbreviation "EU-15". We are "excluding" the "new" Member States here because they have undergone economic transition, so their ODA flows are very low. However,

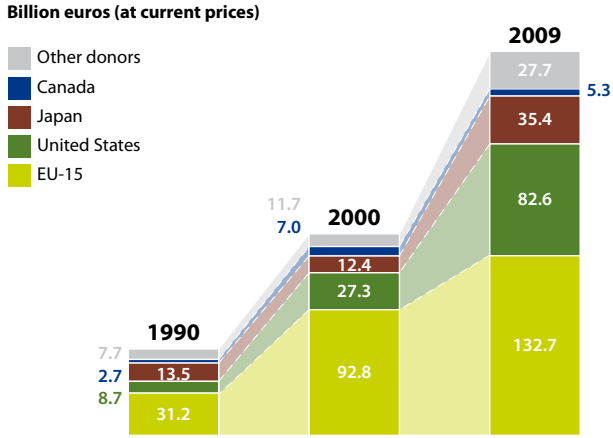
([2]) Report of the World Commission on Environment and Development to the General Assembly of the United Nations, *Our Common Future*, 1987.

12.2 **The EU is the world's biggest donor...**

- The EU is the biggest donor of financial support to developing countries
- Since 1990, all donors have increased their funding for developing countries
- In 2009 total financing for developing countries was 4.5 times higher than in 1990

Financing for developing countries, by donor

Billion euros (at current prices)



Source: OECD, Eurostat (online data code: tsdgp310)

Figures for the future: 20 years of sustainable development in Europe?

the economic point of view is not the only relevant thing here – what also matters is the willingness to show solidarity with developing countries.

'Slide 12.1 shows different types of financial flows to developing countries. In terms of quantities the two most important are official development assistance, or ODA, and private flows. ODA refers to grants or loans from the official sector to promote economic development and welfare in the recipient countries. Private flows include export credits, finance for multilateral organisations and foreign direct investment or FDI. FDI includes investments by foreign companies in production facilities or shares in national companies in developing countries.

'We see that the EU has been spending more and more on supporting developing countries during the past 20 years. Total financing for developing countries in 2009 was about four times higher than in 1990. While ODA has more than doubled, private flows have risen more than 20-fold. However, the growth in ODA stayed more or less constant, while quantities of private flows fluctuated from year to year. This is one reason why ODA provides a much more reliable source of support, especially for the poorest countries.

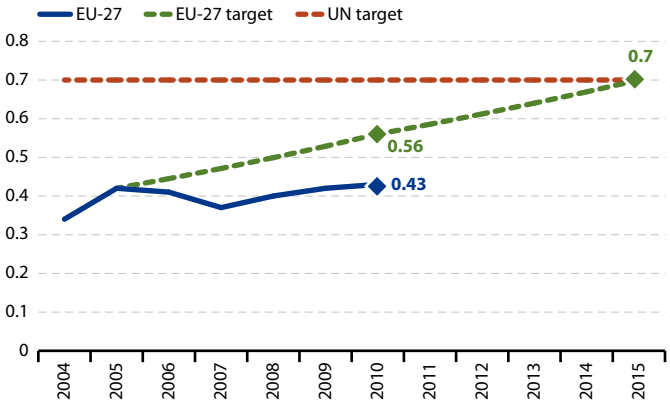
'Now, as you can imagine, the EU is not the only donor in the world. So let's look at the global picture of finance for developing countries.' Slide 12.2 appears.

'Here we see what the world's major donors contribute to finance for developing countries. The EU is the biggest donor, pitching in about 130 billion euros in 2009. The United States was second, with 80 billion euros, followed by Japan with about 35 billion.

12.3 ... but there is still some way to go

- The EU has committed to achieving the UN target of spending 0.7 % of its GNI on ODA in 2015, with an intermediate target of 0.56 % for 2010
- However, the 2010 target has not been met
- Five European countries have exceeded the UN target of 0.7 % of GNI in 2010

Official development assistance (ODA), EU-27



Source: OECD, Eurostat (online data code: tsdgp100)

Figures for the future: 20 years of sustainable development in Europe?

'Since 1990, all donors have increased their funding for developing countries. Total finance for developing countries in 2009 was 4.5 times higher than in 1990. Increased assistance from the two biggest donors – the EU and the USA – were the driving forces behind this growth.

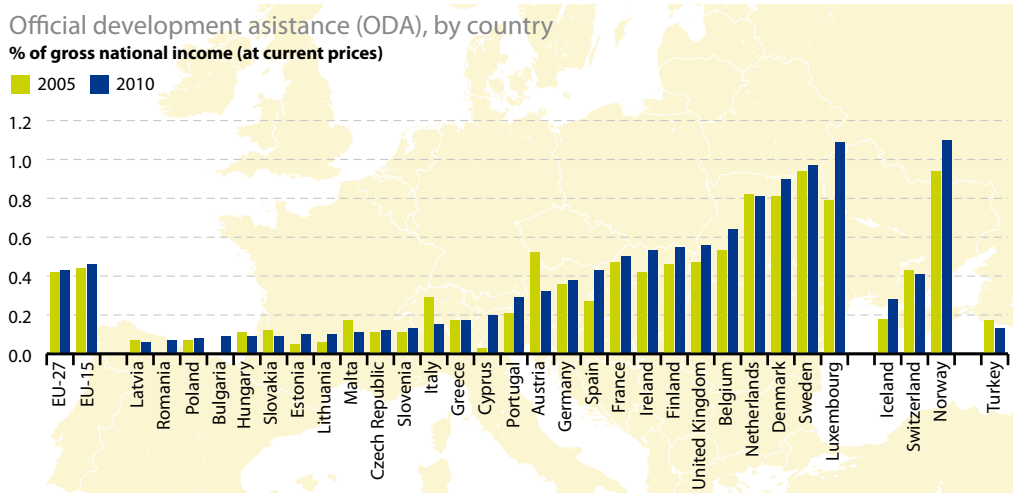
'Now, we've seen that more money flows to developing countries. But does this go hand in hand with improved living conditions in these countries? There's no way of knowing for sure because this also depends on how the money is used in the developing countries. We would have to go there and look for ourselves, which may not be feasible right now.'

It may not be feasible now, but what about the future? In the past few weeks Anne has considered so many different ideas about her future that it makes her a little dizzy. She's also started to consider the possibility of a teaching career, with the idea taking root while she was talking to Cat on the bus. And what else? Anne tightens her grip on the podium as if she needs to balance herself. Then she looks around her audience. Marta had given her advice on maintaining some eye contact throughout her talk. She sometimes forgets to do that if she's absorbed in the topic.

The tall African girl calls out: 'If you come to visit my country, you will be very welcome! I'll show you around.'

'Ah, thanks for the invite,' Anne tells her. 'But before I turn up on your doorstep, we *can* make a start by looking at the quantities of money involved and evaluate whether we're fulfilling our internationally agreed obligations.' Anne switches to slide 12.3.

12.4 **Wide variation in support by Member States**



Source: OECD, Eurostat (online data code: tsdgp100)

Figures for the future: 20 years of sustainable development in Europe?

'A long-standing international objective, which dates back to a UN General Assembly Resolution in 1970, asks countries to spend at least 0.7 % of their gross national income, or GNI, on ODA. Here we're only talking about the ODA part of the total financing for developing countries; there's no similar agreement for the other flows.

'The EU has committed itself to achieving this 0.7 % target in 2015, with an intermediate target of 0.56 % for 2010. But, as we see, this target has not been met. Although the EU has spent more on ODA than in the years before, it only reached 0.43 % of GNI in 2010. This also puts a question mark behind the aim of achieving the UN target of 0.7 % in 2015.

'However, when looking at the individual EU Member States on slide 12.4, we find that a few countries have already met the 0.7 % target.

'Across the Member States, ODA figures range from less than 0.1 % in a few Eastern European countries up to almost 1.1 % of GNI in Luxembourg.

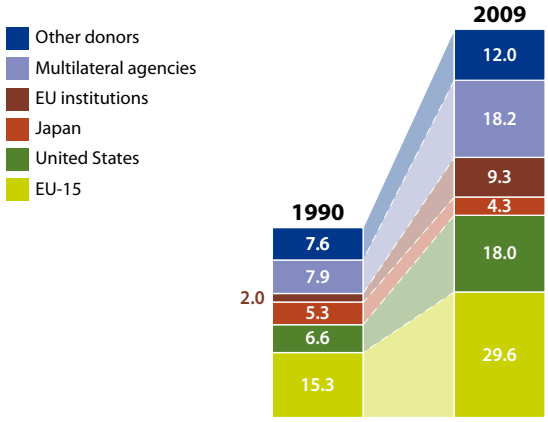
'The picture on the international level is not so different. With the four EU Member States on the right of the slide – the Netherlands, Denmark, Sweden and Luxembourg – and Norway, only five donor countries met the UN's 0.7 % target in 2010. However, ODA has been growing constantly at the global level.' Anne switches to slide 12.5.

'I've already mentioned that global ODA flows have doubled over the past 20 years. Besides the EU and the US, which we've already identified as the world's biggest donors, we can see the central role of multilateral agencies. This includes UN agencies such as

12.5 **Official global assistance has doubled since 1990**

- Global ODA flows have doubled over the past 20 years
- The most important donors worldwide include the EU, the US and multilateral agencies (including UN agencies)

Official development assistance (ODA), by donor
Billion euros (at current prices)



Source: OECD, Eurostat (online data code: tsdgp100)

Figures for the future: 20 years of sustainable development in Europe?

UNAIDS, UNDP, UNICEF and WHO. Notably, one important donor – Japan – has cut its ODA contribution by about 20 % compared with 1990. Meanwhile, flows from the EU have almost doubled and those from the USA have almost tripled since then.

'Now, we've seen how much money donors are spending on development assistance. As I mentioned, we must look at the quantities since we have no indicators that show us if the money is used "sustainably" in the counties receiving the assistance. However, we also need to look at where the money goes. Some developing countries are poorer than others, with the least-developed countries, or LDCs, the poorest of all.

'And while development co-operation includes the eradication of poverty in all developing countries as one of its aims, the European Consensus on Development ([3]) stresses the need to dedicate a high proportion of ODA to "low-income countries", which include LDCs and other countries with low incomes.' Anne switches to slide 12.6.

'We see that the proportion of financial flows to low-income countries is much higher for ODA than for FDI. In 2009 only 6 % of FDI went to low-income countries. But the share for ODA was much higher, at about 57 %. This means more than half of the EU's ODA is dedicated to low-income countries.

'And this brings me back to my recent point that ODA provides a much steadier flow to low-income countries than FDI, which fluctuates over time. Because of their larger

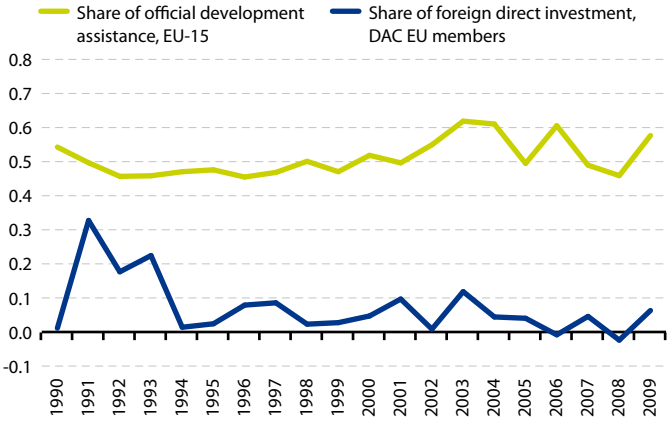
([3]) Joint statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission on European Union Development Policy: *The European Consensus*, 2006/C 46/01.

12.6 **Official channels provide a reliable assistance source**

- Proportion of financial flows to low-income countries is higher for ODA than for FDI
- More than half of the EU's ODA is dedicated to low-income countries
- In 2009 ODA flows to low-income countries amounted to about 11 billion euros, while FDI flows were 'only' 1.7 billion euros

Share of financial allocations to low-income countries

% of country-allocated ODA



Source: OECD, Eurostat (online data code: tsdgp320, tsdgp330)

Figures for the future: 20 years of sustainable development in Europe?

share, ODA flows to low-income countries are much higher than those of FDI. In 2009, financial flows to low-income countries amounted to about 11 billion euros of ODA, but only to 1.7 billion euros of FDI. This is the second reason why ODA is more important for the poorest countries.

'Now, I've shown you figures about how much money is spent on development co-operation, where it comes from and how much of it goes to the poorest countries. But what do these numbers mean for people in developing countries?' Anne goes to slide 12.7.

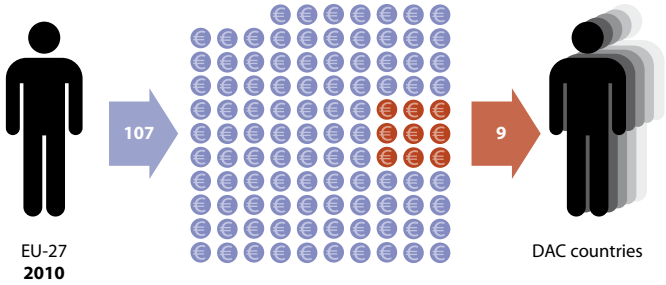
'Here we see how much money theoretically each European citizen spends on official development assistance and how much a person in a developing country would receive. I have to say that gap is *amazing*. In 2010, ODA from the EU amounted to 107 euros per citizen. However, recipient countries only received about nine euros per person. And while the EU contribution of ODA per person has grown since 2005, when it was about 92 euros, this rise is not reflected in higher per person amounts in developing countries.

'The reason why the increasing ODA flows are not reflected in a growing per-person figure in recipient countries may be population growth. And this brings me to the next topic of my presentation: demographic changes.'

12.7 **The donor-recipient gap**

- ODA from the EU amounted to 107 euros per EU citizen
- However, due to their larger populations, recipient countries only received about nine euros per person
- The growth of the EU contribution of ODA per person since 2005 is not reflected in higher per person amounts in developing countries

Official development assistance per capita in donor and recipient countries
Euros per person (at current prices)

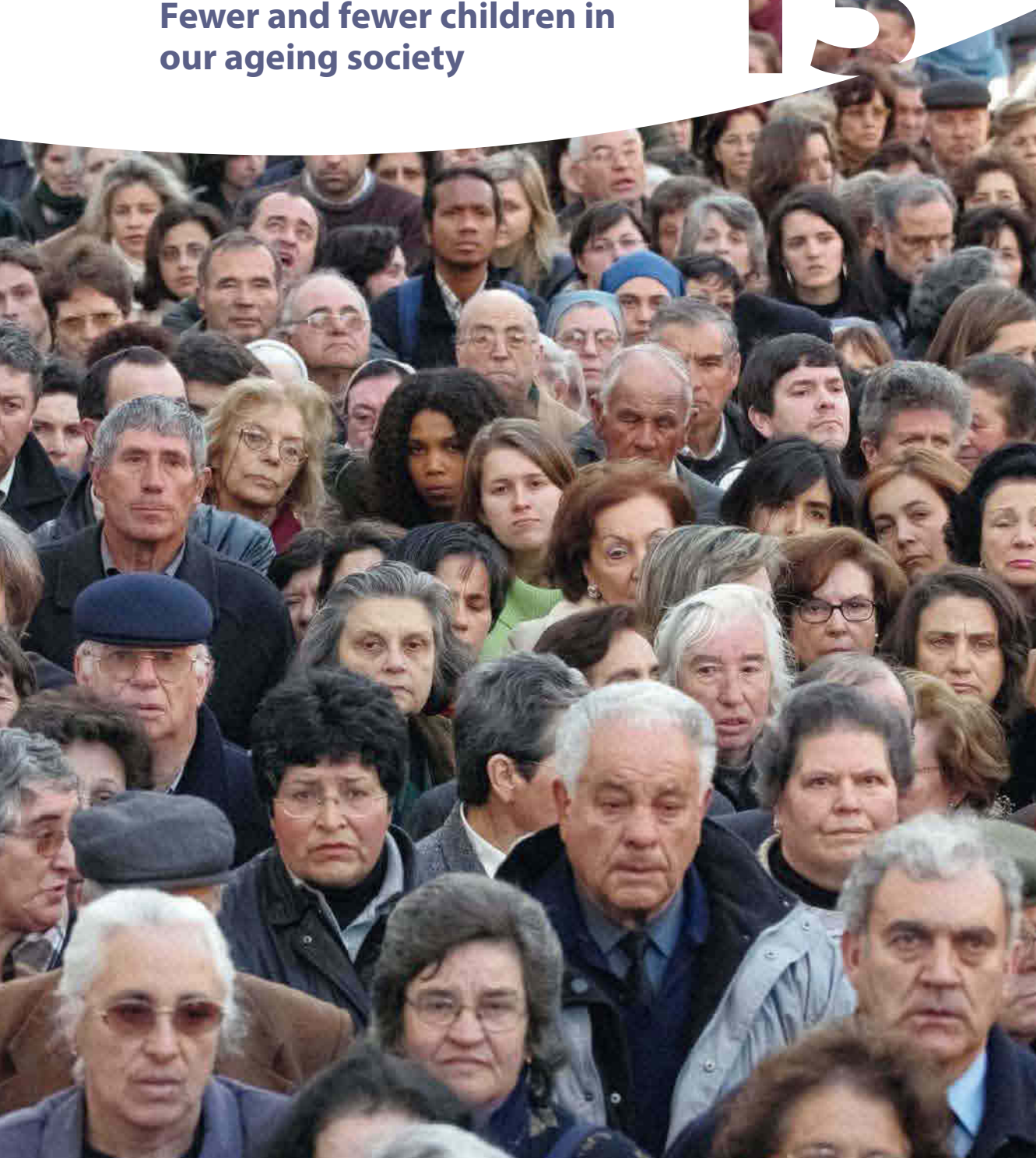


Source: OECD, Eurostat (online data code: tsdgp520)

Figures for the future: 20 years of sustainable development in Europe?

13

Fewer and fewer children in our ageing society



'Now, let's return to my outing. We were still on the bus, just about to arrive at the school. Then Catherine told me something else I didn't know: she was planning to teach elsewhere in a year or so. I'd be at university by then, so it wouldn't affect me. But it was still a shock.'

Cat steps in to explain her decision to the audience. 'The enrolment at our school was going down. Generally, people are having fewer children and that means less demand for our services. We'd been told some classes are likely to close, so I decided it was time to move on. And I've been offered work at an inner-city school where enrolment is rising.'

'And why would that be?' Anne asks. 'Our suburban school faces declining enrolment, while a school in the city has even more pupils coming in.'

'Many of the new pupils have just arrived in the country with their families,' adds Cat. 'And I think I'll especially enjoy working with pupils who have a background similar to mine.'

'So, this situation illustrates the demographic changes I'm going to tell you about now,' Anne says. 'Population change is a major challenge on the path towards sustainable development, and developing and developed countries face different demographic dilemmas. While the former mainly have to deal with population growth, the latter face growing imbalances in the ages of their populations.

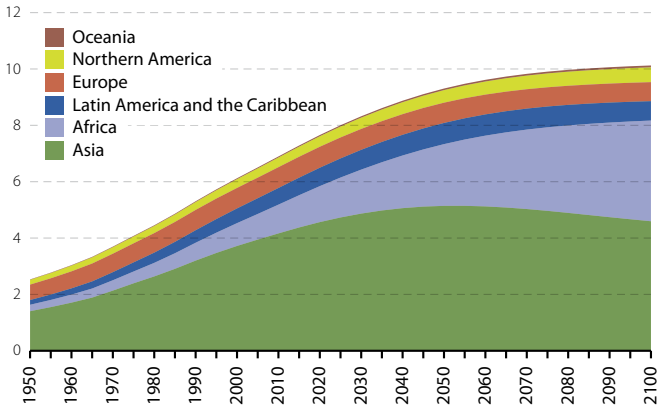
'Now, I've mentioned the European Union is contributing more and more ODA per person. But the money received per person in recipient countries has not changed over

13.1 **Global population continues to grow**

- Earth's total population is expected to quadruple by 2100 compared with 1950, going beyond 10 billion people by about 2080
- Most of the world's population growth has taken place or is expected to take place in Asia and Africa
- Europe's population in 2100 will only be about 20 % larger than it was in 1950

Global population growth and projections

Million people



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision

Figures for the future: 20 years of sustainable development in Europe?

the past years. The obvious conclusion of this trend is that the number of people in recipient countries is growing. Slide 13.1 proves this.

'I've mentioned that the poorest countries in the world are located in Africa and Asia. These two continents are where most of the world's population growth has taken place or is expected to take place. But while Asia's population is expected to peak in around 2050 and decline afterwards, Africa's population may grow continuously until the end of the century.

'Earth's population is expected to quadruple by 2100 compared with 1950, going beyond 10 billion people by about 2080. And while there will be about three times more people in Asia, population is expected to rise more than 15-fold in Africa compared with 1950. Also, both Americas may experience more than a tripling of their population. By contrast, Europe's population in 2100 will only be about 20 % larger than it was in 1950. As you will see on my next slide, the make up of the Earth's population will look very different in 2100 compared with 1950.' Anne switches to slide 13.2.

'Earth's total population is expected to quadruple by 2100 compared with 1950'

'In 1950 more than half of the global population – which then stood at 2.5 billion people – was living in Asia. Europe was second with 22 %. Africa was home to only 230 million people or 9 % of the world's population.

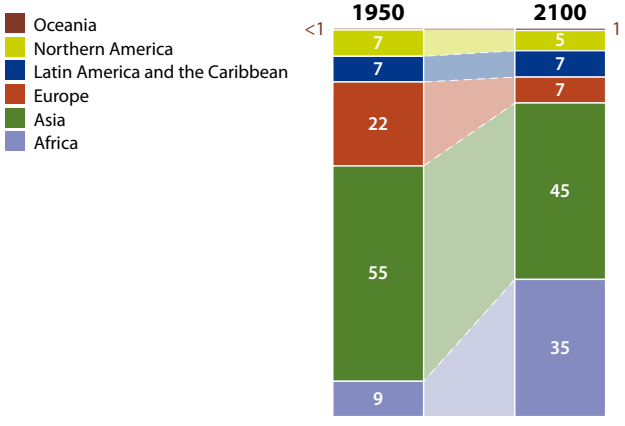
'But this picture could change considerably by the end of the century. Although Asia's population will continue to rise from 1.4 billion in 1950 to 4.6 billion, Asia's share will fall to 45 %. This is because Africa's population is expected to "explode" to 3.6 billion, making up 35 % of the world's population in 2100.

13.2 **Europe's share of global population is shrinking**

- The make up of the Earth's population is expected to look very different in 2100 compared with 1950
- Africa's population is expected to "explode" to 3.6 billion, making up 35 % of the world's population in 2100
- Europeans will only make up less than 10 % of the world's population at the end of the century

Share of continents in global population

%

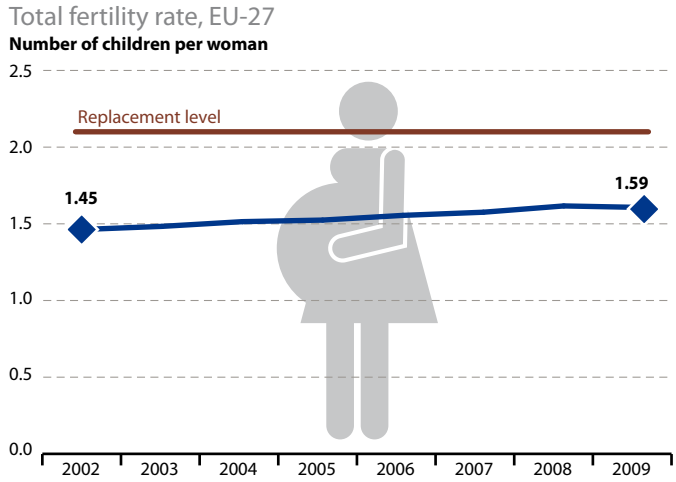


Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision

Figures for the future: 20 years of sustainable development in Europe?

13.3 **Birth rates too low to support population growth**

- A fertility rate of 2.1 children per woman is needed to naturally maintain the EU population at its existing level
- The EU's fertility rate has risen slightly but remains below the replacement level
- Across Europe only Iceland has a fertility rate above the replacement level



Source: Eurostat (online data code: tsdde220)

Figures for the future: 20 years of sustainable development in Europe?

'By contrast, there will "only" be 130 million more people in Europe in 2100. While Europeans represented almost one quarter of the world's population in 1950, their share will fall to less than 10 % at the end of the century.

'All in all, global population is expected to reach 10.1 billion people in 2100. Even if people in developing countries continue to live like they do today, this growth is likely to mean increasing pressures on the natural resources that supply energy and food. Now let's imagine how Earth would look if all these people catch up with the living standards that people in industrialised countries enjoy today. Now *that* is a scary picture, isn't it? The charred landscape I saw when standing on top of the hill during our excursion seems like a herald for what may still come.

'So what's the alternative? Should we try to limit population growth, as China has with its one-child policy? China's fertility rate fell from 2.9 children per woman in 1979 to 1.7 children per woman in 2004, preventing about 250-300 million births ([1]).

'But can this be the solution? Or would this give rise to other demographic challenges? I've shown you that the lowest population growth is taking place in Europe. So let's look a bit closer at the demographic situation in the EU.' Anne switches to slide 13.3.

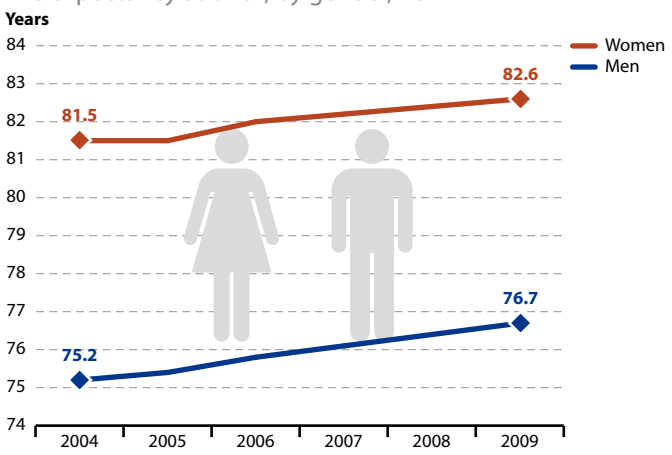
'Here we see the EU's fertility rate, defined as the average number of children born alive to a woman during her lifetime. A fertility rate of 2.1 children per woman is considered

([1]) Therese Hesketh, Li Lu, Zhu Wei Xing, 'The Effect of China's One-Child Family Policy after 25 Years', *New England Journal of Medicine*; 353:1171-1176, 2005.

13.4 **Europeans are living longer**

- A girl born in 2009 in the EU is expected to live about 83 years on average; a boy about 77 years
- Life expectancy in the EU is increasing, meaning people are living longer and longer
- As a result, the EU is still experiencing a natural increase in its population – but this is expected to change soon

Life expectancy at birth, by gender, EU-27



Source: Eurostat (online data code: tsdph100)

Figures for the future: 20 years of sustainable development in Europe?

necessary to naturally maintain the population at its existing level. This is the "replacement level". All other things remaining equal, a fertility rate below the replacement level will lead to a shrinking population.

'The EU's fertility rate has risen slightly since 2002, but has stayed below the replacement level. Across Europe, only one country – Iceland – has a fertility rate above the replacement level. All other countries, including the 27 EU Member States, were below the replacement level in 2010. Three countries came close to it, with rates above two children per woman: Ireland, France and Turkey. On the other hand, Latvia and Hungary had the lowest fertility rates, with about 1.2 children per woman. Cultural and economic dynamics feed into the huge differences. These influences can include changes in employment conditions and material aspirations. Education, social security and welfare arrangements will also affect whether people have children, and how many they will have.

'The EU's fertility rate has risen slightly since 2002, but has stayed below the replacement level'

'Now, I said with *all other things remaining equal*, a fertility rate below the replacement level will lead to a shrinking population. However, all things don't remain equal in real life. Population change is not affected by fertility rates alone. There are two other factors besides births: deaths and migration. Let's start with a positive development concerning deaths.' Anne puts on slide 13.4.

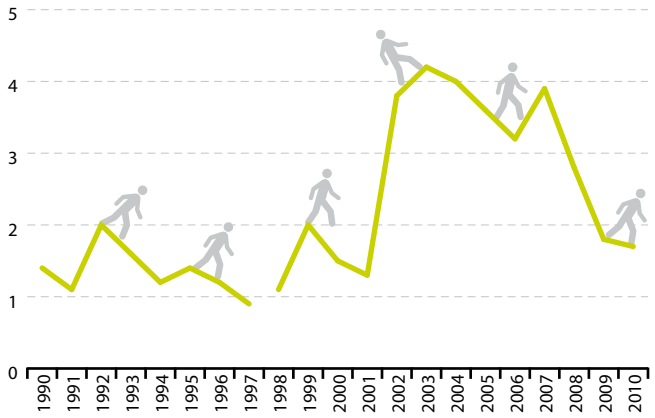
'Life expectancy shows the number of years that a child born in a specific year is expected to live. In the EU, a girl born in 2009 is expected to live for about 83 years on average and a boy about 77 years. In slide 13.4 we see that over the rather short period from 2004

13.5 **More people move to the EU than leave**

- Net migration means the difference between immigration and emigration
- The EU has experienced continuous immigration from outside over the past 20 years
- From 2015 onwards positive net migration is expected to be the only population growth factor in the EU

Crude rate of net migration plus adjustment, EU-27

Per 1 000 people



Source: Eurostat (online data code: tsdde230); *Note*: break in series in 1998

Figures for the future: 20 years of sustainable development in Europe?

to 2009 life expectancy in the EU has risen continuously for both men and women. UN population estimates going back to 1950 see an even stronger rise in life expectancy of about 10 years over the past 60 years ([2]).

'This means that people in the EU are living longer and longer. Though the EU's fertility rate is below the replacement level, the EU still experiences a natural increase in its population: there are more births than deaths in each year.

'The annual number of births is expected to fall between 2008 and 2060'

'But this is expected to change soon. The annual number of births is expected to fall between 2008 and 2060, while the annual number of deaths is projected to rise. From 2015 onwards, deaths will outnumber births and population growth due to natural increase will stop. From this point, positive net migration will be the only population growth factor in the EU ([3]).' Slide 13.5 appears.

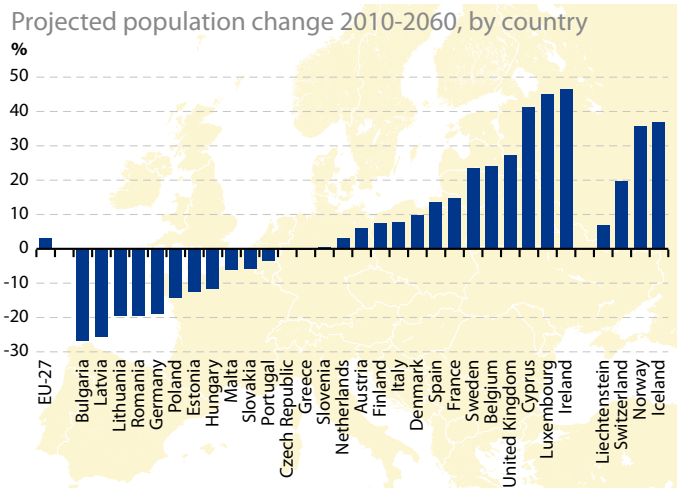
'Net migration means the difference between immigration and emigration. There have been large fluctuations in the EU's migration levels. However, the rate has stayed positive over the past 20 years, which means the EU has experienced continuous immigration from outside.

'Eight EU Member States experienced negative net migration in 2010, which means more people moved away from than moved into these countries. Emigration has been

([2]) Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision.
([3]) Eurostat news release 119/2008, From 2015, deaths projected to outnumber births in the EU27, 26 August 2008.

13.6 **The changing face of Europe's population**

- By 2060, the EU's population is expected to grow by about 15 million people, or 3 %
- About half of the Member States – most in Eastern Europe – may experience a shrinking population



Source: Eurostat (online data code: tps00002)

Figures for the future: 20 years of sustainable development in Europe?

highest in Ireland, Cyprus, Latvia and Lithuania. On the other hand, Luxembourg and Belgium received the most immigrants.

'Now, I've shown you the factors driving population change. So let's have a look at what this means for the EU's future population.' Anne puts on slide 13.6.

'By 2060, the EU's population is expected to grow by about 15 million people, or 3 %. However, this figure hides big differences between Member States. About half – most in Eastern Europe – may experience a shrinking population. Many of these countries report low fertility rates and net emigration at the same time.

'However, when taking a closer look, we see that population growth in the EU is not continuous.' Slide 13.7 appears.

'The EU population could rise from 501 million in 2010 to 526 million in 2040 and gradually decline to 517 million in 2060. I've already mentioned that deaths are expected to outnumber births from 2015 onwards, making positive net migration into the EU the only population growth factor. However, from 2035 this positive net migration would no longer balance the negative natural change and the population is projected to start falling ([4]).

'However, this is not the only demographic change the EU faces. I've mentioned the growing imbalances in age across the population. Because people live longer and births

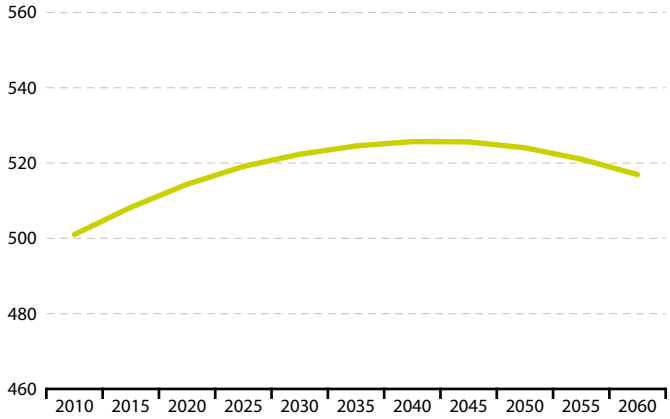
([4]) Eurostat news release 119/2008, From 2015, deaths projected to outnumber births in the EU27, 26 August 2008.

13.7 **EU's population expected to peak in 2040**

- Population growth in the EU will not be continuous
- The EU's population is expected to rise until 2040 and then gradually fall to 517 million in 2060
- This is because from 2035 net migration would no longer counterbalance the natural decline that is expected to start in 2015

Projected population change, EU-27

Million people



Source: Eurostat (online data code: tps00002)

Figures for the future: 20 years of sustainable development in Europe?

are declining, the EU population will grow older. So the proportion of working-age people is shrinking, while the relative number of retirees is expanding. This will place a bigger burden on those of working age to pay for the social services needed by an ageing population.' Anne moves to slide 13.8.

'The median age of the EU's population was about 41 in 2010; this means half the population was older than 41 and half was younger. But this is expected to rise to 48 by 2060.

'We see on slide 13.8 that young people up to the age of 14 made up 15 % of the EU's population in 2010. People of working age – 15-64 years of age – accounted for two thirds of the population and older people aged 65 or more for 17 %.

'By 2060, people aged 65 or older will account for almost one third of the EU's population'

'By 2060, people aged 65 or older will account for about 30 % of the EU's population. The share of those aged 80 or above could grow the most.

'"Age dependency ratios" tells us about the level of support for young and older people by the working age population; these ratios are expressed in terms of the relative size of young and older populations compared with the working-age population. The old-age dependency ratio for the EU was 26 % in 2010; so there were about four people of working age for every person aged 65 or over. By 2060, the old age dependency ratio could more than double. In other words, in 2060 we'll only have about two people of working age for every person aged 65 or over.

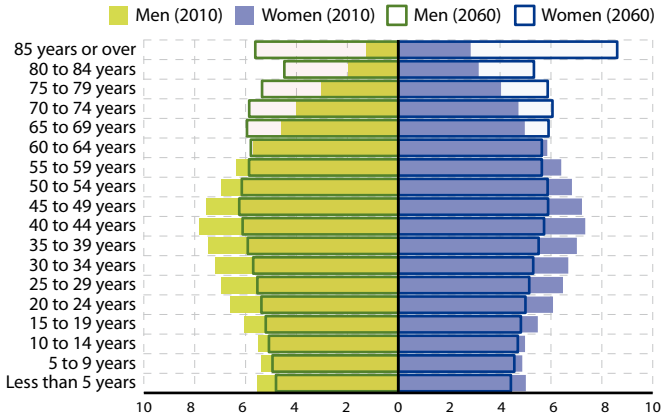
'Migration, especially from non-EU countries, offers a temporary solution to population ageing, as most people migrate as young adults between 25 and 34 years of age. As young

13.8 **An ageing population**

- The EU population will grow older because people live longer and births are declining
- The median age of the EU's population is expected to rise from 41 years in 2010 to 48 years in 2060
- By 2060 people aged 65 or older will account for about 30 % of the EU's population

Population structure, by age group and gender, EU-27

% of total population



Source: Eurostat (online data code: demo_pjangroup, proj_10c2150p)

Figures for the future: 20 years of sustainable development in Europe?

foreigners feed into the older national populations, the total population is rejuvenated and diversity increases ([5]).

'If you recall, I told you about the train journey through unfamiliar parts of my city where I saw signs in other languages and piles of colourful fruit and vegetables outside the small shops. So that was a visible sign of such diversity, though there's not much of it my own neighbourhood.'

Then Anne points to slide 13.8. 'However, as you can see on this slide, the EU's age pyramid will see big changes. This has sparked debates on what to do about these changes. Most approaches revolve around the restructuring the labour force. This could include raising the legal retirement age as well as adopting an active family policy and positive economic and immigration policies.

'To prepare for the expected demographic changes, expensive social services, welfare, healthcare systems and infrastructure must change to meet the demands of ageing citizens and a declining labour force. All this comes at a time when the financial crisis has sparked serious concerns about national budgets and austerity measures.

'This means that each of us sitting in this room could end up working much longer than our parents and grandparents, and we may enjoy fewer state benefits than previous generations.'

([5]) European Commission Directorate-General for Employment, Social Affairs and Inclusion, and Eurostat, Demography report 2010 – Older, more numerous and diverse Europeans, 2010.

A silence first greets that pronouncement. Then a commotion of questions and comments erupts. European women are the most vocal, though Anne imagines that delegates from Asia and Africa would also have concerns.

'What *are* these active family policies?'

'Are you suggesting that the state force women to have more babies? That happened in my country under Ceausescu. No way!' Anne realises that the woman who said this must come from Romania.

'Why is immigration described as a "temporary" solution? My family's settled in this country permanently!'

'No, no! It's not just a matter of having more babies in Europe. We have to deal with the economic crisis.'

'Many people aren't having children because they can't afford them! Just to begin with, funds are being cut for childcare services and state schools… and only the rich can afford private education. I know I can't. So who wants to bring children into a world of crisis and austerity?'

Ann decides to step in here. 'Obviously, the subject of population and family has provoked an emotional response. After all, this is where social policy touches on our personal lives and hopes. I have no idea whether I want to have children or not. I have other things to think about now. I'm only 17. In fact, I felt a bit weird myself about some of the things I've talked about. So *please* don't shoot the messenger, folks!'

An undercurrent of laughter defuses the tension. Now that the situation is in hand, Anne feels pleased that some sparks have started to fly. She wanted audience engagement. She wanted debate. And that's what she got.

'Given the response to this topic, I suggest we leave it for the party tonight. And more meetings after this one. Agreed?'

Agreed.

'And now, let's move on to a more hopeful subject: green growth.'

14

Is green growth a solution?

'Now that we're reaching the end of my presentation, I want to recap some of the worrying trends I've shown you. But I'll also introduce an issue that has gained a lot of attention recently: green growth. Putting it simply, green growth means that our economies can continue to grow, while the negative environmental consequences are diminished. And grow they must, it seems, when social and economic indicators have shown clear signs of deterioration as a result of a contracting economy caused by the economic crisis.

'However, as the European Commission said in its "position paper" for the Rio+20 conference – I mean the *real* Rio+20 conference – it is important to "promote the *right kind* of growth" ([1]). This means growth that respects the needs of society and preserves – and not threatens – the natural resources we all depend on.

'Such an economy – a *green economy* – will be discussed as one of the main themes of the Rio+20 conference. Some argue that's just another name for "sustainable development". But I don't want to get into *that* discussion right now, and I also don't want to split hairs about the differences between "green growth" and "green economy". The main objective is the same: transforming the current economic system into a more sustainable one.

'And believe it or not – I've had help from my father with the last part of this presentation. From what I've said so far, you probably don't think he's a very green kind of guy, unless you're talking about the colour of money… in some currencies, at least.

'If you remember, my father had been very much on edge the day of my excursion to the national park a few weeks ago. He'd been on his way to a meeting at his bank on "restructuring", as well as giving me a lift to school. Now, *restructuring* usually is a "nice" word for kicking a lot of people out.

'But when I found him waiting for us when we returned from the excursion he seemed very… *jaunty*. He greeted me and Catherine, and asked about the excursion. He seemed very interested, even when the conversation got into a lot of nitty-gritty about sustainability. Then he wanted to pick up the conversation that, much to my relief, had been cut short when we arrived at the train station that morning. The one about the article in the paper regarding another dip in the economy… Cat might've been a bit tired, so she told him quite bluntly that she believed sustainability problems lie at the heart of the economic system.

'Oh-oh, here it comes, I thought. But my father replied in a very amiable way: "Maybe you're right, but what can we do about it?"

'And I was thinking: what's up? Did they put happy pills in the coffee at his canteen? The effects of my fair-trade coffee from the highlands of Chiapas paled in comparison.

'Then Dad told me the news as we drove home. Part of his meeting had indeed been about cutting costs – energy costs for the bank's buildings. The bank was looking into energy saving measures, including use of renewable energy. But most important, it was opening a new department to deal with "green investment" and invited applicants to head this new department.'

'"And I'm applying," my Dad declared.

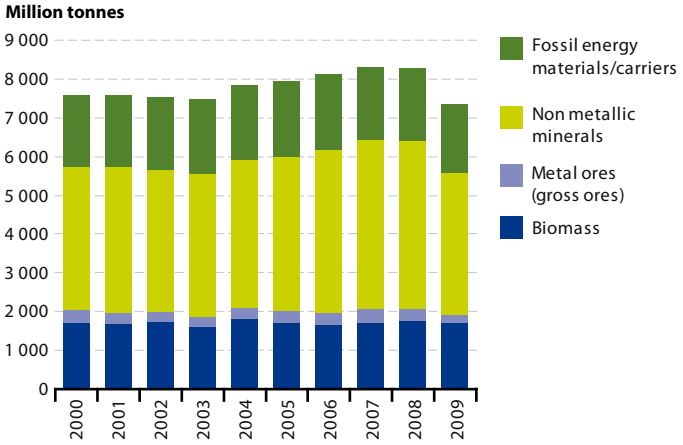
"What? *You're* applying? *You*?" I was gobsmacked.

([1]) Commission communication, *Rio+20: towards the green economy and better governance*, COM(2011) 363 final.

14.1 Use of natural resources in the EU

- Half of the materials consumed in the EU are minerals
- Material use tends to follow the economic cycle closely

Domestic material consumption, by type, EU-27



Source: Eurostat (online data code: tsdpc230)

Figures for the future: 20 years of sustainable development in Europe?

'To be honest,' Anne tells the audience, 'I first had the reaction you get when your parents start dancing to your favourite music and pretend they're "down with kids"… you know?'

Sympathetic chuckles greet this question. Many in the audience certainly *do* know.

'Yeah… My reaction was almost territorial in a way, and partly embarrassed. But then I realised he was serious.

'To prepare for his application, Dad had to get to grips with some of these strange "green" issues. So he was eager to learn a few things from me as I pulled this presentation together. We collaborated on some of our research, combining his economic interests with my environmental concerns. That isn't to say we agree on everything. But I'm proud he's making this effort, whether or not he gets the promotion. And maybe this combination of concerns gives us a cause for optimism in the end.

'But before we get too optimistic here, I want to talk about one worrying trend that I've spared you from so far. You could see it as an overarching trend related to many of the indicators I've just presented. It is also directly linked to today's consumption patterns. It's about domestic material consumption or DMC... not to be confused with a certain 1980s rap group, Run DMC. That was what my grandfather tried to dance to when *he* thought he was getting down with the kids – in the 1990s!' Anne puts on slide 14.1.

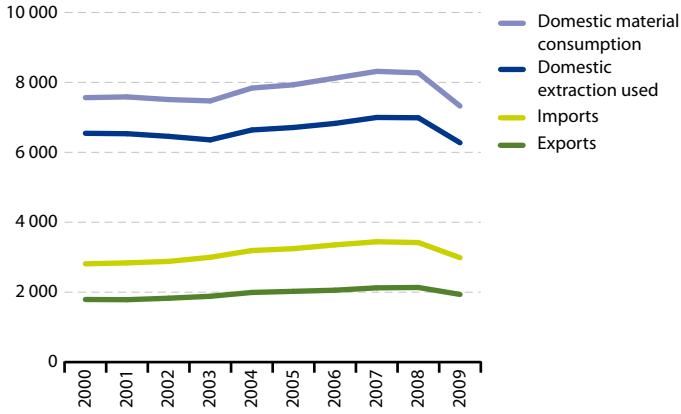
'Domestic material consumption shows the amount of natural resources we use. "Natural resources" means almost everything from raw materials to semi-manufactured

14.2 **Imports are needed to meet EU raw material demand**

- Most of the materials used in the EU are extracted here
- However, imports are becoming more and more important
- Imports, exports and domestic extraction have all fallen during the crisis

Components of domestic material consumption, EU-27

Million tonnes



Source: Eurostat (online data code: tsdpc220)

Figures for the future: 20 years of sustainable development in Europe?

and finished products. When we discuss natural resources, it may be more useful to talk about "resource stocks": the amount of resources we still have left. However, we don't have reliable data on natural resource stocks. That's why we are looking on the "flow" side, or the amount of resources we are removing from nature. And that's what DMC is about.

'As you see on slide 14.1, DMC is broken down into four major categories: biomass, metals, minerals and fossil fuels. About half the materials used in the EU are minerals, followed by fossil fuels and biomass with slightly more than 20 % each. Metals, in contrast, show a relatively small share because they are often imported in a highly concentrated form or as pure metal. So, the enormous amounts of raw materials extracted in the countries of origin are left out ([2]).

'Coming back to minerals used in the EU, it's worth noting that a large fraction of them is sand and gravel, mainly used for building. And as many of you have surely seen, construction is closely linked to economic development. So it isn't surprising that the trend for mineral use – and also total DMC – since 2000 has closely followed the economic cycle.

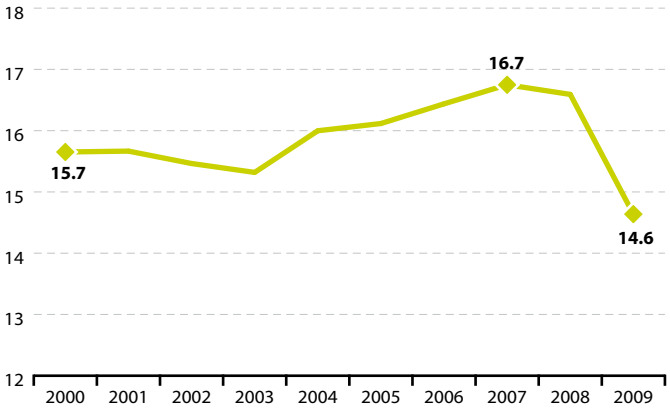
'I hope you still remember the GDP growth plateau I mentioned in the beginning, which took place between 2001 and 2003. This plateau is repeated here for DMC, with material use falling by 3 % during that period. The stronger economic growth that followed

([2]) Eurostat statistics in focus 9/2011, Economy-wide material flows: European countries required more materials between 2000 and 2007.

14.3 **Material use per person fell strongly during the crisis**

- In 2007 each EU citizen theoretically consumed about 17 tonnes of materials per year, or 45 kilograms of materials per day
- Due to the economic crisis, material use fell below 15 tonnes per person in 2009

Domestic material consumption per person, EU-27



Source: Eurostat (online data code: tsdpc220, demo_gind)

Figures for the future: 20 years of sustainable development in Europe?

resulted in a similar rise of material use by 11 % until 2007. As with energy use, transport volumes and greenhouse gas emissions, the recent economic crisis has led to a drastic fall in material consumption.

'Now, I mentioned that metal imports distort the picture that DMC shows us here. This is related to another side of material use that the next slide will illustrate.' Anne switches to slide 14.2.

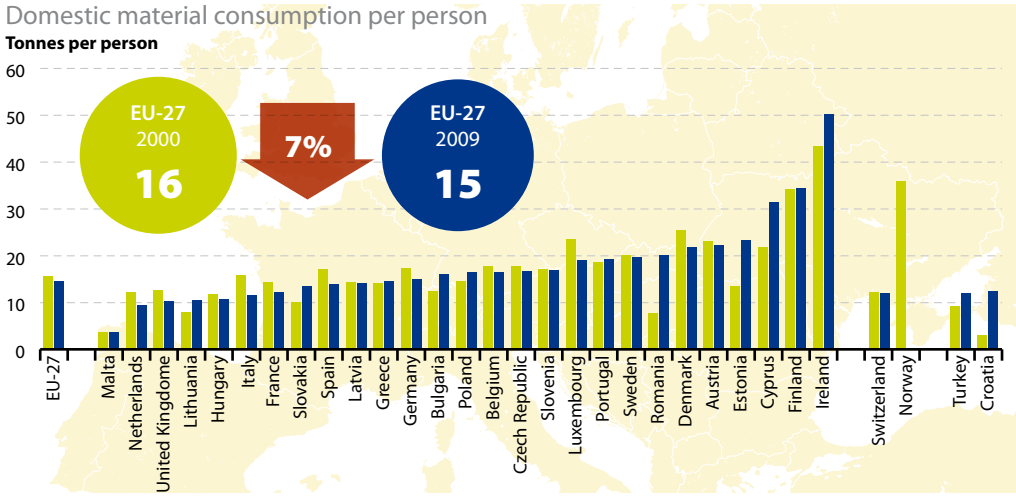
'You can look at DMC in terms of where the materials we use come from. Most materials used in the EU are extracted here, shown by the line labelled "domestic extraction used" on this slide. What the slide also shows is that while some of this is exported, the EU imports even more from outside the EU. This links back to the trade figures I just showed you. However, those showed monetary figures, while this slide shows the amount of materials actually traded.

'At its highest level in 2007, about 3.5 billion tonnes of materials were imported into the EU. At the same time about 2 billion tonnes were exported. The difference between imports and exports together with the "domestic extraction used" resulted in a material use of 8.3 billion tonnes in the EU in 2007.

'To grasp the real meaning of this huge figure, I've done some maths again and calculated what this means for each of us.' Anne puts on slide 14.3.

'Dividing the DMC figures by population reveals that each EU citizen in 2007 theoretically consumed about 17 tonnes of materials. Imagine if each of us bought 10 cars in a single

14.4 **Resource efficiency varies across the EU**



Source: Eurostat (online data code: tsdpc220, demo_gind)

Figures for the future: 20 years of sustainable development in Europe?

year! It is equivalent to that. Or if you want an even clearer illustration, this means that each EU citizen consumed about 45 kilograms of materials per day.

'Thanks to the crisis, this figure fell to 15 tonnes per person in 2009. These average figures, however, hide sizeable differences between Member States. So let's look at variations in material use within the EU.' Slide 14.4 appears.

'Material use per person varied more than 13-fold across Europe in 2009. It was lowest in Malta with about 4 tonnes per person and highest in Ireland with about 50 tonnes per person. Differences in climate, population density, infrastructure, availability of raw materials and reliance on imports and economic structure are some factors that explain this variation ([3]).

'However, some countries appear to use their materials more efficiently than others. And this term – *efficiency* – brings me right back to *green growth*.

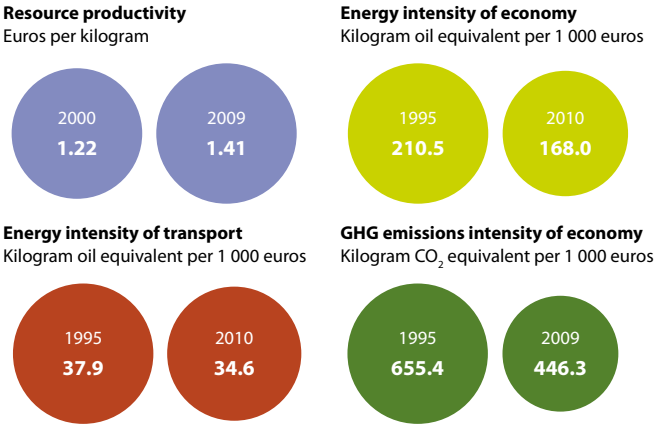
'You might say that green growth means nothing more than "making more from less". With "more", we usually mean economic growth or GDP. And with less, we mean resources and environmental degradation. This is what is usually referred to as "decoupling". As evident from the term "decoupling", the aim is to separate something that is usually combined or "coupled". I've already given examples of these "coupled" issues throughout my presentation: economic growth leading to an increase in energy use, transport volumes or materials use. Some of these issues in turn result in more

([3]) European Environment Agency, *The European Environment – state and outlook 2010: Material resources and waste*, 2010.

14.5 **Productivity and efficiency appear to be improving...**

- Resource productivity has risen since 2000. This means more euros were created from the same amount of materials
- At the same time, the amount of energy needed for economic activities has reduced. Less greenhouse gases have also been emitted per euro
- However, these simple ratios do not tell the full story

Changes in resource production and energy intensity, EU-27



Source: Eurostat (online data code: tsdpc100, tsdec360, tsdtr250, nama_gdp_k, tsdcc210, nama_gdp_k)

Figures for the future: 20 years of sustainable development in Europe?

environmental impacts. An increase in energy use, in particular for transport, is usually connected with rising greenhouse gas emissions.

'Sustainable development policies aim to break this link by "decoupling" environmental impacts from economic drivers. So let's have a look at how the EU has achieved this aim in materials use, energy use, transport energy use and greenhouse gas emissions.

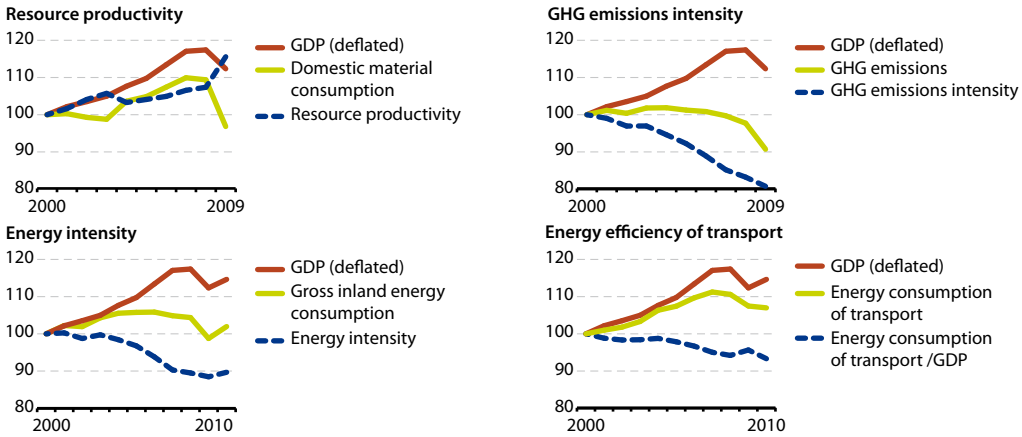
'The figures on slide 14.5 have been calculated as a ratio with GDP. The purple graph is a little different from the others, since it is about "productivity", while the others are about "efficiency" or "intensity". The first one – "resource productivity" – is GDP divided by DMC. It shows how much GDP, in euros, can be created out of one kilogram of materials. Resource productivity has risen since 2000, which means that more and more euros of GDP were created from the same amount of materials. The rise from 2000 to 2009 is a good sign because it shows a decoupling of economic growth from material use.

'The other three graphs are calculated the other way round by dividing the environmental indicator by GDP. They show "efficiency" or "intensity" by showing how much energy input has been needed or the amount of greenhouse gases emitted to create 1 000 euros of GDP. Here, a falling trend indicates decoupling because the same amount of GDP has been created with fewer environmental impacts.

'Looking at these four graphs, you may think the EU is progressing towards sustainable development, with decoupling taking place in the EU over 10-15 years. However, these figures hide vital information: they don't show us if environmental impacts have really fallen in the EU. What we see is a rise in efficiency, but we don't know whether these

14.6 ... but not so promising when compared with GDP

Resource productivity and energy efficiency



Source: Eurostat (online data code: tsdpc100, tsdpc230, nama_gdp_k, tsdec360, tsdcc320, tsdtr100, tsdtr250, nama_gdp_k, sdcc210, nama_gdp_k)

Figures for the future: 20 years of sustainable development in Europe?

efficiency gains have yielded results in less resource use or lower emissions. We also don't know if the gains have been offset by an even stronger economic growth, in an outcome similar to the "rebound effect".

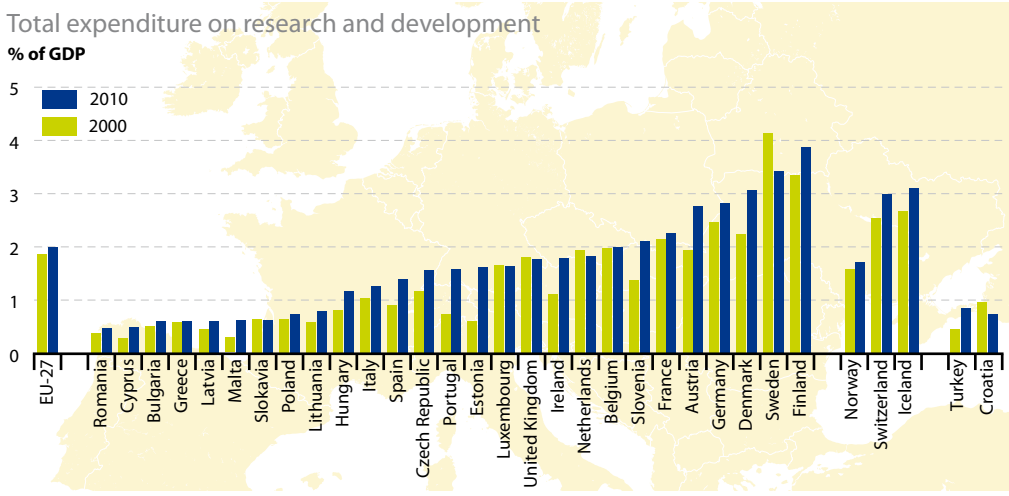
'And it's not enough to look at these ratios in isolation – we must include the original figures I used to calculate those ratios. And this is the result.' Anne puts on slide 14.6.

'Here those original figures complement the graphs I used before. To make the data comparable, all figures are indexed to 2000. This means that the value in that year is set to 100 % and all changes before or after 2000 are expressed as percentage change compared with this reference year.

'Looking at this slide, the picture becomes less promising. If we leave out the dramatic effects of the crisis in 2008 and 2009, we see that the alleged "decoupling" actually results from GDP growing faster than the related environmental impacts. This is especially true for material use and energy use in transport. The trend is less clear for overall energy use, which rose alongside GDP until 2004, but has since stalled. The only "real" decoupling has taken place for greenhouse gas emissions, which fell while GDP was growing.

'However, I've already mentioned some reasons for the drop in greenhouse gas emissions, which include economic restructuring in Eastern Europe and the switch from high- to low-carbon fuels. It's questionable whether these factors will keep pushing greenhouse gases down while the EU economy continues to grow.

14.7 **R&D expenditure has not increased enough**



Source: Eurostat (online data code: tsdec320)

Figures for the future: 20 years of sustainable development in Europe?

'We can cautiously conclude that decoupling, as advocated by the concept of green growth, may be a way forward. However, we need to take a closer look at whether the environment is really improving.

'It also seems that more innovations are needed to tap the full potential of green growth. And this brings me to my last slide. It is about investing in the future, which includes all of us sitting in this room today.' Anne switches to slide 14.7.

Anne wants her audience to see the future in terms of the world they will be living in. If she's learned anything while participating in the model United Nations, it's the ability to look at possibilities in a collective and global way. This goes beyond whether she works in education or journalism, or if she'll be able to travel to many of the places she's spoken about today.

'I'm showing you how much the EU and its Member States spend on research and development, or R&D, out of its GDP. Investing in R&D contributes to our "knowledge society" and lays the foundations for future innovations that address unsustainable trends. The EU aims to raise the share of R&D expenditure to 3 % of GDP in its Sustainable Development Strategy ([4]). The recently adopted Europe 2020 strategy ([5]) reaffirms this target.

'Despite these pledges, the past 15 years haven't seen much progress towards this target. R&D expenditure in the EU has stayed between 1.8 % and 2 % of GDP. This is not only

([4]) Council of the European Union, *Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy*, 10917/06.
([5]) Commission communication, Europe 2020. *A European strategy for smart, sustainable and inclusive growth*, COM(2010) 2020.

below the OECD average of 2.4 %, but also well below the shares reported by the United States and Japan, with 2.9 % and 3.4 % ([6]).

'As we can see from the country breakdown in slide 14.7, there's a huge variation in the amounts Member States spend on R&D. Shares above the 3 % target are reported from Denmark, Sweden and Finland. On the other hand, there are nine Member States spending less than 1 % of their GDP on R&D.

'Countries have reacted differently to the crisis. While some have raised their R&D spending to support economic recovery and longer-term growth, others have cut funding due to pressures on public resources.

'However, it is not only the amount of money that is important. It is equally important that the money is used in a "sustainable" way. Does it contribute to sustainable development or not? The same principle applies to many of the monetary indicators I've shown today.

'Personally, I think that the money our schools have spent on organising this model UN event actually does contribute to sustainable development.'

Anne looks around at the audience again. Yes, remember that eye contact. Has she really come to the end of her presentation? It feels incomplete. But she's shown the last figure, uttered the last comment indicated in her notes. She takes a sip of water. Then she says her final words.

'Thank you!'

([6]) Organisation for Economic Co-operation and development, *Main science and technology indicators*, vol. 2011/2, Paris, 2012.

Conclusions on sustainable development: the conversation continues

15

Applause greets Anne as she packs her stuff together, ready to sit down with her colleagues in the front row. She's proud that she's given the type of presentation she wanted to give. Well, not everything went as planned. But that's the nature of giving an interactive presentation where the audience is invited to contribute.

Catherine raises her arm, indicating that Anne should remain in front of the audience. Anne's confused. Has she missed something? Oh yes, the questions and answers. The *conclusion.* Her job is far from over.

'We've had a lot of information to process,' suggests Cat. 'And now we need to return to the initial question. After what you've shown us today, can we conclude there have been 20 years of sustainable development in Europe? Anne, what's *your* answer to this question?'

Be creative and improvise. That's what Marta had suggested for her presentation. And thats what she needs to do right now. Anne had immersed herself so much in the details of the indicators that she hasn't really thought about taking a step back and looking at the bigger picture.

'Well…' Anne doesn't know where to start. Then she remembers another hint Marta had given her. *Involve your audience. That generates discussion about issues that don't have an easy bite-sized conclusion.* Now she knows what she has to do.

Anne clears her throat and starts again.

'Well, I've been talking a lot already. To be honest, I don't have a clear answer to this question, although I brought it to the table. But …' Anne looks around in the audience, seeing many faces looking at her.

'…there are people in the audience who still may have something to say. So I'd like to pose this question to you.'

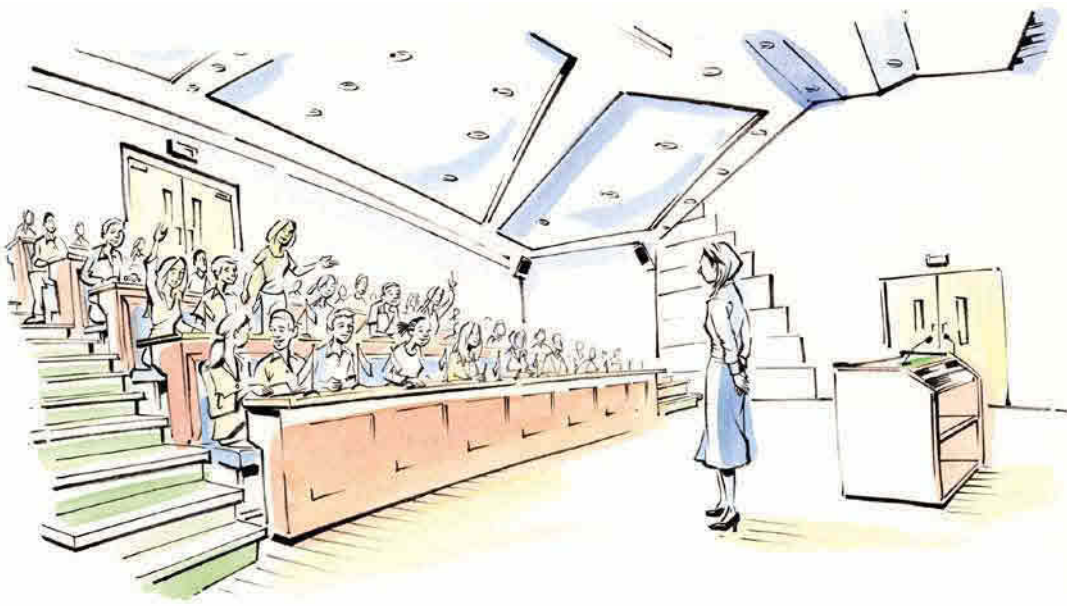
At least a few in the audience are seeing this as an invitation to contribute because a forest of hands shoot up. Anne decides to take a leaf from her grandfather's book. 'Just shout out… Never mind about raising your hand. If it gets too chaotic I'll ask Cat to chair, but let's try to have an informal discussion first.'

After the free-for-all that broke out over population change, Anne feels confident she can handle this. Bring it on!

Anne repeats the central question: 'Have there been *20 years of sustainable development in Europe?* What's *your* answer? Or let's make it easier: what important issues do you remember from my presentation? And how would you see them in the light of this overarching question?'

There's a moment of silence, then a blonde girl who might be Scandinavian speaks up: 'What I found most striking was the outlook you gave on the projected temperature increases. I haven't been aware of how severe the consequences of global warming may be.'

'Yes, that scared me too,' says the Bulgarian boy. 'And what scares me even more is that while we Europeans are doing our "homework" to reduce greenhouse gas emissions, we still can't avoid the effects of global warming in Europe when other countries emit more and more.'



The Indian boy had been quiet for a while, and Anne has been wondering what might be in store from him. She's rather relieved when he joins in. 'I think Anne has made it clear that we need major emission cuts from everybody to limit global warming – and that includes Europe! In my opinion, the EU still has a lot of "homework" to do. And I'm still not convinced that the EU is not simply outsourcing its emissions. Look at the trade figures we've seen. It's no coincidence that rising emissions from China go hand-in-hand with its rising role in global trade.'

The Bulgarian replies: 'We don't know that for sure! It could well be that emissions from China and India are rising because they try to catch up with living standards in industrialised countries… meaning that emissions are driven from within these countries.'

'Do you want to deny the people in these countries the opportunity to raise their living standards?' the Indian guy asks. 'Remember what Anne showed us on her graphs… you come from one of poorest regions in Europe, so you must understand what I'm talking about. Remember that bubble chart we saw in the beginning? Per capita GDP figures in China and India are *much* lower than in the EU! Sustainable development means social justice. So in my opinion these countries have a *right* to raise their living standards! Or do you want to keep them poor so people in the EU and other developed countries can simply go on with their lives without changing their consumption patterns?'

The Scandinavian girl joins in: 'We've seen that the EU is the biggest donor of development assistance around the world, so you can't say that we Europeans *want* to keep the poor countries poor. I think my colleague here wanted to say that these countries don't have to take the same path as the industrialised countries. They don't have to make the same mistakes. We're in the 21st century now, not the 19th when most of Europe industrialised. For example, I'm sure there's a big potential for renewable energy in these countries.

They don't have to rely on fossil fuels like we did.'

'Don't forget emissions caused by trade.' A new face enters the discussion. Anne thinks the dark-haired girl might be from Russia, judging from her accent. 'If I remember correctly, greenhouse gas emissions from international air and maritime transport are growing rapidly, along with global trade. In my opinion, there's much room for progress there. I mean, do you really need to drink mango juice in Europe? There are lots of other fruits in Europe you can make juice from.'

Apple juice, Anne is thinking.

The girl from Russia continues: 'This is just an example. I'm sure there are many other ways we can save on transport emissions.'

The tall African girl raises her voice: 'But don't forget that trade plays an important role in helping developing countries get out of poverty. Apart from the fact that it's not possible for the EU to stop all imports, this would cause major problems in other parts of the world. So trade also has its good sides.'

The Russian girl replies: 'Trade does have its good sides. But it also does have its bad sides. This seems to be a real dilemma.'

Anne feels the urge to enter the discussion now. 'I wouldn't call it a "dilemma". In my opinion, this is one of the many trade-offs we face when dealing with sustainable development. There may be many situations where solving one problem helps solve another one. But we have to admit that there are also a lot of times when an improvement in one situation can make another worse.

'From what I've learned while preparing my presentation, economic growth is such a situation. Thanks to the crisis, we've seen economic "de-growth", which means a contraction of the economy, has brought about an environmental gain in areas such as materials, energy, emissions and so on. These had been getting worse alongside economic growth.

'However, the opposite seems to be the case for many social and economic issues. Indicators such as employment, poverty, public debt and even suicides seem to *improve* along with economic growth, and the recent crisis has led to a worsening of those indicators.

'This is a clear trade-off to me. It seems we need growth to progress towards social sustainability, but we need de-growth to come closer to environmental sustainability. So, it seems we can't have both at the same time, can we?'

The Scandinavian girl seems to have a solution: 'Maybe the concept of "green growth" you presented at the end could help? If I understand it correctly, this could mean it *is* possible to have continued economic growth while the environment is recovering.'

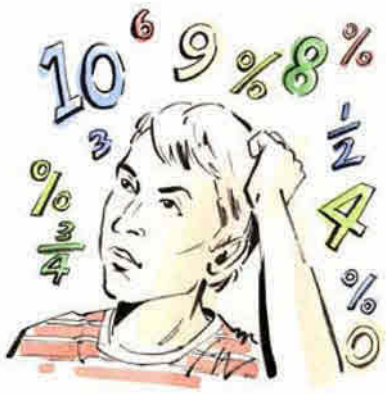
The student from India doesn't seem so sure: 'But that requires actual decoupling. And you need to look at the global level, not at the EU alone.'

He looks at the Bulgarian guy. 'Although my colleague here might say otherwise, developed countries have been outsourcing dirty industries to developing countries, which has helped cut pollutant emissions in developed countries. If you ignore that, you're likely to perceive a decoupling of pollutant emissions from economic growth. But the outsourcing is only relocating the problem.'

The girl from Scandinavia nods in agreement. 'This reminds me of another point I liked in your presentation. You said we're all sitting in the same boat and sustainable development can only be achieved with global collective action. So I'm wondering if we can really decide whether the EU is on a sustainable development path or not. As you pointed out, the EU cannot pursue sustainable development in isolation. So any assessment of progress towards sustainable development must take global trends into account.'

The girl from Africa breaks in. 'I think Anne has pointed out important developments on the global level. But it's hard to find a clear answer to her question. I wouldn't say that the EU is on a sustainable development path yet. But I also wouldn't say that it is not. We've seen so many different aspects and trends, some clearer than others, that it is almost impossible to answer "yes" or "no".'

The boy from Bulgaria speaks up again. 'Also, the crisis has led to dramatic turnarounds for many indicators. These are clearly distorting the picture. So I think we have to wait for more recent data. Then we can see how these indicators develop after the crisis has been overcome – if it is overcome yet.



'That actually brings me to another thing I'd like to mention. I didn't know that statistics can tell us so much. I have to admit I sometimes felt dizzy with so many numbers floating and flowing around in the air like a "statistical fog". But Anne's references to her daily life have helped me see through this "fog", and I think we've seen a much livelier picture than we could have expected. I won't forget that and I'll surely look at these indicators differently in the future.'

The murmur in the audience rises in agreement. Some people start talking among themselves about details Anne told about herself in her presentation. She feels partly embarrassed – and partly elated.

Above the rising noise level, the Indian guy replies: 'I agree that Anne has done a great job. But as you may have noticed, she didn't only throw numbers at us. Statistics alone are not enough. You also need to know *why* things are changing and understand the background. So it's also important to do research in order to analyse particular trends.'

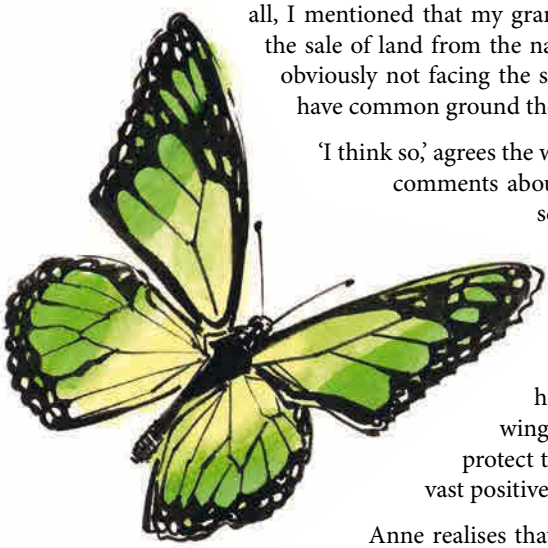
A woman with long dark hair starts to speak. But with all the loud discussion she's having a hard time getting a word in. 'There's someone over there trying to say something,' Anne intervenes on the mic. 'Shall we let her into the conversation?'

The woman stands up. 'Thanks. I come from Brazil, the country where the Rio+20 conference will be held. While I'm very excited to be in the host country, I'd like to bring up some issues we face in Brazil and something that still needs to be addressed. Alongside the official Rio conference there will also be more informal gatherings of groups who work at the grassroots on issues relating to land reform and access to essential resources for the world's poorest. And this kind of activism has a powerful history in Brazil. While

you've talked about poverty and exclusion, somehow the initiative of people who are most affected has been left out. I can't help but think there's been a very top-down orientation to this discussion.'

Anne feels that old defensiveness rising. Then she stops to think. Doesn't the Rio+20 website invite everyone to join 'the global conversation' and moot the presence of community activists, women's groups, indigenous peoples organisations, trade unions and youth movements ([1])? And where have these groups been in today's discussion?

'You're right,' Anne tells the Brazilian woman. 'When we spend a lot of time examining issues at a governmental level, it's easy to overlook the activity of citizens in "civil society" and treat people as passive statistics. And I should've known better. After all, I mentioned that my grandfather had been in a group campaigning against the sale of land from the national park – and this campaign *won*. While we're obviously not facing the same situation you have in Brazil, do you think we have common ground there?'



'I think so,' agrees the woman. 'And may I say something else? I found your comments about the *butterfly effect* very interesting. I read about science and enjoy science fiction; in Brazil we have a rich tradition of speculative fiction. So I'm also familiar with the idea. Now, you talk about the butterfly flapping its wings and setting off a chain of events that culminate in a hurricane. This is the theory of chaos, of cataclysm. But can't it happen the other way around? The butterfly flaps its wings – or ordinary people take a small step together to protect the environment and their land – and this results in vast positive changes on a global scale.'

Anne realises that she must have been holding her breath while the Brazilian woman spoke about a reverse butterfly effect. Now Anne exhales. 'On that note, I think we can finish the discussion. Or closer to the truth, we'll take a break and continue talking at the party tonight…' Anne adds.

'No way,' says the Indian guy. 'You haven't finished telling us about the rest of your day.'

'Oh *that*,' Anne laughs. 'I went home, ate supper and started to write up my account of the day's excursion. It was getting late. I looked at the paper and saw a listing for a TV programme about the Rio+20 conference. Of course, I had to watch it. So I stretched out on the sofa and switched it on. Then my dad came in and reminded me I had to take out the recycling. That's my regular chore, you see. Of course, he needled me a bit about it, given my new-found fervour about the environment.

'So, out I went with the box of recycling and a good bag of it too. We have a long drive, so it's a bit of a trek if you've just been settling down on the sofa. When I got to the top of the drive, I sat on a rock and looked at the moon, which was almost full. Only an occasional car went by. Though the motorway isn't far from my house, I couldn't hear

([1]) See http://www.un.org/en/sustainablefuture/conversation.shtml.

it. In the distance the tower blocks of the poorer suburbs rose up, but even they looked pleasing in the moonlight.

'I looked at the moon, which reminded me of the dream when I looked at the Earth in space. I remembered the fresh scent of the air that came into the space ship. It reminded me that I shouldn't have to go on a space ship or even leave the city like Grandpa Rob to know what clean air smells like. It should be there for everyone.

'"Hey Anne!" My next-door neighbour and good friend Marta was taking out her own recycling. I waved back at her. As I watched her return to her house, I decided to visit her soon and ask for advice on my presentation. She's a journalist who specialises in environmental issues, so she might have some good ideas.

'And at this point, I have to tell you all that Marta did give me inspiring advice on this presentation and I owe a lot to her. So let's hear it for Marta!'

As the applause for Marta dies down, Anne finally gathers her things together and leaves the podium to join her friends. Her presentation has finally come to an end.

But this discussion isn't finished, is it?

Abbreviations and acronyms

Geographical aggregates and countries

EU-27 The 27 Member States of the European Union from 1 January 2007 (BE, BG, CZ, DK, DE, EE, IE, EL, ES, FR, IT, CY, LV, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI, SE, UK)

EU-15 The 15 Member States of the European Union from 1 January 1995 to 30 April 2004 (BE, DK, DE, IE, EL, ES, FR, IT, LU, NL, AT, PT, FI, SE, UK)

Note that EU aggregates are back-calculated when enough information is available – for example, data relating to the EU-27 aggregate is presented when possible for periods before Bulgaria and Romania joined the EU in 2007 and the accession of ten new Member States in 2004, as if all 27 Member States had always been members of the EU. The label is changed if the data refer to another aggregate (EU-15).

European Union Member States

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy

CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom

European Free Trade Association (EFTA)

IS	Iceland ([1])
LI	Liechtenstein
NO	Norway
CH	Switzerland

EU acceding state/candidate countries

ME	Montenegro
HR	Croatia ([2])
MK	The Former Yugoslav Republic of Macedonia ([3])
RS	Serbia
TR	Turkey

1 Note that Iceland is also an EU candidate country.
2 Croatia will join the EU on 1.7.2013 and will then be moved to the EU Member States list.
3 The name of the former Yugoslav Republic of Macedonia is shown in tables as "FYR of Macedonia". This does not prejudge in any way the definitive nomenclature for this country, which is to be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.

Abbreviations

CBD	Convention on Biological Diversity
CHP	Combined heat and power
CO_2	Carbon dioxide
DAC	OECD Development Assistance Committee
DMC	Domestic material consumption
EEA	European Environment Agency
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
GHG	Greenhouse gas emissions
GNI	Gross national income
IEA	International Energy Agency
LDC	Least-developed countries
LULUCF	Land use, land-use change, and forestry
NMVOCs	Non-methane volatile organic compounds
NO_x	Nitrogen oxides
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PM	Particulate matter
Ppm	Parts per million
SDI	Sustainable Development Indicators
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
US	United States
WHO	World Health Organisation
WMO	World Meteorological Organization

European Commission

Figures for the future — 20 years of sustainable development in Europe? — A guide for citizens

Luxembourg: Publications Office of the European Union

2012 — 155 pp. — 17.6 x 25 cm

Theme: General and regional statistics
Collection: Statistical books

ISBN 978-92-79-23873-4
doi:10.2785/28488
Cat. No KS-32-12-152-EN-C

HOW TO OBTAIN EU PUBLICATIONS

Free publications:

- via EU Bookshop (http://bookshop.europa.eu);
- at the European Union's representations or delegations. You can obtain their contact details on the Internet (http://ec.europa.eu) or by sending a fax to +352 2929-42758.

Priced publications:

- via EU Bookshop (http://bookshop.europa.eu).

Priced subscriptions (e.g. annual series of the *Official Journal of the European Union* and reports of cases before the Court of Justice of the European Union):

- via one of the sales agents of the Publications Office of the European Union (http://publications.europa.eu/others/agents/index_en.htm).

Figures for the future

20 years of sustainable development in Europe?

A guide for citizens

'Sustainable development is such an abstract concept! How can I make an interesting presentation about it?' Anne has the task of informing fellow students from around the world about whether the EU has moved towards sustainable development over the past 20 years. She turns to the EU set of Sustainable Development Indicators (SDIs) provided by Eurostat, trying to give sense and meaning to a multitude of data.

'Figures for the future' is a statistical guide to the EU SDIs and the trends they show. It communicates statistical figures as seen through the eyes of fictional 17-year-old student Anne. Anne aims to find answers to many questions that relate to our everyday life and our future. How has our climate really changed? How is this related to energy use and transport? What does it mean to be poor in Europe? Do we hear as many birds singing as before? How is the financial crisis affecting jobs? Has life improved for Europeans over the past 20 years?

These and many other questions are answered while Anne is giving her presentation at a Model UN conference. She illustrates statistics by linking the topics to an important day in her life. Students from around the world add their points of view to the European perspective.

http://ec.europa.eu/eurostat

KS-32-12-152-EN-C

Publications Office

ISBN 978-92-79-23873-4