United Nations
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Cultural Organization

United Nations Decade of Education for Sustainable Development (2005-2014)

Draft

ESD media training and resource kit

Prepared for UNESCO
by the Thomson Foundation

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UNESCO's ED and CI sectors, since the joint media workshop done with UNESCO Bangkok in Bangkok in December 2005, have been working with Thomson Foundation (Cardiff, UK) www.thomsonfoundation.org on developing an ESD media training and resource kit for media professionals.

The final version of the kit will contain:

(i) a handbook with guidelines for journalists to enable them to write and broadcast in a way which will enable readers/viewers/listeners to understand SD; exemplars of good writing/TV and radio coverage of SD and ESD topics; a glossary of terms; modules that include development reporting, news writing, interviewing, case study reporting, and feature writing, which will enable journalism trainers to deliver SD/ESD skills sessions to print, broadcast and multi-media journalists.

(ii) a resource kit that contains: - lecture notes, examples of articles, news stories and broadcast coverage; exercises and tasks; outline course programme; briefing notes; DVD/CD containing good media practices reporting education for sustainable development from around the world.

This draft text is being be tested in workshops or other situations with journalists and media people. Initial contacts with field colleagues and outside partners have yielded positive responses for trying out the draft kit:

- Jordan (with/through our UNESCO Amman office),
- Caribbean (with/through our UNESCO Kingston office)
- Kenya (with/through our UNESCO Nairobi office),
- Malaysia (through AZAM (NGO in Sarawak), Ms Zabariah Matali its General Manager is a member of the DESD reference group

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Introduction

However you do the arithmetic, the world as it is cannot go on indefinitely. Sooner or later, something will have to give. If you have money in a bank account, or water in a well, you cannot afford to empty it, because if you do, there will be nothing left when you need it. So you make sure that what you take out is less than what goes in. But the human race is now doing the opposite - consuming the Earth's resources faster than they can be replaced.

One of the biggest stories today for any journalist to cover is the way humans are taking out more than they are putting in. In all sorts of ways, the human population is now pushing up against the limits of the natural world. It is a story that is familiar to scientists. Many of them say their research shows the limits are getting close, sometimes dangerously so. Whatever other differences they may have, they agree that the way humans are using the Earth is not sustainable. But not many people who rely on newspapers, radio, television or the internet for their information realise yet how near the world has come to emptying its account. It is a story that is still largely untold.

This handbook is designed to be a practical guide to journalists for understanding and reporting why (or whether) humanity needs to change to a quite different way of life, called sustainable development. It is a difficult phrase, because it sometimes seems to mean so many things that it ends up meaning nothing at all. It is certainly a very quick way to make an editor's eyes glaze over with boredom. So here is one working definition of sustainable development, from Rob Gray, co-author of *Accounting for the Environment,* which may be helpful - he calls it "treating the world as if we intended to stay".

One advantage for any journalist trying to report on sustainable development is that it covers so much of everyone's lives. It is about water and food, shelter and energy. It is about how rich people may hope to become, the prospects for their health, and the sort of world their children and grandchildren will inherit. And it is about how to get the world's leaders to agree what needs to be done, and then to do it. So it is a story for specialists of all descriptions - science journalists, economists, health and diplomatic correspondents, environment writers, and many others.

But another point that will help journalists is that sustainable development is something you can cover without much detailed specialist knowledge. It is not essential to have a science degree to report accurately what scientists are saying and doing. You do not need an environmental qualification to tell your audience what is happening to the world. What you do need, in every case, is the classic skills of the journalist: curiosity, persistence and humanity. You need a nose for a story, the determination to report it accurately and comprehensively, and the ability to make it interesting and relevant to your audience. So the sustainable development beat is one for the general reporter just as much as the specialist. Journalism, at its simplest, is about helping people to understand their world better. Both the expert and the generalist can help to make that happen, and the handbook is designed to be useful to both groups. To make it easier to find what you are looking for, it is split into two parts.

Part One reports on some of the main areas where humanity is pressing very close against the limits of what is sustainable. It examines the impact of several key problems caused (or at least worsened) by humans. The overview is divided into separate but linked chapters:

Part Two of the handbook puts the idea of sustainable development in a wider context: it asks some of the questions that any self-respecting sceptic would want answering.

Chapter 9 looks at the reasons why modern societies are unsustainable, at the political, industrial and personal decisions which together spell trouble ahead.

Chapter 10 details a number of case studies, glimpses of places and situations where people are working out what a sustainable way of life may mean for them. The CD which comes with the handbook provides further material to illustrate the chapter.

In Chapter 11 you have a chance to hear some of the sceptics, the people who say there's really very little to worry about and the answer is business-as-usual. We stand back and ask what sustainable development amounts to: sustainability of what, and for whom? Is the search for sustainable development compatible with the search for a more just and equitable world? Are the sceptics right in arguing that sustainability is a myth?

The urgency of the scientists' warnings is the theme of Chapter 12. Many of them say the world is approaching a number of what they call tipping points, crises beyond which there will be no turning back and change will be irreversible. Are they right?

However good you are as a reporter, you might as well not bother if you cannot persuade your editors to run your stories. So Chapter 13 is about sustainable salesmanship, offering hints and tips on how to stop editors yawning when they hear the word sustainability and on making the idea positively attractive to them, and to your readers.

Finally, Chapter 14 looks into the future to try to make out what the Sustainability Revolution might look like. What would a sustainable future mean for each of us, what would we have to give up to get there, and what might we gain?

A few words of warning. First, you can find almost anything on the web, and some of what you find will be incomplete, misleading or simply wrong. If you search long enough you are certain to unearth a scientist who says what you need to back up your story. So it is worth remembering two things. One: when you are using the web, check what you find there just as rigorously as you check any other source. And two: the way you cover sustainable development is exactly the same as the way you cover any other story - you report the facts as straightforwardly as you can, and you do not try to persuade your audience that one or other view is right. If journalists can help their audiences to understand the world better, they have done their job. Campaigning is best left to campaigners.

Sustainable development can be quite a technical subject. Sometimes there is no way of explaining it without using scientific ideas and language. If you do, your audience will expect you to provide a clear translation, so they can understand what you are saying.

And sustainable development is a fiercely-argued subject as well. There are people involved in the debate who would be delighted if you accepted their arguments and opinions without challenge or scrutiny and presented them uncritically as facts. Scepticism is the air every journalist breathes - and journalists reporting on this subject need to go on taking very deep breaths all the time.

Chapter 1: Climate Change - Storm Warning

Climate change is a story that has come into its own. Ten years ago, perhaps even five, it was very hard to interest editors in it. Now, increasingly, it is one of those stories journalists do not have to push to get space for: the problem rather is satisfying the demand.

There are several reasons for this. One is that the science which says the Earth's climate is warming is becoming much more certain. Another is that it is a story with clear political implications. When you have Arnold Schwarzenegger – disagreeing profoundly with his fellow Republican, President George Bush, you have all the makings of a good story. A third reason is that it is seen now by many people as something which is going to affect everyone on Earth in one way or another. And in many countries that means there is growing public pressure for action to limit the impacts of climate change - and not always a very clear idea of what that will mean.

Most journalists writing about climate change will need at least a rough knowledge of the science involved, because that is what most readers want: something to guide them through the confusions and the complexities and even the sheer contradictions of what the scientists are saying. Not only is the science getting (mainly) much clearer and surer: it's changing very fast. Every week sees a new discovery announced in the pages of specialist journals like *Science* and *Nature,* or more popular titles like *New Scientist* and the serious newspapers. Radio and television sometimes break climate news, and almost always report scoops that their print colleagues have made. And there is a huge range of websites covering climate change from one angle or another - and as usual with what's available on the web, journalists need to know what they can trust and what they should treat with even more than their usual scepticism.

A journalist with a basic science background should not have much difficulty in understanding what the climatologists are saying. But journalists without that grounding need not be put off: you can quickly learn enough about the issues whatever your knowledge, so long as you retain the curiosity and scepticism (again) that need to mark everything you write. In fact too much detailed knowledge of science (or anything else) can be a problem for journalists: we need to know just enough to be able to make sense for our readers of what the experts are saying, but not so much that we confuse them with an excess of detail.

How serious is climate change already? How bad could it be? When will we know? The answers to questions like these depend very much on who you ask. To help you, and your readers, first of all decide who you can trust, then follow what they report closely, because it is liable to change very quickly. To make sure you're not missing anything essential, keep a regular eye on sources that may offer a different perspective, or additional information. If you can report the science comprehensively and clearly, you will be giving your readers a chance to make up their own minds.

**** Information point:***

- The UK's Energy Saving Trust has an interactive guide to the science of climate change at http://tinyurl.com/yeq5vb
- A more technical description is at http://tinyurl.com/ylla8r
- Two detailed and constantly updated sites are the London *Guardian's* http://tinyurl.com/yklgxu and *New Scientist* magazine's http://tinyurl.com/ya8l6a
- The UN Environment Programme's http://tinyurl.com/ynhacp has some helpful pointers towards regional impacts of climate change

**** Action point:***

- What will the probable impacts of climate change be for your country? Will they all be negative, or might you gain something?
- Write a brief, reader-friendly guide to climate change: what it is, what it will mean nationally, what people can do to prepare for it.
- Write a leader addressed to your government on the climate policies it needs to adopt.

But there is a constant chorus of voices saying that climate change is not a story at all, or certainly not in the way it is usually reported. These are the voices of the climate sceptics. Some argue that the atmosphere is not warming enough for us to worry about. Others agree that the changes are occurring, but say the causes are entirely natural, with nothing that humans are doing making any difference at all. They maintain that the changes are within the limits of natural variation - the amount of heat reaching the Earth from the Sun, for example. Another group says nothing that humans can do will have any effect in slowing the warming of the atmosphere. And there are some who say the whole idea of climate change is hugely exaggerated by scientists who simply want to keep their research funds flowing.

The sceptics' views deserve reporting. Although they are a scientific minority, they have a case that deserves to be heard. And science makes progress, not through consensus, but by testing ideas until they are proven right. What happens sometimes is that the sceptics are given as much space or airtime as the majority, to provide "balanced" coverage. The sceptics' numbers, and their evidence, are not so great that journalists should try to be even-handed: that would involve us in injecting an artificial balance into an unbalanced reality.

**** Information point:***

- One example of sceptical thinking is the Scientific Alliance, http://tinyurl.com/v8u4f
- Another is Tech Central Station: http://tinyurl.com/3gh9w
- Some stories positively invite everyone to be sceptical about climate change: see for a taster http://tinyurl.com/vjs73

**** Action point:***

- Your news editor says the paper's climate coverage is too one-sided, and so you must reflect the sceptics fairly. What do you reply?
- Do you tell your readers to beware of some of the sceptics' arguments, or just leave it to them to make up their own minds?
- How would you write the story of the ocean cooling? Would you write it at all?

To help you to report climate change as comprehensively as possible, there are several guides through the mass of detail that will assail you from every side. First, there is a sort of official consensus on climate, represented by the Intergovernmental Panel on Climate Change (IPCC), which speaks for the governments of the world. Every few years it brings out another report: the most recent one, in 2007, says global average temperatures are likely to rise by between 1.8 and 4 degrees Celsius by 2100. It may not sound very much - but the difference between now and the last Ice Age is around 4-5C.

The IPCC's 2007 report says more clearly than any of its three previous ones that humans are at least partly responsible for the problem - that we are intensifying the climate's natural variability. The IPCC is at least 90% certain that human activities are causing some of the warming. But just as journalists need to recognise the sceptics' arguments, we need too to report the scientists who think the IPCC may be understating the real scale of the problem. It is a cautious, judicious group, and it says

only what the governments who belong to it will accept. It is a very useful benchmark for climate science, it's unlikely to be wrong, but it may not be completely right. An IPCC report is seldom the last word on climate.

**** Information point:***

- The IPCC's home page, a fairly technical one, is at http://tinyurl.com/y4477y
- A more accessible approach is from the UN Environment Programme's centre at Arendal in Norway: http://tinyurl.com/y8zq5u
- GRID-Arendal also provides a climate news portal, http://tinyurl.com/tktax

**** Action point:***

- Find out if any of your country's scientists were involved in writing the IPCC's 2007 report, and ask them whether they think it is cautious or frank
- Use the report to write a series of pieces alerting your readers to the probable impact of climate change for your country (other chapters coming out in 2007 cover the probable impacts of climate change, options for adapting to them, and possible ways of reducing greenhouse gas emissions)
- Ask your national environment NGOs how helpful they find the report.

Something else to bear in mind is a key part of the science: changes can take many years to show up, and they can last for a very long time. The world's oceans and its atmosphere are one linked system. The oceans are warming up more slowly than the atmosphere, and once they have warmed (the signs are that they will continue to warm, despite the recent blip) they will take many centuries to cool again. Many of the greenhouse gases which are causing the warming stay in the atmosphere for years: carbon dioxide, for instance, will stay there for a century, so even if the world stopped emitting it tomorrow - which it won't - the atmosphere would go on warming for a long time ahead. What this means is that decisions we take today will have effects far into the future. Some scientists believe the climate is very close to what they call a tipping point, a moment when actions (or failure to act) will inevitably cause disaster ahead - for example, letting the global average temperature rise enough to start melting the Greenland ice cap, which once started would not stop. Jim Hansen, the director of NASA's Goddard Institute for Space Studies, thinks that could happen within the next ten years, unless we make radical changes to the way we live.

Many people have thought climate change will mean a gradual warming that happens evenly all round the planet. But there are increasing signs that some parts will warm much faster than others, and that other regions may actually get colder. There is growing evidence that it is all happening much faster than anyone thought possible a few years ago. Partly this is because of what scientists call 'positive feedbacks' - a process where the warming fuels itself, so the more temperatures increase, the more likelihood there is they will increase still more. When ice and snow melt, for instance, they leave earth, rock and water exposed - dark surfaces which absorb the Sun's heat instead of radiating it back out into space, as ice does.

Readers will thank you if you can make sense of the science for them in terms they can easily understand. They will also be grateful if you can filter out exaggerated claims. And they will look to you to put the sceptics' arguments in context without giving their presentation of the science a prominence it does not deserve.

**** Information point:***

- See why Jim Hansen is worried: http://tinyurl.com/y4qpvy

**** Action point:***

- How do you reply to a reader who writes to the editor demanding you should be dismissed for scaremongering when you have simply reported the views of scientists like Jim Hansen?
- Write a feature which explains the urgency of confronting climate change without frightening your readers so much that they despair.
- Your paper is producing a supplement on the world in 2020 for secondary schools. Write a 500-word piece for it on climate change.

But what most people confronted with the prospect of climate change want to know is: what can anyone do to prevent it? Preventing or more likely reducing the impacts of a warmer world is one of the strategies governments are pursuing, with more or less commitment. It is called mitigation, the attempt to limit the effects of the build-up of greenhouse gases. So a key part of your job is to tell your readers what is possible, scientifically and politically, and what is actually being done - and sometimes there are big differences between the two.

The other way governments are preparing for the inevitable is called adaptation - accepting that climate change is happening and will gather pace, and trying to change their economies and societies so that they will have a chance of riding out the enormous upheavals that are coming. Most governments accept that both mitigation and adaptation are vital. Both strategies will mean radical changes in the lives of your readers. Telling them what lies ahead will help them to come to terms with an uncertain future.

**** Information point:***

- The world's first attempt at mitigation is the Kyoto Protocol. For the text, see http://tinyurl.com/69u36. For a Q&A, see http://tinyurl.com/y8lwga
- The US Environmental Protection Agency has a site, http://tinyurl.com/owkal, on how individuals can reduce their global warming impact
- The University of Oxford's Environmental Change Unit explains how a personal carbon allowance scheme might work at http://tinyurl.com/u9adq

**** Action point:***

- Write a readers' guide to the inadequacies of the Kyoto Protocol (it will reduce greenhouse gases by about 5% if it is fully implemented) and the need for a much more far-reaching agreement to replace it.
- Tell your readers what they can do to reduce their own emissions of greenhouse gases.
- Write an op-ed on the Global Commons Institute's proposal for 'contraction and convergence' - allowing everyone in the world an equal, tradeable right to pollute the atmosphere with greenhouse gases.

Chapter 2: Energy - running on empty

Energy is part of almost every story any journalist will ever write, because without energy nothing happens. So it is a story with a huge number of angles, offering opportunities to all sorts of specialists and to general news reporters as well. The headline is that there isn't enough energy, and what there is is the wrong sort.

Not enough energy? For industrialised societies the only way to keep the wheels turning is to use fossil fuels, and they're getting scarce. It does depend on who you talk to, of course. But the only really abundant fuel appears to be **coal,** with worldwide reserves likely to last for more than 150 years. **Oil** could be scarce quite soon: some experts think production will very soon reach its peak, if it hasn't already, and that it will soon start to decline. **Gas** is likely to last longer, but not very much; by the middle of this century production could have peaked in the same way as oil. **Nuclear power** is part of the answer in some countries - in France, for instance, it provides about 70% of the country's electricity. But there is still huge fear of it in parts of the world, because of the possibility of accidents and the impossibility - so far - of getting rid of nuclear waste safely and easily. Countries blessed by Nature - Norway, parts of Africa - or prepared to build large dams can use their rivers to generate **hydropower,** but globally there is little prospect of increasing its potential significantly. And for billions of people living outside the industrialised world, none of these options is available. They have to rely on wood, charcoal, farm waste or dung - organic fuels known collectively as **biomass** - for all their household needs, and on animals for transport.

**** Information point:***

- For energy basics, a good starting point is the International Energy Agency, http://tinyurl.com/ykjw6a
- For a look into the future, try "Where do current energy trends lead?", http://tinyurl.com/yelxos, a fact sheet from the *World Energy Outlook 2005*. If you follow the link on the web page you can see the latest version, with its forecasts for several decades ahead
- The World Coal Institute (http://tinyurl.com/yn6mlf) gives estimates of reserves left in the ground
- Go to the Association for the Study of Peak Oil and Gas to see when it thinks world oil production will peak (http://tinyurl.com/5m9gk)

**** Action point:***

- If you are a defence specialist, report what military analysts will tell you about your government's plans to ensure a continued supply of energy.
- Business journalists: write up the comparative costs of the fuels your country uses, and how it could save money
- Science/technology/environment correspondents can report on the ideal energy mix for their country

What makes the energy equation even harder to solve is the increasing demand for fuel. People who burn biomass want clean gas or electricity instead. People who already have supplies of fossil fuels want more, so they can have central heating, or air conditioning, or a bigger car. Countries which have already industrialised and those in the process of doing so will all be trying to grab a bigger share of the energy available. By 2030 world energy use is likely to have increased by more than 50% (experts always qualify forecasts like this by saying they will come true "on present trends". But

short of a massive war or epidemic which cuts human numbers ruthlessly, it is quite hard to see why present trends will not continue.) So when oil or gas production does peak, there will be a crisis not far ahead, as a dwindling supply has to meet a growing demand.

When that crisis comes, industrialised countries will face a massive and sudden change, unless they have found new forms of energy. It won't just be heating and lighting that run short. Oil drives about 90% of the world's transport. It's the basic material for many everyday staples like plastics, and it's used for pharmaceuticals. Without oil agriculture would screech to a halt. So a world deprived of oil would be a cold, dark, sick and hungry planet.

**** Information point:***

- See how China's thirst for oil is growing at http://tinyurl.com/3mc2b
- And India is not far behind: http://tinyurl.com/ybmf43

**** Action point:***

- Find out which of your country's main industries have made plans for the post-oil era.
- Tell your audience about the balance between public and private transport: how many people rely on each, how much fuel each consumes.
- Do a reader survey of energy use: how much they use now, how much more they want over the next 20 years, whether they think they could cut their use.
- Spend a day with a group of farmers and find out how they would be affected.
- Research the number of medicines commonly used in your country that depend on oil in their manufacture.

Perhaps the crisis won't come. Perhaps the huge energy multinationals will find plentiful new supplies of oil and gas. That is the view of the optimists: that market forces will come to the rescue. Some economists argue that the market will always work to find new supplies of a scarce resource. They believe that as conventional oilfields are exhausted the geologists will find ways to exploit some hard-to-get-at deposits, like deep-water reserves, tar sands and shales, and bitumen.

**** Information point:***

- For an idea of some unconventional oil sources see http://tinyurl.com/ul8dg

**** Action point:***

- Research the facts behind the oil forecasts: how many significant new oilfields have been found in the last 30 years; how much would it cost to extract oil and gas from unconventional sources; how practical does the industry think it will be to exploit them?

But here's the real Catch-22. If the world manages to avoid the crisis of vanishing fuel supplies it will simply worsen another crisis which looks likely to be even worse - climate change. The greenhouse gases that are already warming the atmosphere to dangerous levels come mainly from the burning of fossil fuels (the section on Climate Change has more on this). A world with enough fossil fuels to meet its energy needs 20 or 30 years from now will not be able to afford to burn them - or not in the way it does today, anyway.

If you burn fossil fuels in different ways you can cut out a lot of the pollution. There is also a way of extracting carbon dioxide from the smoke that pours out of factories and power stations, converting it into a liquid, and piping it into old oil and gas wells. There it should remain for centuries or longer without polluting at all.

**** Information point:***

- For a quick reminder about climate change, try http://tinyurl.com/bt9oo
- On the clean combustion of coal, see http://tinyurl.com/y2tggo
- See http://tinyurl.com/y7w925 on removing carbon dioxide from smoke ("carbon sequestration")

**** Action point:***

- Explain the energy dilemma to your readers. Not many people realise how close the crisis is.
- Tell them how far technology can help to clean up emissions - and how much it will cost.

Environmental campaigners say there is a way out of the energy fix - renewable energy. If you can rely on solar or wind power you will have a source of energy that causes no pollution and will never run out. That will almost certainly be possible in time - but not yet, many scientists say. They believe the technology of producing enough renewable energy, reliably enough for it to replace fossil fuels, is still some way ahead.

If there is not enough energy we could simply use less of it. And using less is one way to make sure that the supplies there are will last as long as possible and work as hard as possible. There is a vast number of ways to save energy: switching TVs and computers and other appliances off when they are no longer in use, rather than leaving them on standby, and walking or cycling short distances instead of using a car are just two examples. Combined heat and power schemes are one example of getting energy to work twice over.

**** Information point:***

- Practical Action offers a guide to some forms of renewable energy at http://tinyurl.com/y96dxr
- And the Centre for Alternative Technology has much more at http://tinyurl.com/u2zzk

**** Action point:***

- Offer readers a feature on renewable energy, including micro-generation schemes designed for households, like mini-wind turbines or solar panels
- Get an energy expert to do an audit of the amount of energy your house uses and how much you could save - and publish the results.

Very often in the energy debate you come across stark contradictions, and all a journalist can do is report them: if there is an answer, we are unlikely to know what it is. In 2006 a group of British researchers came up with a startling conclusion. Based at the Tyndall Centre for Climate Change Research at the University of East Anglia, they published a report entitled *Climate Change on the Millennial Timescale*. It said the world could safely afford to burn only about a quarter of known fossil fuels. Yet the International Energy Agency believes fossil fuels will continue to dominate the energy market, accounting for 85% of new demand. The two conclusions sound as if they cancel each other out.

Sustainable energy is beyond the world's reach at the moment. Even the present level of fossil fuel use is unsustainable if you look at the costs it imposes: deforestation, air and water pollution, acid rain, the destruction of people's traditional way of life. There is the damage it causes to health and the numbers of people it kills (an average of 12 coalminers die at work in China every day).

There is no sign on the horizon of a magic bullet that will solve the energy crisis when it breaks on the world (hydrogen and nuclear fusion could provide answers but

are unlikely to be available in time). Most experts say the only way to cope will be to use every possible answer: fossil fuels (cleaned up as far as possible), nuclear power, renewables, and energy saving. The one possibility that few people are discussing is that the world should use less energy. For that to happen, the people who use most would have to make big cuts in non-essentials, so that those who use least could meet their basic needs. It sounds fanciful. But the unsustainable futures in prospect both sound horrific.

**** Information point:***

- A site which combines both simple and more technical information on acid rain is http://tinyurl.com/d7khn
- Survival International has information at http://tinyurl.com/t2oan on what the search for energy can do to indigenous peoples
- For one view of the dispute between the Ogoni people of Nigeria and the oil company Shell, see http://tinyurl.com/w4y7c
- Contraction and Convergence is a plan for sharing the right to emit greenhouse gases at a level the atmosphere can cope with, while making sure everyone in the world can meet their basic needs: http://tinyurl.com/wxcsg

Chapter 3: Pollution - the poisoned planet

The reality of pollution and waste is unattractive, but as a story it has a lot going for it. It's all around us, it's often getting worse, it takes many forms, and it can be a real health threat. And - cleaning it up can be a money-spinner. So it's a story with plenty of angles.

Air pollution is a killer: three million people a year die because of outdoor pollution, says the World Health Organisation, and about 1.6 million are killed by smoky stoves in their own homes. There's even evidence that poor air can damage the lungs of children before they're born. Normally healthy people may not notice what polluted air is doing to them (though in Europe every year 310,000 people die earlier than they normally would. It cuts 8.6 months off the life of the average European.) But for someone with lung disease, or heart problems, poor air can be enough to push them over the edge.

Europe is not alone. Satellite measurements of one polluting gas, nitrogen dioxide, over China in 2005 showed concentrations had increased by 50% in ten years, and the rate of increase was speeding up. And anyone who knows the streets of cities like Dhaka or Lagos knows how foul the air can be.

It's easy to complain about air quality but much harder to do much to clear it up, because the pollutants are part of modern life. Cars and trucks, power stations and factories and even domestic fires all contribute. Farming can be a source. Diesel engines are a particular problem, especially if they're not well maintained. They produce tiny particles of soot, fumes and unburnt fuel which can penetrate deep into the lungs and cause cancer. And with indoor air pollution there are no quick answers, because people have to burn something to keep warm and cook their food. Without gas or electricity they burn wood, charcoal, farm waste or dung (biomass, to give it its proper name), or often coal. There are solutions, but they cost money.

**** Information point:***

- WHO has an indoor air pollution database at http://tinyurl.com/y9wthx, useful for basic facts
- Practical Action, a UK-based charity, has produced a report, *Smoke - the killer in the kitchen,* http://tinyurl.com/ygdecw, detailing the effects on women and children in particular
- The National Society for Clean Air has some useful general information on air pollution at http://tinyurl.com/ymazlg, although it concentrates on UK and European policy
- For a global perspective, see the GEO Year Book 2006, an annual publication by the UN Environment Programme, at http://tinyurl.com/yej8ew
- And for particulates, try http://tinyurl.com/y2t3ba.

**** Action point:***

- A story approach that often works is to find out hospital admissions for heart and lung problems and compare them with increases in traffic. It may surprise readers.
- You could list the sources of pollution and the cost of cleaning them up, and compare that with other environmental priorities. What policy gives the greatest benefit to most people?
- How much of your air pollution is home-grown, and how much drifts across your frontiers from your neighbours? How much do you pollute them? And who pays?

- It will probably startle many of your readers if you simply tell them what air pollution does to the human body - and how it is almost certainly shortening their lives. Telling the story is what readers look to us for.
- Talk to people who cause air pollution (taxi drivers, farmers, power station workers) and who suffer its effects (spend an hour in a smoky home burning biomass). First-person accounts usually bring stories to life.

Water pollution is another wholesale killer. More than two million people die every year from diarrhoea and similar diseases spread in water. In fact four out of every five illnesses and deaths in the developing world are caused by waterborne diseases. The global total killed by poor water -- more than five million people a year - is 10 times the number killed in wars around the world. Often the reason why they have to rely on polluted water is because they have no sanitation: the river they use to drink from is someone else's toilet. Then there is the damage caused by discharges from factories and farms: when rain runs off farmland into rivers and lakes it may well be carrying fertilisers and pesticides that have washed off the plants and the soil.

In 2000 the number of people without safe water was 1.2 billion - one person in every five worldwide. And twice as many still have no proper sanitation. The World Commission on Water has estimated that an extra $100bn a year would be needed to tackle water scarcity worldwide. By comparison, the Stockholm International Peace Research Institute in 2003 put global military expenditure and the arms trade at over $950 billion. And in 2005 the world spent nearly half as much on bottled water as the cost of ensuring a global safe supply.

**** Information point:***

- A basic guide to water pollution, its causes and effects, is available from WWF at http://tinyurl.com/tbu3f
- The *New Internationalist* magazine also has some useful information at http://tinyurl.com/utw4p
- The problem affects the oceans too: try http://tinyurl.com/y39pms to see how
- If you think bottled water is the answer, http://tinyurl.com/y4rro5 may sow some doubts in your mind.

**** Action point:***

- How many children in your country die before reaching their fifth birthday? Most of them will probably have had to drink polluted water and had no sanitation.
- What does your government spend on treating people suffering from waterborne diseases? How many years' expenditure would it take to provide everyone with clean water?
- What is your country's annual military expenditure? How much would it take to provide sanitation for all?
- What laws have been passed to protect water quality? How are they enforced?
- How much bottled water is imported annually into your country? Who buys it?

Chemical pollution is different from the risks in poor air and water, because nobody really knows how much of a problem it is. Apart from the obvious examples when people have been poisoned by chemicals, as they were in the Bhopal and Seveso disasters, all science can say is that some chemicals are certainly damaging wildlife, and it seems quite possible that they are a risk to humans as well. They can build up over time in the body, and they can move up the food chain - so contaminated fish can affect birds, and they can damage humans, which is why the WHO says humans may "be conducting a large-scale experiment with children's health" (children are at particular risk because they are still developing). There is clear evidence linking

one group of man-made chemicals to changes in the genitals of animals like polar bears. The chemicals, called endocrine disruptors, interfere with glands and hormones - and may be doing the same to humans.

One of the worrying aspects of chemicals like these is the way they spread far and wide. There is virtually no industry in the high Arctic. But the chemicals are there all the same, carried north by winds and ocean currents. National frontiers do not protect anyone against pollution.

The chemical industry says its products are safe. But campaigners are not so sure. There are about 70,000 chemicals on sale worldwide, with around 1,500 new ones coming onto the market annually. At least 30,000 of them are thought never to have been tested for their potential risk to people. And the number of chemicals tested for their combined effects is small, although they can behave quite differently when used together. One problem is that dangerous chemicals are often necessary for human life and well-being, and there is a tightrope to tread between their good and bad effects.

**** Information point:***

- The Polar Environmental Centre, http://tinyurl.com/sm3s7, explains how the pristine Arctic has been contaminated
- See the Norwegian Polar Institute at http://tinyurl.com/y7kxo4 on why you should avoid seabirds' eggs
- Some chemicals are leading to animals in effect changing sex: http://tinyurl.com/ylfotu
- But there are often no easy answers. See http://tinyurl.com/e77ud to find out why the World Health Organisation had a rethink
- Pollution is not a national problem: it needs countries to work together. This page explains why: http://tinyurl.com/yk8kv8

**** Action point:***

- Find out who in your country is responsible for monitoring chemical pollution. Ask them how many potentially harmful chemicals they know of in the country, and what protection against them exists.
- Ask your environment ministry - or an international agency like the UN Environment Programme - what potentially harmful chemicals could safely be phased out.
- Write a story on the potential risks of commonly-used chemicals and the benefits they offer.
- Investigate what international treaties on limiting pollution your country has ratified, and how good it is at living up to them.

Contaminated land is often a literally invisible problem, because the soil beneath people's feet is something they usually take for granted. But industry and agriculture can pollute the land, making it less productive. And it is sometimes poisoned when pesticides and other chemicals are illegally dumped - this is usually a problem in developing countries. International treaties banning dumping are not always effective. The London daily *The Independent* reported on 31 March 2006 that the fertility of Africa's soil was being depleted at a rate that threatened to undermine the continent's attempts at eradicating hunger with sustainable agricultural development. A study had found three-quarters of Africa's farmland was plagued by severe soil degradation, caused by wind and soil erosion, and the loss of vital mineral nutrients.

**** Information point:***

- In parts of Europe land contamination is serious: in developing countries it can be as bad, or worse. See examples from Pakistan, http://tinyurl.com/yaacz5, Ivory Coast, http://tinyurl.com/yczxaf, and Ghana, http://tinyurl.com/yk5m53
- The Basel Convention (on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal) is an international treaty designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries: http://tinyurl.com/ybz62z
- Worried about the soil that grows your food? Perhaps you should be: http://tinyurl.com/sbsba

**** Action point:***

- Spend a day with farmers to ask them whether their soils are as productive as they were 20 or 30 years ago.
- How much food does your country import that it could grow itself? What's stopping it? Soil quality, or something else?
- What controls are there on waste imports into your country? How good are they? How easy is it to evade them?
- How much does your government earn from accepting shipments of foreign waste? What health costs does it incur as a result?
- Spend time in any communities that have been affected by hazardous waste, whether domestic or imported.

Waste causes massive pollution, even when the waste is not itself dangerous: the right product discarded in the wrong place can cause huge problems, as Bangladesh, India and Kenya have found to their cost with the humble plastic bag. One answer is to throw much less away, and to make products which last longer or can be recycled: the US recycles more than a third of its waste, and American business seldom does something unless there is a profit to be made from it.

**** Information point:***

- See what waste can do - and what people can do about it: http://tinyurl.com/yxxyf7
- Why are plastic bags a long-lived menace? Go to http://tinyurl.com/y99dny
- Zero waste is possible, or so the Argentines think: http://tinyurl.com/umetp

**** Action point:***

- One person's waste is another person's opportunity. Find the people who are making a living from recycling other people's throwaways.
- How much does your government spend on getting rid of waste, or clearing up its harmful effects?
- Could zero waste work for your country?

Chapter 4 Resource Depletion - two more planets please

Stories about the Earth running out of resources are easy to write - the scientists are coming up with plenty of evidence that that may happen. What is much harder is to persuade sceptical editors (and sometimes sceptical readers) that the possibility is real, and that it is not scaremongering to suggest we could soon be facing serious shortages. So reporting on the unsustainability of assuming we'll never run out of the things we need depends, as so often, on knowing where to go for the really persuasive evidence.

Part of the problem is that phrase you come across everywhere in discussions of resource depletion - 'on present trends'. If we go on as we are, the suggestion is, there'll be enough energy, or food, or whatever to last us long into the future. The problem is that present trends will *not* continue unchanged. There are massive changes ahead, largely because of population growth and the desire for better living standards. That is one reason why the future looks unsustainable: the more of us there are, and the more we demand, the faster we will empty the barrel. Present trends are a poor guide to the future.

One of the world's fastest-growing societies is certainly worried - so much that it may change the entire course of its economic growth. In 2004 Pan Yue, deputy head of China's State Environmental Protection Administration, said the country's environmental problems had reached crisis levels and were threatening its economic performance. China's industrial development was unsustainable, he said, because its resources were inadequate. Mr Pan said China could no longer afford to follow the western development model, with its reliance on the consumption of resources. He urged the government to encourage people not to adopt the rich countries' consumer habits.

But China is far from alone in its unsustainability. The rate of consumption in the UK means that it would need the resources of three planet Earths to sustain its lifestyle indefinitely. Unfortunately, we have only one Earth.

**** Information point:***

- Look at Chapter 2 of *Limits to Growth: The 30-Year Update,* written by three authors from the Club of Rome: Donella Meadows, Jorgen Randers and Dennis Meadows. It is available from Earthscan (http://tinyurl.com/ycpp2n). The whole book is helpful on resource depletion, and Chapter 2 explains 'exponential growth' - what happens when the *rate* at which something grows is itself growing steadily
- The Club of Rome itself, a global think tank, is at http://tinyurl.com/ylgth4
- The International Institute for Environment and Development works for 'more sustainable andequitable global development', including resources: http://tinyurl.com/yksxbs
- The *Guardian* has a useful list of bullet points on resource depletion: http://tinyurl.com/yltlpn

**** Action point:***

- How fast is your national economy growing? What are the resource 'pinch points' - the raw materials, fuels and other resources that could run out in the foreseeable future?
- What will the run-down of resources do to your nation's exports? Will it still be able to sell enough without fear of them being exhausted?
- Talk to economists and planners and find out what they are predicting for 2025.

So what may run out? In theory anything may, and in logic everything will, one day. But science and technology will find replacements for some of the resources that keep us going, and economists say human ingenuity and the workings of the market will delay the crisis for a long time yet. The idea is that as something becomes scarcer it also becomes more expensive, so there is more profit to be made by finding it, however inaccessible it is - like oil in deep-sea basins or in shale and bitumen deposits.

Other sections of this chapter look at the prospects of the world running short of energy and water, and entering a new wave of mass extinctions. This part examines two other possible crisis points - forests and fishing. Both are especially important for developing countries as they provide food and income for millions of people.

Forests matter, obviously, for the trees they contain, but they are much more than that - a community of species built up over thousands or millions of years and impossible to reproduce once they've gone. They are going fast - an area the size of 36 football pitches vanishes every minute. About one person in five worldwide depends on forests for their livelihood, and 60 million indigenous people rely on them for food. Beyond that, forests purify the air, conserve watersheds and improve freshwater quality. By stabilising the soil they help to prevent erosion and floods. They are home to myriad species, some of them highly endangered.

So deforestation is a serious problem, not simply to the countries which are losing their forests but to the rest of the world as well. Nobody can afford the continued loss of species and the destruction of the potential for air purification and other environmental services which somewhere like the Amazon or the south-east Asian forests represent.

It doesn't have to be like this. There are ways of using forests sustainably, as the Forest Stewardship Council knows: its schemes cover over 78 million hectares in more than 82 countries. And there is more information available from the UN's Convention on Biological Diversity.

But sustainability doesn't always appeal to those who want to exploit the forests. Human pressure forces those without any option to encroach on them to find somewhere to grow their food and find the fuel they need. There are other, corporate pressures from those who want to use the forests to grow crops. Soya beans make money more quickly for farmers than trees, though that can trigger resistance by the intended customers. Sometimes governments try hard to conserve their forests but are beaten by the impossibility of enforcing the laws they have passed: illegal logging remains a potent threat in many countries, fed by ready markets in developed countries (see Friends of the Earth's European League Table of Imports of Illegal Tropical Timber). Check Illegal Logging for the details.

And so the forests continue to vanish, and the world loses not only individual species but entire communities, both of them irreplaceable.

**** Information point:***

- The UN has established a special Forum on Forests: see http://tinyurl.com/ydnp4m
- Try the FAO forestry site at http://tinyurl.com/ymxa4j. See its Global Forest Resources Assessment at http://tinyurl.com/9koy3 for the latest on deforestation
- WWF forest section: http://tinyurl.com/yle587
- The Forest Stewardship Council (FSC) site is at http://tinyurl.com/yh7zzr
- Go to http://tinyurl.com/yexq4b for the Convention on Biological Diversity
- See the *Guardian* report on a planned boycott of soya from the Amazon: http://tinyurl.com/ydqgdj
- Illegal Logging: http://tinyurl.com/yk573k

- FoE's table of illegal tropical timber imports to Europe is at http://tinyurl.com/yz5zkq

**** Action point:***

- Are your forests healthy, or dwindling? Who is responsible for them, and who profits from them?
- Do you have an effective forest conservation law, and is it enforced effectively?
- If illegal logging is a problem, spend time with a forestry patrol and report on what they find.
- How much of your forests have been certified by the FSC?
- What rare or endangered species live in your forests? How long can they survive?
- Find out which countries in the developed world are buying your timber and other forest products (like nuts and fruit). Then ask NGOs in those countries how much of the imports came from sustainable sources.
- Tell your readers what the loss of your forests could mean: landslides, erosion, floods, changes in the climate, loss of species, a halt to exports...

One of the most striking ways in which humans are making unsustainable demands on the natural world is fishing. The problem here is that fish don't respect national boundaries: they tend to swim where they like, so no country can normally claim them as its own. Nobody owns them, nobody is responsible for them - so everyone takes them. For some of the basic facts on overfishing, see the UN Environment Programme's *Ten Stories the World Should Hear More About*. WWF and Traffic International, the wildlife trade monitoring network, say there soon won't be any commercially worthwhile fish left to catch in international waters. One of the problems with many fishing methods is that they are very destructive, like bottom trawling and dynamiting (see *The End of the Line: How Overfishing Is Changing the World and What We Eat,* by Charles Clover). A 2006 report from WWF, *Fish Dish – exposing the unacceptable face of seafood,* said that in the European plaice and sole fishery "most catches come from Europe's most wasteful fishery. Up to 80% of some plaice catches in the North Sea are thrown overboard dead or dying - either too small or less valuable than the rest of the catch."

**** Information point:***

- UNEP on overfishing is at http://tinyurl.com/zxbcl
- Traffic International: http://tinyurl.com/yjkajj
- The Sea Around Us Project at the University of British Columbia researches policies to reverse harmful trends in fishing: http://tinyurl.com/ya3llx

**** Action point:***

- Are your country's fishing methods good for the environment? Are they sustainable?
- What can you learn from the people who catch the fish? Can they find new ways to earn a living?
- And what about the people for whom fish is a staple of their diet? What will they eat when the fish are too scarce or too expensive?
- What should the politicians do? Write an op-ed telling them how to conserve the fish and the fishing industry.

Beyond specific crisis points like forests and fishing, there is another way in which the human consumption of resources at present rates may be impossible for much longer. Increasingly, the resources are being taken by the rich, leaving less for the poor. Dr. Mathis Wackernagel of the Global Footprint Network was a lead

researcher on the 2004 *Living Planet Report*. He said: "From 1991 to 2001, essentially the ten years after the United Nations Rio conference in 1992, the footprint in the 27 wealthiest countries increased by 8% per person, while in the middle and low income countries, it shrank by 8% per person… exactly the opposite of what Rio promised." A sustainable future will be one where the gap between rich and poor is shrinking, not growing wider. At the moment all the signs are pointing in the wrong direction.

**** Information point:***

- Global Footprint Network: http://tinyurl.com/yhg3lu

**** Action point:***

- Use Dr Wackernagel's site to check your country's footprint, whether ecologically it is in the red or the black. You can even show your readers how to find out what their own footprints look like.

Chapter 5: Water - the thirsty century

Water is something many of us take for granted. Perhaps you live in a country with ample water supplies and find it difficult to see a way of getting a story out of it. But in a world that wants to live sustainably water is a story for everyone: many people today do not have enough, and the number will inevitably increase. That spells unsustainability - for all of us.

Very little of the water on Earth is available for us to use. Most of it - 97.5% - is too salty. Most of the rest is locked up in the world's icecaps and glaciers. Of the little that's left about 20% is in remote and inaccessible regions, and much of the rest arrives in sudden violent downpours as monsoons and floods, vanishing before it can be any use. But although less than 0.08% of all the Earth's water is available for us to exploit, that's still far more than enough to meet everyone's basic needs.

**** Information point:***

- A good source of data on global water resources is the UN Food and Agriculture Organisation's Aquastat, its global information system on water and agriculture: http://tinyurl.com/yc7dh6
- Another is the UN Environment Programme's freshwater portal, http://tinyurl.com/yhoph4
- For a visual representation, try UNEP's Vital Water Graphics: http://tinyurl.com/ynge7r
- The UN's World Water Decade (2005 to 2015) is at http://tinyurl.com/yhu8yv

So why the worry? The UN says everyone should have at least 50 litres a day for drinking, washing, cooking and sanitation (a running tap uses 7-12 litres a minute, garden sprinklers and hoses about 20 litres, and flushing a toilet uses between six and twenty litres). Experts say countries with less than 1,700 cubic metres of fresh water available for every citizen are in "water stress". Those with less than 1,000 cubic metres they define as experiencing "water scarcity". More than 430 m people already live in countries affected by either stress or scarcity. By 2050 that number could have reached 7 bn.

Yet over the next two decades the use people make of this limited supply is estimated to increase by about 40%, for two reasons: there are more of us every day, and we all want to live richer lives. Long before 2050 water will be running scarce in many parts of the world: by 2025 1.8 bn people will be living in countries or regions of water scarcity.

For billions of people, though, how much water there will be in 2025 is irrelevant, because they don't have enough today. Water doesn't just feed us and slake our thirst: it also keeps us healthy. But not everyone: over one billion people (almost one in six people alive today) lack access to clean, safe water and over 2.4 bn have no basic sanitation. The World Health Organization says water-related diseases are the leading global cause of disease and death, killing more than 3.4 m people annually. Most of those who die are young children, killed by illnesses like diarrhoea from raw sewage.

**** Information point:***

- On water scarcity in 2025, see http://tinyurl.com/ybdyr3

**** Action point:***

- Is your country already suffering water stress or scarcity? Where is it likely to be in 2025?
- Does anyone go short of water today? Who?
- What is the incidence of water-borne disease? Is it rising or falling?
- How many people lack piped water and at least basic sanitation?
- How fast is water consumption rising? How long can you meet projected demand, taking into account population growth and rising living standards?
- Spend a day with a woman who has to fetch water because she has no domestic supply.

Providing everyone in the world with that basic supply of 50 litres a day by 2015 would take less than 1% of the amount of water we use today. It wouldn't be very expensive either. In 2000 the World Commission on Water estimated the cost at an extra $100 billion a year - about twice the net worth of Bill Gates of Microsoft, or the amount spent annually on bottled water worldwide.

Problem solved? No - because the magic figure of 50 litres a person a day does not include the amount of water it takes to grow the food we eat. Most of the world's water supply, about 70%, is used in farming, with the rest shared by industry and households. When water runs short hunger threatens. By 2025 growing water scarcity will mean countries including Pakistan and South Africa and large parts of India and China will not be able to use enough water to irrigate their crops and feed their people. So they will have to import food - if they can find enough at affordable prices.

It's hard to think of any sort of food or drink that has not needed water to produce it somewhere along the line. A pint of British beer? That will probably have needed from four to six pints of water before you take a gulp. If you eat vegetables but no meat, though, you're helping to save water: farming a steak needs about five times as much water as growing a similar weight of cereals or vegetables. A report produced for the Swedish Government by the Stockholm International Water Institute (SIWI) in 2004, entitled *Water: More Nutrition Per Drop*, said: "For several decades, the increase in food production has outpaced population growth. Now much of the world is simply running out of water for more production... " Malnutrition, according to the World Health Organisation, is "the silent emergency", a factor in at least half the 10.4 m child deaths which occur every year.

**** Information point:***

- The Earth Policy Institute has details on bottled water consumption at http://tinyurl.com/b3p97
- Water into beer: http://tinyurl.com/ydxs4a
- SIWI is at http://tinyurl.com/yhtavw

**** Action point:***

- How much bottled water does your country produce, import and consume? Who drinks it?
- Who provides the water supply - the government, or private companies?
- How much do people have to pay for their water? What happens if they cannot afford it?
- How widespread is the practice of illegally taking water from the public supply?
- How widespread is malnutrition?
- Is meat-eating common? Is it growing?

- How much of your food is produced locally, and how much is imported?
- Write an editorial telling your government how it should maintain food supplies in 20 years from now when global water supplies are under more pressure.

Many people pin their hopes of feeding a water-scarce world on improved irrigation. It needs improving: UNESCO's 2003 World Water Assessment Report *ater for People, Water for Life,* representing 23 UN agencies, says almost 60% of the water used in irrigation is wasted, simply running off the soil or evaporating before reaching the crop to do any good. One of the UN's Millennium Development Goals promises to halve the proportion of hungry people by 2015. But the UNESCO report says this may not be achievable before 2030, because previous estimates of food availability failed to distinguish between rain-fed and irrigated crops.

Climate change is likely to make matters worse. Exactly which regions of the world will become wetter or drier is still unclear, but trends are emerging. One vulnerable group will probably be the millions of people in Asia and South America who depend on water from melting snow and glaciers. Rising temperatures will probably mean more rain and less snow in the mountains and snow melting earlier in the year. And the result is likely to be rivers and streams carrying more water much earlier in the year than normal. Areas with small reservoirs or none at all will be unable to hold on to the extra water, which will simply be lost as it flows away downstream. Once the glaciers have melted away there will be no other water source for the people who have relied on them.

Further downstream there is more trouble for many of the world's biggest rivers. UNESCO's 2006 World Water Development Report, *Water, A Shared Responsibility,* says most years the flow of one of China's great watercourses, the Yellow River, is too slight for it to reach the sea. The river has run dry for part of each year since 1985, and in 1997 it failed to reach the sea on 226 days. The lower reaches of the Nile, which used to carry 32 bn cubic metres of water a year, now carry just two billion. The Indus in Pakistan has lost 90% of its water since 1945. Australia's Murray River reaches the sea one year in two.

**** Information point:***

- For the list of the Millennium Development Goals, start with http://tinyurl.com/ybc4o4
- Melting glaciers: http://tinyurl.com/ye7w2w and http://tinyurl.com/yhv54u
- UNESCO's 2006 report is at http://tinyurl.com/juygp

**** Action point:***

- Find out what potential there is for improved irrigation, and for other agricultural methods which use less water.
- How likely is your country to achieve all or any of the Millennium Development Goals?
- What will the likely impact of climate change be in your region? What preparations is your government making to prepare for it?
- Does anyone depend on glacier-fed rivers? Are they at risk of catastrophic flooding as the temperature warms? Where will their water come from in future?
- How healthy are your rivers? Are they flowing as strongly as they did 20 years ago? What does this mean for shipping and for the people who live along the banks?

But if too little rain is falling from the skies and feeding the rivers, surely there's another answer, literally beneath our feet? Some parts of the world are blessed with huge amounts of water in underground reservoirs where it has accumulated,

sometimes over millions of years. The trouble is that two billion people depend on this groundwater, including the populations of some of the world's biggest cities - including Bangkok, Cairo, Calcutta, London, Mexico City and Jakarta. And we are often emptying the reservoirs far faster than they can refill themselves. The UN Environment Programme in 2003 said world supplies of groundwater were being exploited so fast that water tables were falling by about three metres a year across much of the developing world. In the Bangladeshi capital, Dhaka, the fall in some places has been drastically more. If you want to get an idea of how badly the world will miss the groundwater when it's gone, have a look at what Lester R. Brown, president of the Earth Policy Institute in Washington DC, has written in his book *Plan B: Rescuing a Planet Under Stress and a Civilization in Trouble* (W.W. Norton & Co., New York).

**** Information point:***

- UNEP on groundwater is at http://tinyurl.com/yhvrnl
- The Earth Policy Institute home page is http://tinyurl.com/yhohwt

**** Action point:***

- Does your country rely on groundwater? How fast is it being depleted? Is the water table falling anywhere? If so, how are people managing to get their water?
- Write an op-ed spelling out what you think your country's priority should be when water runs short: agriculture, industry or households?
- How much water is left for the natural world after human needs have been satisfied? Find an expert who can tell you what water scarcity means for wildlife and wild places.

Chapter 6: Extinction - rushing towards oblivion

Scientists know fairly accurately how many people there are on Earth - a little more than 6.5 billion. So it may come as a surprise that they have not been able to count how many other species share the planet with humans. It could be as few as three million, or as many as 100m - nobody can say. However many there are, science has managed so far to describe fewer than two million. And nobody knows either how fast species are sliding over the edge into extinction, or which particular species are disappearing. We are profoundly ignorant about almost everything else that makes up the web of life, the planet's biodiversity. There are at least two reasons why we need to know far more than we do if life on Earth is to be sustainable.

First, many other species can be useful, and we'd be in a mess if they weren't here. Worldwide, humans use between ten and twenty thousand plant species for medicine. About 80% of people in the developing world rely on traditional plant-based medicines, and 75% of the world's top prescription drugs include ingredients derived from plant extracts. The rosy periwinkle, found in the forests of Madagascar, has boosted the chances of surviving some forms of childhood leukaemia from 10% to 95% in the last 50 years. The Pacific yew provides the basis for a drug used to fight breast cancer.

It's not only plants that are valuable. The cone snail family has around 500 distinct species. In October 2003 an article in the journal *Science* (Chivian, Roberts and Bernstein, 2003) said: "Tropical cone snails may contain the largest and most clinically important pharmacopoeia of any genus in Nature." Each species has its own set of about 100 toxins, and so far only about 100 of the estimated 50,000 cone snail toxins have been analysed. They look promising for treating some forms of lung cancer, for controlling epilepsy, helping muscles after spinal cord injury, preventing cell death when there is inadequate circulation, and for treating clinical depression, heart irregularities and incontinence. There is one toxin that may be a thousand times stronger than morphine for treating pain. But millions of cone snails are now being killed annually for their shells, and their habitats are being damaged. One of the authors of the *Science* article said: "Wild Nature has been the template for most of the medicines we use today, but we have barely even begun to tap its potential. If we fail to protect the cone snails, the loss to future generations would be incalculable." Almost certainly some species have already been consigned to oblivion which would have offered humans massive benefits. And now we'll never know.

Many microscopically small species live in the soil. But they are far more vital to human life than "the charismatic mega-fauna", as zoologists call the big mammals and other attractive and photogenic creatures. The health of the soil depends on things like nematodes (roundworms) and micro-organisms, but many of them are disappearing before anyone has managed to record their existence. They are vanishing because humans are destroying huge tracts of wilderness, converting entire ecosystems for our own use. Researchers estimate that by 2020 less than five per cent of the Amazon will remain as pristine forest. By then, another estimate says, about 20% of central Africa's forests will probably have gone too. The trees of south-east Asia are being cut down so fast that the wild man of the forests, the orang-utan, is unlikely to survive in the wild beyond about 2025.

Extinction has been a fact of life since life began, of course. With mammals and birds, the probable natural extinction rate ("the background rate" to scientists) has been about one species a year. But they now think it is at least a hundred times greater, and perhaps a thousand. The Earth has lived through five previous mass extinctions: the last was the catastrophe that wiped out the dinosaurs about 65m years ago. The planet

recovered from each of these disasters, though with a different set of species emerging each time to replace those which had died out. Today species and ecosystems are being destroyed so fast that many scientists believe the Earth is entering a new age of mass die-offs, "the sixth great wave" of extinction. Humans did not exist during the five previous extinctions, but this time our fingerprints are all over it.

A few years ago a group of US researchers tried to estimate the value of what Nature - the entire biodiversity of the Earth - did for humans. It does a lot: it oxygenates the atmosphere, purifies drinking water, fixes nitrogen, recycles nutrients and waste and pollinates crops. Plants and bacteria let photosynthesis take place: that produces the oxygen we have to breathe. Trees absorb carbon dioxide and so slow climate change. Mangrove swamps and coral reefs helped to lessen the impact of the 2004 tsunami (where they were still intact: mangroves are often cleared to allow the creation of lagoons to grow prawns for export). The researchers found the value of the goods and services the natural world provided to the global economy was nearly twice the value of what humans were themselves making. So there's a huge amount at stake.

**** Information point:***

- Biodiversity from scratch: http://tinyurl.com/yeuhqw
- For the implications of the sixth great wave of extinctions, try http://tinyurl.com/yjznut
- What Nature does for us: http://tinyurl.com/4t2kw

**** Action Point:***

- Find out how many species your country is known to have lost since 1900, and since 1950. Is the rate of extinction speeding up? Why did they vanish? Who profited?
- How much wilderness have you lost in the last 50 years? What is it being used for now? How much of your farm and fishing production is exported? Who makes a living from it now?

The second reason for wanting to know how fast extinction is happening, and whether we can slow the rate at all, is because the world works not as a collection of separate parts, but as an interdependent whole. No species lives in isolation: everything on this interdependent planet is part of a community, an "ecosystem". Removing one species can affect the entire ecosystem, often in ways which no-one foresees and which leaves everyone wishing they hadn't interfered. To supply the European restaurant trade, Bangladesh some years ago began killing its frogs. The scheme succeeded, and now the fields in some areas are completely free of frogs, with disastrous results for Bangladesh.

Removing a species from its ecosystem to farm it separately seems an obvious idea and a good way to save time and effort. But it may fail, precisely because so many species need to live in communities. Al Gentry, a world-renowned botanist from Missouri Botanical Garden before he was killed in an air crash, used to describe how attempts to grow Brazil nuts commercially never came to anything. The nut, found in the Amazon basin, is worth a lot to forest dwellers, as it can fetch a good price. But once you take the trees out of the forest they simply refuse to bear fruit.

**** Information point:***

- See what the lost frogs have cost Bangladesh: http://tinyurl.com/yf238r
- Why Brazil nut plantations are a waste of time: http://tinyurl.com/ynf9kk

**** Action point:***

- Find out from your planning or environment ministry how many of your country's ecosystems are being managed as an integrated whole. Then ask the national academy of sciences whether it thinks this will safeguard biodiversity - and what the consequences will be if not.

It can be hard to realise just how fast oblivion is overtaking the creatures that share the planet with us. So in 2005 the UN Environment Programme published its Millennium Ecosystem Assessment, a catalogue of loss and destruction. After four years' work by 1,300 researchers from 95 countries, the Assessment's authors concluded that human activities were threatening the Earth's ability to sustain future generations. They said a third of all amphibians, a fifth of mammals and an eighth of all birds were now threatened with extinction, and estimated 90% of the large predatory fish in the oceans had disappeared since industrial trawling began. More land had been converted to farming since 1945 than in the whole of the 18th and 19th centuries together. More than half of all the synthetic nitrogen fertilisers, first developed in 1913, ever used had been spread on the land since 1985. Perhaps most ominously, the MEA's authors said the loss of biodiversity was largely irreversible.

**** Information point:***

- The Millennium Ecosystem Assessment: http://tinyurl.com/ynbl8o
- An authoritative source of information on threats to biodiversity is IUCN-The World Conservation Union: http://tinyurl.com/ymmp3f (see especially its Red List of Threatened Species)
- The Convention on Biological Diversity (http://tinyurl.com/yexq4b) is the UN treaty that aims to slow the rush to extinction
- Traffic - http://tinyurl.com/yjkajj - is the wildlife trade monitoring network

**** Action point:***

- Has your government ratified the Convention on Biological Diversity? What does it to to uphold and implement it?
- How many of your country's species face some threat of extinction, and why?
- What laws are in force against wildlife poachers, and are they enforced?

Who is causing the sixth great wave? It is easy to point towards identifiable culprits, like the pet trade, the collectors of cone snails for their shells, or the bushmeat traders who are driving Africa's great apes over the edge. But that is sometimes too easy. In south-east Asia it is the clearance of forest for palm-oil plantations that spells the end for the orang-utans. Much of the deforestation happening in the Amazon is to clear land to grow soya. It is then exported to provide cattle and chicken feed to put cheap meat on European tables. Sometimes the damage is done for the best of reasons: damming rivers or draining wetlands to provide cropland and water sounds good, but can be lethal for the natural world. Humans easily forget that we are not separate from that world, but part of it.

**** Information point:***

- What the bushmeat trade is doing to Africa's apes: http://tinyurl.com/ydzdbw
- The orang-utans' plight: http://tinyurl.com/yceup6
- The cost of soya: http://tinyurl.com/ydqgdj
- Leave well alone: the story of the Mississippi: http://tinyurl.com/abrll

**** Action point:***

- How can poor people in your country feed themselves, even if it means killing bushmeat?
- How can your government earn enough foreign exchange to pay for development, even if it means destroying forests and rivers?
- What strategy does your government have to take care of this generation without damaging the prospects for your descendants?

Chapter 7: Population - the overcrowded ark

Population is likely to be a story wherever you live - but it can be a very different story in different places. For some countries in Europe, the problem is keeping numbers *up* enough to prevent population decline. Others are faced not with a problem over absolute numbers but with the dilemma of an ageing population, where fewer active workers will be available to support more pensioners. In many developing countries population is no longer the acute problem it used to be, because parents are themselves choosing to have fewer children, and the steep rise in numbers is levelling off of its own accord. But in some parts of the developing world, and notably in much of Africa, the problem is not only continuing but actually accelerating: bigger populations are producing more babies in an ever-increasing spiral of growth, which threatens to wipe out any prospect of development.

And of course the impact of another birth varies wildly between countries and regions, according to how rich they are and how much they consume. A child born in the US, whose population topped 300m in late 2006, is going to have a far more marked lifetime effect on the Earth than an infant born in Nepal or Niger.

**** Information point:***

- See the London *Guardian* at http://tinyurl.com/yegddv on US birth rates and their impacts
- The US Census Bureau World Population Information site, http://tinyurl.com/5d3hx, has a range of statistics, including: US and world numbers on the day of your visit; world births, deaths and natural increase per year, month, day, hour, minute and second (showing four babies born globally each second); and world population trends and growth rates
- A visual on population increase is at http://tinyurl.com/ylsses, with the figures clicking upwards as you watch. Its total is higher than the Census Bureau's, but it does let you see the increase happening every second. It also lets you compare today's total with any year back to 1970, and project it forward to compare with 2037, when the site estimates there will be almost 10.3 bn human beings
- For a recent update on world population, see the press kit produced by UNFPA, the UN Population Fund, for the launch of its *State of the World Population 2006* report (http://tinyurl.com/ygq2te)

**** Action point:***

- How fast is your country's population growing? Is the proportion of over-60s changing fast?

Population is a story that varies from one country or region to the next, but it matters to everyone. If the world approaches the point where its resources cannot provide for everyone's needs, then everyone faces a crisis. There are campaigners who say world population is already far beyond the planet's ideal carrying capacity and who argue for reductions to a fraction of today's level.

**** Information point:***

- The Optimum Population Trust's home page (another with a ticking clock) is at http://tinyurl.com/y9pgy4

Worldwide, although numbers are still rising, the *rate* of increase is slowing. There's no mystery: as people emerge from poverty they find it easier to limit their

families, because they have better access to contraception. They also find it suits their interests to do so, because improved health means they no longer need to produce surplus children to guarantee some will survive to support them when they are old. When many children die before reaching their fifth birthday you cannot count on any of them surviving into adulthood, so you produce as many as you can.

So improving reproductive health - making sure people can have as many or as few children as they want, confident that they will survive - is key to bringing fertility rates down. UNFPA, the UN Population Fund, argues that everyone should have reproductive health and voluntary family planning services based on the principle of informed choice. The trouble is that not everybody accepts that that is a right. Some religious leaders say humans should not interfere with divine plans for populating the Earth. They can influence the politicians who control the purse strings.

**** Information point:***

- Reproductive Health Online, an affiliate of Johns Hopkins University, http://tinyurl.com/yhkejh, describes some of the factual issues connected with contraception
- On religion, see for example the encyclical of the late Pope John Paul II, *Evangelium Vitae*, or *The Gospel of Life*, in which he spoke of 'the moral unlawfulness of contraception': http://tinyurl.com/yhroa9. There is also the UK-based Christian Institute at http://tinyurl.com/yj5hb3

**** Action point:***

- Is family planning available to everybody in your country who wants it, at affordable prices? Who decides policy on reproductive health issues: politicians? Are they influenced by interest groups or campaigners? Do their policies reflect people's wishes?
- Are there social pressures on women to bear children even if they do not want to?
- Is education available to both sexes equally?

In 1994 the UN organised the International Conference on Population and Development, held in Cairo. That set a budget for a global family planning programme of $17bn a year, which was agreed by the world's governments. But Professor Norman Myers of Green College, Oxford, a key British writer on sustainability, says that while the developing countries have paid the great bulk of their two-thirds share of that $17bn annual total, the rich countries have largely failed to pay theirs. If they all met their commitments, he says, we would probably reduce the ultimate global population by as many as a billion people, with fewer unwanted births and fewer abortions (personal communication).

**** Action point:***

- How much does your government spend on reproductive health and family planning services? How much did it agree to provide at the 1994 Cairo population conference?
- How much does it receive for this purpose from foreign donors, and who are they? How does their performance compare with their Cairo pledges?
- How many couples want contraception but cannot obtain it?

Marie Stopes International, which provides sexual and reproductive health information and services to 4.8 million people in 38 countries, says there are 'political and ideological forces in the USA, Europe and elsewhere that are actively seeking to undermine and even reverse progress made in the last decade' (in other words, since Cairo). There are plenty of people to challenge that view, but it does have some serious backing as well. The UK Government's Department for International

Development (DfID) describes the US as 'pursuing a strongly illiberal line on reproductive health issues at various fora... This is part of a sustained (and well-resourced) effort to undermine and roll back consensus on reproductive health and rights reached in particular at.UN conferences'. Religious campaigners often wield great influence with American policymakers - and with leaders in other countries too.

**** Information point:***

- Marie Stopes International: http://tinyurl.com/yj95mw
- Government Response to the UK Network on Sexual & Reproductive Health & Rights Submission, *'Keeping Sexual and Reproductive Health on the Agenda*', Department for International Development, London
- The US Agency for International Development's homepage is at http://tinyurl.com/okzxm

DfID estimates that 350 million couples worldwide do not have access to modern family planning methods, and that as many as 150 million women want to prevent or delay pregnancy but are not using any method of family planning. It is especially concerned at how little the rising generation knows about HIV/Aids. It says: 'The sexual and reproductive health needs of over 1bn young people - the largest generation in human history - are largely being overlooked. Young people in many countries are becoming sexually active at an earlier age and young people are most at risk of sexual infection. Half of all new HIV infections are in the 15-24 age group. Five million teenage women undergo abortions every year. Yet UNAIDS [the Joint United Nations Programme on HIV/Aids] reports high levels of ignorance of issues related to HIV/Aids.'

Making sure people can obtain the family planning they want is one way of reducing numbers. There is of course another approach, which is to force people to have fewer children. China has had a policy since 1980 of allowing couples to have only one child. There are exceptions, the policy has been modified, and there is a promise that it will ultimately be phased out. In the meantime, China says, it has prevented more than 300m births over 30 years - in a country whose population today is now more than 1.3bn.

**** Information Point:***

- On China's policy, see http://tinyurl.com/yfh5f3
- China's population clock is at http://tinyurl.com/tg6c9
- For one Chinese view of the policy (it has both supporters and opponents within the country), go to http://tinyurl.com/yjluvz
- Examples of foreign criticism are at http://tinyurl.com/ydmwh3 and http://tinyurl.com/rpyj9

**** Action Point:***

- Write an op-ed piece on different policies for reducing population, comparing China's with your own country's.
- Find the projection for your country's population 20 years from now, and compare that with the requirements you will then have for food, water and energy.
- How much of a problem is HIV/Aids? How fast is it growing? What is your government's policy? Spend a day in an HIV/Aids clinic, and write up what you hear from patients, their families and the medical staff.
- What policies are in place for telling young people about HIV/Aids? Are they working? Do they get help to protect themselves?

You could argue that if the rate of population increase is slowing down (as it mainly is), then the problem is on the way to solving itself, and that arguments over

compulsion or money will in the end be irrelevant. With more progress on reproductive health the world might even achieve the Millennium Development Goals, which aim to halve world poverty by 2015. Reducing poverty is itself helping to reduce population. You could say the prospect of 9bn people in 2050 (up from 6bn today and just 2bn in 1900) is something we can cope with. But there are two factors that make it hard to be very confident.

One is Africa, the continent which bucks the trend towards falling numbers of births. Today one person in seven in the world is an African. By 2050 that will be almost one in four, with Nigeria, for example, the world's fourth biggest country. Millions of Africans already live unsustainable, hungry, thirsty lives.

The other factor, which is ravaging not only Africa but many other parts of the world, is HIV/Aids. It is killing people on a huge scale, and it is distorting populations as well. That means communities are increasingly composed of the very old and the very young, with most of a generation missing. And that strikes at the survival of everyone, because there will be nobody left to work the fields and produce the food. The International Food Policy Research Institute says: 'In eastern and southern Africa , the AIDS epidemic is already having serious consequences for agriculture by affecting adults at the height of their productive years...'

**** Information Point:***

- For the Millennium Development Goals, see http://tinyurl.com/catlk
- There is more on Africa at http://tinyurl.com/yhpurk
- A comparison of different national life expectancy rates is at http://tinyurl.com/y9ffoo
- UNAIDS, the UN programme on HIV/Aids, is at http://tinyurl.com/yf74fe

**** Action Point:***

- Will your country meet all the Millennium Development Goals?
- What does the international community need to do to help Africa to reduce its population growth?
- How much political power do your country's religious leaders wield?

Chapter 8: Poverty - what choice for the poor?

"Poverty is the worst form of pollution", Indira Gandhi once said. It may be - but it's not the easiest of stories to sell to editors, or to persuade readers to look at. If you want to help people to think about sustainability, though, then poverty is inescapable. That's because the poor don't have the choices the rest of us have about looking after the environment. They cannot choose the best way to avoid polluting a river, or the most environmentally friendly way of farming, because they have to think above all about their survival.

Because they have to make immediate choices, the poor cannot think or plan long-term, which is what environmental protection needs. For example, in Malawi 93% of energy comes from wood. In Nepal and Bangladesh people strip the trees from the forest to earn a living. The result, as in Malawi: erosion and flooding. A widespread problem along tropical coasts is fishing with dynamite or other explosives, a method which can kill the coral but can also earn a day's wage. A report from the World Resources Institute (*World Resources 2005 -- The Wealth of the Poor: Managing ecosystems to fight poverty*) says: "If the natural resource base is not managed for the long term, if it is exploited and polluted for short-term gain, it will never provide the fuel for economic development on the scale demanded to relieve poverty." "Improving environmental conditions can help reduce poverty", says the World Bank. And yet the areas of greatest poverty are quite often those with the greatest natural wealth: see the Poverty Mapping site's maps which show the overlaps. One striking instance of poverty and hunger driving people to destroy their environment is the plight of some of the surviving large mammals. The Zoological Society of London reported in October 2006 that the population of hippopotamuses in the Democratic Republic of Congo had halved in the last two weeks because of poaching. Poachers also reduced East Africa's elephant population by about half in the last two decades of the 20th century. And see the Bushmeat Project site to realise how soon the gorillas, chimpanzees and orang-utans may vanish into oblivion.

**** Information point:***

- For a US take on how poverty and the environment are linked, see http://tinyurl.com/kksvd
- The World Bank's view is at http://tinyurl.com/yb9lmo
- UNEP's poverty and environment page: http://tinyurl.com/yhn6zn
- Check the joint UNDP/UNEP Poverty and Environment Initiative: http://tinyurl.com/yhjz6r
- And see http://tinyurl.com/yf5a9g, the site of the International Institute for Environment and Development
- Poverty Mapping's Global poverty-biodiversity map is at http://tinyurl.com/ymmap8
- Zoological Society of London: http://tinyurl.com/ymnmtn
- The Bushmeat Project: http://tinyurl.com/yd7xv4

**** Action point:***

- Are there any obviously destructive ways that people survive - eating rare creatures, chopping down forests, slash-and-burn agriculture, fishing with explosives, using dangerous pesticides?
- Are there any "biodiversity hotspots" - areas rich in wildlife - in your country? Are they the places where many people live in poverty?

- If you look at the world's population today, you'll find that the *proportion* of people living in poverty is shrinking. Decent living standards are possible for more and more people. But that's only half the story, because (yet again) you need to take account of the continuing growth in the population. On that basis the *absolute* number of poor people grows every day. One frequently-cited statistic is the number of children aged less than five years who die every day from hunger or easily-treatable diseases: about 30,000. Most of us probably find that hard to picture. What it means is the equivalent of a large, fully-laden airliner crashing every 20 minutes, with the loss of everyone on board. The facts of poverty can be daunting:
    - More than 1 bn people survive on the equivalent of less than US $1 a day, and 2.7 bn more on less than $2.
    - The 900,000 children who die every month from hunger or basic diseases are more than three times as numerous as the people who died in the 2004 Indian Ocean tsunami.
    - One African child dies of malaria every 30 seconds.
    - The world's 358 richest people have as much money as the 2.3 billion poorest.
    - The average income of the richest 20% of people in the world is 61 times that of the poorest - a ratio double what it was in 1975.
    - Achieving the UN's Millennium Development Goals, which aim to halve extreme hunger and poverty by 2015, would cost less than Europe spends every year on cigarettes.
    - More than 800 m people go hungry every day.
    - A woman in Niger has a one-in-seven chance of dying during her reproductive years as a result of a pregnancy-related complication or infection, or childbirth injury. The risk for a Swedish woman of dying as a result of childbirth over her lifetime is one in 29,800.

**** Information point:***

- World Health Organisation: http://tinyurl.com/3tx9d
- At a glance: Poverty, from UNEP's Our Planet magazine is at http://tinyurl.com/ylgzvy

**** Action point:***

- How many of your country's people live every day on less than the equivalent of US $1 - or $2, or $5?
- Try living on $1 for a day, or a week, and tell your readers what it's like.
- What is the ratio between the incomes of the richest and the poorest?
- How many under-fives die every day? What kills them? What are the rates of death for women in childbirth?

The Millennium Development Goals (MDGs) were agreed by all the UN's members in 2000. They commit every country to:

- halve extreme poverty and hunger (which is defined as living on the equivalent of less than $1 a day)
- achieve universal primary education: 113 million children do not attend school
- empower women and promote equality between women and men: two-thirds of the world’s illiterate people are women, and 80% of its refugees are women and children
- reduce the mortality of under-fives by two-thirds

- reduce maternal mortality by three-quarters: across the developing world, the risk of dying in childbirth is one in 48
- reverse the spread of diseases, especially HIV/Aids and malaria
- ensure environmental sustainability: more than a billion people still lack access to safe drinking water
- create a global partnership for development, with targets for aid, trade and debt relief.

But the prospects for achieving the goals look doubtful. Seventy-four countries, with more than a third of the world's population, are not on track to halve income poverty by 2015. The overview of the UNDP *Human Development Report 2005* said: "[On the MDGs] there is little cause for celebration... the overall report card on progress makes for depressing reading. Most countries are off track for most of the MDGs... the promise to the world's poor is being broken." In 2006 the UN Millennium Project itself spoke of "stunningly high child and maternal mortality... and a widespread shortfall for most of the MDGs" in sub-Saharan Africa. It was not much more hopeful about several other parts of the developing world, especially Latin America, the former Soviet bloc countries, and North Africa and the Middle East.

**** Information point:***

- The MDG site is at http://tinyurl.com/catlk
- The World Bank MDG site is http://tinyurl.com/nxkjx
- UN Millennium Project: http://tinyurl.com/yjmdxy

**** Action point:***

- What are your country's prospects of achieving the MDGs?

If reducing poverty really will help to protect the environment, you may wonder why it hasn't made more progress. The UN devised a plan back in 1970 - it envisaged all the rich countries giving 0.7% of their gross domestic product in development aid. Since then the UK and most other donor countries - but not the US - have committed themselves to this target. But progress is still slow.

And there is a problem about poverty alleviation anyway: it can go only so far. Anyone who imagines that the entire world can enjoy the standard of living now accepted as normal in western Europe and North America is mistaken, according to the Worldwatch Institute. Even the cost of just two emergent nations, China and India, joining the elite would be prohibitive, it says. In its annual *State of the World* report, published in January 2006, the Institute says the Earth lacks the water, energy and agricultural land to allow China and India to attain Western living standards. The report says: "The world's ecological capacity is simply insufficient to satisfy the ambitions of China, India, Japan, Europe and the United States as well as the aspirations of the rest of the world in a sustainable way". If China and India were to consume as many resources per capita as Japan, then in 2030 "together they would require a full planet Earth to meet their needs", the report concluded.

**** Information point:***

- Oxfam's MDG campaign site has more on the 0.7% aid target: http://tinyurl.com/y9rpvr
- Worldwatch Institute: http://tinyurl.com/ycyo5d

**** Action point:***

- Write a feature based on the Worldwatch report explaining to your readers why it is impossible for them ever to attain US living standards. Ask them to write in saying what they would settle for.

Chapter 9: What went wrong?

The world as it is is unsustainable: we cannot go on as we are. Who is to blame? Putting the responsibility on someone else for things going wrong saves us having to accept that some of the fault may be our own.

Is it the politicians' fault? Politics start at the international level but spread much further. At every level, they can help to make the world more sustainable -- or less:

- global groups like the United Nations, the World Bank, the World Trade Organisation (WTO)
- regional organisations: the African Union, the European Union (EU), the Association of South-east Asian Nations are examples
- national governments: there are now almost 200 sovereign countries in the world, each with its own government and laws
- local governments: regional, district and town councils within a country
- you and me: we have an effect when we vote for a political party, and also if we decide not to vote.

Global groups do sometimes achieve improvements. Without the UN there would be no treaties on climate change, for example, like the Kyoto Protocol, or on saving species from extinction -- the Convention on Biological Diversity. But they are often little help: what the WTO agrees on trade counts for more than any international environment agreement. Multi-lateral groups can always be only as strong as their most powerful members allow, and that often leaves them too weak to be effective.

Regional organisations are a mixed picture too. The EU, for example, has helped to drive up anti-pollution standards across Europe. But it also continues to subsidise its hugely damaging farming and fishing industries, harming its own citizens and people in the developing world as well. The African Union has a stirring vision for the continent, but few of the resources the vision needs.

National governments usually try to protect the health and wellbeing of their citizens. But inevitably they think in *national* terms, about what will appeal to their electorates. There are few votes in policies to save the world if they mean even short-term pain for the people at home who put you in office. So nearly 200 countries operate 200 separate management systems for one planet. What happens on one part of the planet can rapidly affect other very distant parts. Politicians can force up their country's environmental standards, and they can give a lead in thinking and acting sustainably. But they need voters to insist that sustainability matters -- at the ballot box.

Local government can make a real difference. Many people assume, for example, that the entire US doubts the need to act on climate change, because that is the message from Washington. But California and other states take the problem very seriously and are highly critical of the federal government.

You and me: one of the most powerful things any of us can do to build a sustainable world is to vote -- and vote thoughtfully. If we vote out of habit, we miss a chance to prod the party we support to be greener. If we don't vote at all, the politicians may take that as a sign of support anyway. In that sense, in a democracy we are all political actors just as much as government ministers are.

What about business and industry? Often the people with the real power are the multi-national corporations, many controlling more wealth than small or medium-sized countries. Some act responsibly, but by no means all. And some industries inevitably cause damage just by doing what they exist to do:

Energy: mining coal and pumping oil and gas are dangerous, dirty jobs that kill workers and ordinary citizens in accidents (the average number of Chinese coal miners killed at work *every day* is 12) or by long-term damage to their health. Burning the fossil fuels adds to natural climate change.

Food: producing enough food and getting it to consumers is often very destructive in industrial societies. It can involve:

- *clearing wild places* to provide land to grow crops: in the year to August 2004 more than 26,000 square kilometres of the Amazon rainforest were burned or cut down, much of it to make way for soya to be exported to North America and Europe for cattle feed
- *using water:* about 70% of all the water available for humans to use is swallowed up by agriculture, leaving the rest to be shared by industry, households and nature
- *transport:* food is carried around the world to meet demand and get the best price, and moving it takes huge amounts of energy. For every calorie contained in a carrot flown from South Africa to the UK, the aircraft burns 66 calories of fuel
- *processing*: companies make bigger profits from selling prepared food than raw products, and that takes energy too. A bowl of breakfast cereal gives you just 20% of the energy involved in producing it.

Well-off consumers -- you and me again? -- want what business and industry offers us (or at least what they have persuaded us to think we want, which may not be the same thing). We have learnt to want a huge choice of food, not just local and seasonal products but fruit imported from thousands of miles away, or summer vegetables grown year-round in expensively-heated greenhouses. We now want meat as often as possible, which means more soya, which means less Amazon forest.

You and I *are* part of the problem, because none of us can avoid having an impact on the Earth. It is an inevitable part of being alive. But part of the reason why we all face an unsustainable future is that we have forgotten what our small individual impacts add up to. Before the Industrial Revolution there were too few people to make very much difference to the world. But that allowed human numbers to increase rapidly, and it gave us increasing power over the rest of the planet. One example is whaling. People have caught whales for centuries, using their own muscle power to row the boats and to throw the harpoons. But once humans had invented steam-powered ships and explosive harpoons the whales' days were numbered, which is why some species today face extinction.

It is the same with other natural species, with the minerals, the timber and all the other resources modern society needs, and with the world's capacity to absorb the wastes we produce. It is easy to think there are inexhaustible supplies of what we need, but our impact -- our "ecological footprint" -- on the Earth is already unsustainable. If everyone alive today consumed as much as the average American, we should need the resources of five Earths. A UK or French standard of living would take around three planets. A country which gets by on the resources actually available is Mauritius, which consumes only as much as the planetary budget allows. If we all lived like Malawians, though, we should use less than a third of what the Earth has to offer.

With 6bn humans already consuming the Earth's resources 20% faster than they can be replaced, it would be hard enough to steer the world onto a sustainable course even if nothing got any worse from today onwards. But two factors mean things are going to get much worse:

- **population** is continuing to rise, and by 2050 there are likely (on present trends) to be about nine billion people alive, which is about 2.5 billion more of us than there are today

- as people emerge from poverty they understandably demand **higher living standards.** So there will be more people producing wastes, wanting to eat meat, drive cars and take holidays abroad.

People, companies, governments usually act in the way they think will be best for them. That is because we think small: we think using our car for a journey will do nothing to warm the atmosphere, our steak will not threaten the forest. What we forget is the combined impact of millions of individual choices to use cars instead of walking, or to eat meat every day, or whatever it is. There will be no sustainable world until we teach ourselves to do something no other generation has had to do -- to recognise our combined impact on the Earth. We need to start thinking like that today.

And there are two other new ways of thinking that the planet needs. One is to behave as though there is only one Earth. It seems obvious, but many of us are living as if there were multiple planets to provide for us. We simply fail to realise that the planetary budget is already empty. We are living off tomorrow's resources. Humans are now like a swarm of locusts, devouring everything in their path.

The other new idea is to realise that the Earth, the only planet we have, works like a single organism. So when we treat our separate small parts of it just as we like, we may be causing effects on the other side of the globe. One example: significant numbers of polar bears in the Arctic are now showing signs of hermaphroditism -- they are developing the genitals of both males and females. Scientists say this is caused by chemical pollution. But there are no sources of pollution in the Arctic. What is harming the bears is contamination carried thousands of miles north by the winds and the waves from Europe and North America. Or another: HIV/Aids, killing people on every continent, is widely believed to have spread around the world from the practice in parts of Africa of eating chimpanzees and monkeys. The consequences of even the smallest actions can ripple unpredictably outwards.

Who is to blame for our unsustainable world, then? Everybody who thinks the world is limitless, and believes they can act in their own independent interest. This is an *inter*-dependent world, or it will before long not be a world fit for humans at all.

Chapter 10: Glimpses of Hope

Most stories are easier to write when you can picture what they are about. This chapter provides a few examples of the ways people around the world are trying to tackle some of the problems outlined earlier, and suggests places to find more case studies.

Climate Change

The German development corporation GTZ, which works to promote sustainable development worldwide, has found a way to harness the Sun to provide a water supply for people and livestock, and for irrigation: it has developed photo-voltaic water pumps. They are as efficient as small diesel pumps, need no fossil fuel and emit no carbon dioxide in use. They are also ideal for remote places and need neither maintenance nor anyone to operate them. The solar pumps cost about three times more than a comparable diesel version, but running costs are negligible, so they quickly pay for themselves. GTZ's pumps are working so far in Argentina, Brazil, Chile, Ethiopia, Indonesia, Jordan, the Philippines, Tunisia and Zimbabwe.

**** Information point:***

- GTZ, the German development corporation, is at http://tinyurl.com/y9pymu

Energy

Sweden has put into service a biogas-powered passenger train which runs between Linkoping, south of Stockholm, and the Baltic coast city of Vastervik. Biogas, obtained from decomposing organic matter, produces much less carbon than traditional fossil fuels. The country is believed already to have about 800 buses and thousands of cars running on a mixture of petrol and either biogas or natural gas. To encourage the use of biogas several incentives are on offer to people with cars that can run on it. Parking is free in many areas, companies buying biogas cars for their employees pay less tax on them, and biogas itself is tax-free, so it costs 20-25% less than petrol. There are plans to introduce biogas trains in India.

**** Information point:***

- See http://tinyurl.com/ya2wpz

Pollution

More than 2 bn people are without grid-connected electricity. An Indian businessman has put his years of experience in the solar industry to use by developing a low-cost solar lamp. The industry had concentrated on more commercial products, ignoring the needs of those in remote rural areas, which had not been considered viable. In India over 100m families rely on kerosene lamps which do not give a good light and emit smoke which can damage health. Many accidents and deaths have occurred when kerosene lamps have been knocked over. The new solar lamp can provide a bright, constant white light for up to three hours. It costs just £18 ($32/1,400 rupees), so most people can afford it, but there is a micro-credit scheme for those below the poverty line. There are many benefits: mealtimes are better as insects can be kept away from the food; farmers can carry on working after dark; and children are able to continue with their studies safely, using a good quality light. And a serious threat to health is removed.

Water

In the Indian state of Maharashtra, good water management is a matter of life and death. Small-scale farmers depend on infrequent rainfall to maintain their fields and livestock. During the dry season drinking water is so scarce that supplies are regularly trucked into thousands of villages. The Indo-German Watershed Development Program has funded 145 village-based watershed development projects. Darewadi village, in Maharashtra's most drought-prone district, was by 1996 on the verge of desertification. Rainfall supported only three to four months of agricultural work a year, so villagers had to migrate for seasonal work. The Program requires villagers to agree to temporary bans on tree-cutting and grazing on land designated for regeneration. Its five years of work in Darewadi included tree and grassland planting, sustainable crop cultivation, and the building of simple water harvesting and irrigation systems such as hillside contour trenches and rainwater harvesting dams. By 2001 land under irrigation had increased from 197 to 342 hectares, with maize, wheat and vegetables among successful new crops. Grass fodder for livestock increased by 170%. The local water table has continued to rise, as have supplies of livestock fodder and the area of irrigated land.

Fishing

By the early 1990s overfishing of Fiji's coastal waters meant many rural people were going short of both income and protein. About a third of rural households were living below the official poverty line. What helped to reverse the decline was the introduction of locally managed marine areas (LMMAs), which combine traditional local conservation practices with modern monitoring methods. The aim is to improve local incomes by replenishing local waters. The kaikoso, a clam found in shallow mudflats and seagrass beds, is culturally important to the people of the village of Ucunivanua and is also a food staple and source of income. The villagers began began working with the University of the South Pacific and after two years of training in environmental education and community planning decided to set up a 24-hectare *tabu* (closed) area, hoping that as the clam population recovered there more larvae would settle in adjacent fishing areas as well. Between 1997 and 2004 the number of clams increased dramatically in both the *tabu* and nearby areas. The experiment has been extended indefinitely, the kaikoso clam has once again become abundant, and village incomes have risen significantly. The scheme's success has led to the adoption of LMMAs throughout Fiji, Asia, and the Pacific region.

Species Loss

By the early 1980s ecosystems were rapidly deteriorating in the north of Namibia, with rampant poaching of elephant ivory and rhino horn and severe over-use of drought-prone land. Wildlife populations, including the desert elephant, endangered black rhino, zebra, lion, impala and oryx were plummeting. But the country developed an anti-poaching programme based on using local people as community game guards and working with local NGOs to promote an increased sense of stewardship over wildlife. Following independence the government created nature conservancies - legally defined areas within the state's communal lands - where the sustainable use of animals for game meat, trophy hunting and tourism is allowed. Namibia's establishment of these conservancies is one of the largest-scale demonstrations of what is called "community-based natural resource management". Wildlife is benefitting. Populations of elephant, zebra, oryx, and springbok have risen several-fold in many conservancies as poaching and illegal hunting have fallen. People are being helped out of poverty, with more than 95,000 Namibians benefitting: gains include jobs, training, game meat, cash dividends and social benefits like school improvements or water supply maintenance funded by conservancy revenue.

**** Information point:***

- See the *World Resources 2005* case study slide shows: http://tinyurl.com/ynzvmp

Population

In many societies, even ones where contraception is widely available, there may be resistance to using it because of tradition, culture, and family and peer pressure. UNFPA, the UN Population Fund, is experimenting with novel ways to inform women about the reproductive choices open to them. In Bangladesh early marriage and childbearing are common, yet young couples seldom seek reproductive health services. So a UNFPA-supported project identifies and registers newlywed and young couples with one or two children, and offers them one-to-one basic counselling. The programme also educates young couples about the risks of early childbearing and closely-spaced births, and provides information on maternal and child health. Contraceptive use among newlyweds in this programme more than doubled - from 19% to 39% - in four years. Unmarried young men and women also attend sessions, suggesting there may be a growing demand for information among adolescents. In Egypt, Uganda and Zambia UNFPA is part of a project that has enlisted Girl Guides, with trained peer educators and links with clinical services, to provide reproductive and general health information to refugees.

**** Information point:***

- UNFPA: http://tinyurl.com/ymup37

Poverty

Few countries have enough experts to reach all their rural populations in need of expertise. Methods that are used to share knowledge more widely include field schools, mobile plant clinics and radio broadcasts. Bolivia has pioneered a different approach. Its "Going Public" scheme sends agronomists to talk about technical topics in places where rural people congregate, like fairs and country bus stops. There they share their practical knowledge on ways of increasing crops, briefly and simply, with farmers on such subjects as how to control potato and peach pests and how to recognise and encourage beneficial insects. They also answer the farmers' questions, relying on their ability to offer useful advice to attract an interested audience. Similar schemes are now running in Bangladesh, Uganda and Kenya.

**** Information point:***

- Also have a look at the Global Plant Clinic at http://tinyurl.com/yesgr2

You can find many more case studies and further information about attempts to put sustainable development into action from the following sites:

**** Information point:***

- The UK's Department for International Development has a poverty research portal, R4D, Research for Development. Go to http://tinyurl.com/yclzkg
- The World Business Council for Sustainable Development has pages of case studies on ways in which "companies work... to integrate the challenge of sustainable development into their business activities": http://tinyurl.com/yh9ood
- A long list of case studies, mostly academic and arranged helpfully by both topic and country, is available at http://tinyurl.com/yjv9cg
- The UK's Sustainable Development Commission has pages of case studies of projects, many of them small local initiatives and most (but not quite all!) in the UK itself, at http://tinyurl.com/yec36k
- Sustainable Cities: http://tinyurl.com/ymwj95

- The Division for Sustainable Development of the UN's Department of Economic and Social Affairs has a Directory of Websites of Case Studies in Sustainable Development. It is at http://tinyurl.com/yzfyh4
- Hands On, the TV series from Television Trust for the Environment and Practical Action, has a page of case studies: http://tinyurl.com/yzxf2k
- The UK Government's Sustainable Development Dialogues page lists projects under way in China, India, Brazil, South Africa and Mexico: http://tinyurl.com/ycg32m

Chapter 11: Crisis? What Crisis?

All journalists are sceptics. If they're not, they're in the wrong job. We don't take no for an answer, and we don't take yes either, until we are convinced there really is evidence to back up what someone is telling us. "The environment" is a popular subject at the moment, both with newsdesks and with readers.

Those of us who report on it need to retain every scrap of our scepticism, and not least when sustainable development is the issue.

It's a term that's often bandied about, but many people - journalists included - are hazy about what it really means. The Brundtland Commission gave one definition: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". A shorter and simpler one comes from the British diplomat and environmental writer Sir Crispin Tickell: "treating the world as if we intended to stay". There are two areas in particular where we should question not just what we are told about it, but the very idea itself. Can we live sustainably without redesigning modern society from the bottom up? And who would benefit from a sustainable world?

Can modern societies be sustainable?

There are environmental writers who criticise the very idea of sustainable development as a contradiction in terms. They say development inevitably means growth, and economic policies based on concepts of growth and the continued depletion of resources cannot be sustainable, because the word itself demands that resources remain dependably constant. But with resources like oil being used up much faster than Nature can replenish them, these writers argue that the term "sustainable development" is simply an attempt by business to show that capitalism is environmentally friendly.

Not everyone thinks sustainability and capitalism are incompatible, though. Jonathon Porritt is chairman of the UK's Sustainable Development Commission and founder director of Forum for the Future. He has written: "My book *Capitalism As If the World Matters* revolves around two simple observations: capitalism is basically the only economic game in town, and the vast majority of people (in both the rich and poor world) are content for it to remain so for the definable future; [and] learning to live sustainably on the only planet we've got is a non-negotiable imperative if we want to avoid an accelerating descent into resource wars, collapsing eco-systems and traumatic social and economic decline."

Perhaps there is an answer to be found in redefining the way capitalism works. If it is "the only economic game in town", that doesn't mean it can't be changed. Sir Crispin Tickell thinks it could work if it operated on some very different assumptions. He says no-one "would disagree with the statement by a well-known economist that 'the economy is a wholly owned subsidiary of the environment'. In short without a healthy environment, there can be no healthy economy. But there is a real difficulty on how to assess health. The ideologues of free trade like to suggest the price mechanism. But as another distinguished American once remarked: 'Markets are superb at setting prices, but incapable of recognizing costs'. Prices are indicators. But we have to make sure that they tell the truth about costs. A pricing system should include not only the traditional costs, but also those involved in replacing the resource, and those of the damage that use of the resource may do. In short current market economics will not do. We need new systems of measurement and new definitions of wealth... We should heed the words of Oystein Dahle, former Vice-President of Esso for Norway and the North Sea who once said: 'Socialism collapsed because it did not allow prices to tell

the economic truth. Capitalism may collapse because it does not allow prices to tell the ecological truth.'"

- Which of these three views is right?
- Is any of them right?
- Is there another way to allow everyone to lead lives which indefinitely become richer?
- Do we need another way to define wealth?

**** Information point:***

- A brief introduction to Our Common Future, the report of the commission chaired by the former Norwegian Prime Minister Gro Harlem Brundtland, is at: http://tinyurl.com/yka4z3
- Sir Crispin Tickell's website is at http://tinyurl.com/y9jbks
- For Jonathon Porritt, see the openDemocracy site: http://tinyurl.com/4khd
- Forum for the Future is at http://tinyurl.com/yzle4u
- Go to http://tinyurl.com/ya87q4 for the UK Sustainable Development Commission Ethical Performance is a newsletter reporting on socially responsible business: http://tinyurl.com/ydvds2
- The UK Government's website on Corporate Social Responsibility, designed to help UK companies to consider the economic, social and environmental impacts of what they do, is at http://tinyurl.com/yjn2zp

**** Action point:***

- Interview an economist and an environmental activist about the compatibility of capitalism and sustainable development, then report what they tell you in the form of a debate.
- Write a feature setting out the ecological arguments for and against capitalism, and whether reforming it could make sustainability possible. What reforms would be needed, how could your government introduce them, who would gain and who would lose?
- Research the protection of the environment in countries which have rejected capitalism.
- Find out what the environmental record of business and industry is - your country's own capitalists, and foreign companies operating in your country.
- What would your economy look like if prices reflected all the environmental costs of goods and services on a "cradle-to-grave" basis?
- How do you define your country's wealth?

Sustainability: who gains?

Apart from the question of *whether* and *how* we could achieve sustainable development, some people ask *why* we should. That's another way of asking a question that journalists routinely ask themselves in any number of situations: who's going to gain from this?

Suppose the world did find a way of living sustainably, continuing as it is at the moment indefinitely, without having to fear running out of resources. The critics say that would be ideal for those who have enough, but would do nothing for those in need. Put another way, the argument runs, the pattern of development today is already unsustainable, so there is no point in trying to preserve it. It's not "sustainable" that worries the critics so much as "development", because they say it is skewed in favour of the rich.

There was some support for this view in the annual *State of the World* report, published in 2006, by the Worldwatch Institute. It says the Earth does not have enough water, energy and agricultural land to allow China and India to attain Western living standards. The report said: "The world's ecological capacity is simply insufficient to satisfy the ambitions of China, India, Japan, Europe and the United States as well as the aspirations of the rest of the world in a sustainable way". If China and India were to consume as many resources per capita as Japan, then in 2030 "together they would require a full planet Earth to meet their needs", it said.

Assuming Worldwatch is correct, there are three possibilities:

- sustainability is unattainable;
- technology will have to find a way of bridging the gap (though it could almost certainly not solve the problems over water and farmland);
- the developing countries will need to agree to remain permanently less developed than the rich world.

The second and third look impossible, the first unacceptable. So again, it comes down to definitions. How can we define development in a way that meets the needs not just of future generations (the Brundtland Commission's definition) but of this generation as well? Looking at the topics from chapter 2 of this handbook, here are some obvious answers, and even more obvious questions:

- population: provide contraception to everyone who wants it, yes. But how do you overcome political, religious and cultural resistance?
- poverty: take money from other cherished areas of expenditure, like armaments. How? Improve governance and root out corruption. Again: *how?*
- water: produce more water. By towing icebergs from the Arctic to water-short countries (a few years ago there was a serious suggestion to do just that)? Any other ideas?
- energy: hope that technology will provide the answers. It may, but not quickly.
- climate: give everybody on Earth equal, tradeable rights to pollute the atmosphere with greenhouse gases. Would those accustomed to polluting freely accept rationing?
- species loss: stop poor people destroying our biological riches, which just happen to be what they need for daily survival. How do they survive then?
- pollution: spend what it takes to clean up the air, land and water. But where will the money come from?
- resource depletion: enact international laws to protect the global commons like the seas and the atmosphere. But even if you can get them agreed, who will enforce them?

At the time of the Earth Summit held in Rio de Janeiro in 1992 the first President Bush said: "The American way of life is not up for negotiation." Unless Americans - and the people of every other nation - do agree to negotiate on how to share the planet's limited resources, sustainable development will remain unattainable.

**** Information point:***

- On equal rights to emit greenhouse gases, see Mark Lynas's piece in the New Statesman: http://tinyurl.com/yd5tau and its description of Contraction & Convergence, the proposal for sharing emission rights equally among everyone on Earth
- The Worldwatch Institute's homepage is http://tinyurl.com/ycyo5d

**** Action point:***

- What is sustainable development trying to sustain?
- If we managed to achieve sustainable development, who would gain and who would lose?
- Ask a group of teenagers what living standards they expect when they are adults, and how they would share planetary resources.
- Write a backgrounder explaining how Contraction & Convergence would work, and what its impact would be on your country.
- Talk to development NGOs and report what they tell you about your government's policies for ending poverty, and about their impact on the environment.
- Spend time with people living on the poverty line: what is their environmental impact?

Chapter 12: Time to Act

Stories announcing that The End of the World is Nigh usually find a market. It's easy enough, especially with the Internet, to find someone, somewhere who will tell you that we're all doomed. But unless the stories are based on sound and verifiable facts readers will fairly soon get tired of them and stop believing anything the authors say.

That's a dilemma for journalists writing on sustainable development. The facts *are* sound, the science is persuasive. But there is still a credibility gap to be crossed. If journalists are sceptics, then so are many readers. We may report the facts of impending planetary breakdown, but we still risk not being believed - partly because some of our colleagues have a reputation for sexing up the story, and for scaremongering rather than simply reporting the unvarnished facts; partly because the readers have heard it all before (or think they have).

So it can be helpful to know how to show readers that this time the warnings are real and the crisis imminent. It's already working, to a degree: many people now believe that climate change really is happening and threatens us all, even if they are not yet thinking of doing very much about it.

One problem we're up against is the slow progress of the sustainable development crisis (or rather crises, because there isn't just one). Everyone reacts much more quickly to an instant emergency than to one that takes time to develop, which is lucky, otherwise we would not survive for long. But with a slow-burning emergency that steadily gets worse it's impossible to identify a point at which people will feel they simply have to act. David Clark, of the Massachusetts Institute of Technology, has said: "Things get worse slowly. People adjust. The problem is assigning the correct degree of fear to distant elephants".

Perhaps readers have just got too used to hearing warnings, even sober and well-founded ones. The Club of Rome, a global think tank and centre of scientists, economists, businessmen, senior international civil servants and former heads of state, is headed by Prince Hassan of Jordan. In 1972 the Club published one of the best known and most criticised recent warnings of environmental crisis, a report entitled *The Limits to Growth*. It argued (reasonably enough) that resources were finite but that human population was not, and that therefore the world would sooner or later run out of raw materials.

Then came the Declaration from over a thousand scientists from the four great global research programmes at Amsterdam in July 2001. They said:

> "human activities have the potential to switch the Earth's system to alternative modes of operation that may prove irreversible and less hospitable to humans and other life... the Earth's system has moved well outside the range of the natural variability exhibited over the last half million years at least... The Earth is currently operating in a no-analogue state"
>
> "the accelerating human transformation of the Earth's environment is not sustainable. Therefore the business-as-usual way of dealing with the Earth's system is not an option. It has to be replaced - as soon as possible - by deliberate strategies of management that sustain the Earth's environment while meeting social and economic development objectives."

The following year about 1,700 of the world's leading scientists, including most Nobel laureates in the sciences, issued the *World Scientists' Warning To Humanity.* It began: "Human beings and the natural world are on a collision course." Much of the damage, it said, was "irreversible on a scale of centuries, or permanent... No more than one or a few decades remain before the chance to avert the threats we now confront will be lost and the prospects for humanity immeasurably diminished."

In 2004 the *International Herald Tribune* published an article by four leading politicians and scientists who said: "The Earth has entered the so-called Anthropocene - the geological epoch in which humans are a significant and sometimes dominating environmental force. Records from the geological past indicate that never before has the Earth experienced the current suite of simultaneous changes: we are sailing into planetary *terra incognita*."

Later in 2004 came a warning, not from a scientist but from a perhaps more unlikely source, a leader of the oil industry - Lord Oxburgh, chairman of the oil giant Shell. He said that unless carbon dioxide emissions were dealt with, he saw "very little hope for the world".

The same year the Club of Rome published *The Limits to Growth: The 30-year Update.* Its publisher said: "The new book suggests that the central problem for the next 70 years will not be averting environmental decline - which the authors view as virtually inevitable - but containing and limiting damage to the planet and humanity. It's too late for sustainable development, the authors conclude... [they] are far more pessimistic than they were in 1972. Humanity has squandered the opportunity to correct its current course over the last 30 years."

So nobody can claim there have been no warnings. And still they come. Most have suggested there is still time to change. But one eminent scientist disagrees. Professor James Lovelock, a Fellow of the Royal Society (the UK's national academy of science), developed the Gaia Hypothesis, which suggests that the Earth functions as a single organism which maintains the conditions necessary for its survival. Writing in the London *Independent* in 2006, he said the Earth was "soon to pass into a morbid fever that may last as long as 100,000 years... before this century is over billions of us will die and the few breeding pairs of people that survive will be in the Arctic where the climate remains tolerable."

**** Information point:***

- Club of Rome: http://tinyurl.com/ylgth4
- World Scientists' Warning To Humanity: http://tinyurl.com/waydx
- The Anthropocene epoch in the *International Herald Tribune*: http://tinyurl.com/v6zq7
- James Lovelock: http://tinyurl.com/secq8

**** Action point:***

- How can we know whether it's too late - for sustainable development, or for humanity?
- How do we report genuinely alarming stories based on scientists' judgements of the Earth's crisis? Do we moderate them, to avoid being disbelieved? Or do we tell them as they are, despite the risk we shall be dismissed as scaremongers?
- Should we be reporting on sustainable development at all, with respected scientists saying it's a waste of time?
- How long will your country's raw materials and key resources last? What happens when they run out?

- Ask your national academy of science for its view of James Lovelock's prediction. Ask it what it predicts for your country in 20 years' time.
- Run a competition for school and university students: ask them how they would try to prevent Lovelock's prediction coming true.

Many of the warnings uttered in the past must have sounded pretty unlikely. Who in 1972 would have thought there was any likelihood of the Earth running out of raw materials, apart from a few eco-fanatics? Yet now we can see that the Club of Rome was on the right track. Science has come a long way in 30 years, and the incredible has become the all-too-likely. More and more people are prepared to accept there are critical points ahead. But there are still significant problems - for journalists trying to tell the story, and for the planet. Here are some:

- all these crises are coming to a head at the same time. If the world just had climate change to cope with, for example, it might be relatively easy: the technology is available, the priorities are clear. But it isn't just the climate: it's water, and energy, and population, and everything else
- radical changes can happen very quickly. Evidence from the distant past suggests the climate sometimes flipped from one stable system to a much colder (or hotter) one in as little as a decade. Professor John Schellnhuber, of the School of Environmental Sciences at the UK's University of East Anglia, believes there are a number of "tipping points" which could trigger rapid and irreversible changes in some crucial natural systems. One is the Asian monsoon system - there is still a widespread belief that a sustainable world is achievable through making some fairly minor changes, and an unwillingness to accept how radically different it would be. The UK Government's chief scientific adviser, Professor Sir David King, has said that aiming to stabilise concentrations of atmospheric carbon dioxide at roughly double the pre-industrial level would still expose us to many of the dangers of climate change, but it was, he thought, "realistically achievable". He added: "It is do-able, but we will have to bust a gut to make it happen." Busting a gut doesn't figure large in most people's hopes for the future.

  There are no glib, easy answers: telling people what they are not ready to hear is never simple. But there are some pointers which can sometimes be useful to us:

- never over-write the story. The prospects for avoiding crisis and building a sustainable world are dire enough already, so the story doesn't need sexing up anyway. The more sober and restrained and factual your copy is, the greater the chance it will be believed
- at the same time, don't pull your punches. Tell your readers that they can look forward to a future of surprises and busting guts rather than gently and comfortably adjusting to predictable and manageable changes
- context matters a lot. Telling your readers that oil is running short is helpful. Telling them that climate change would make it dangerous to burn any new resources is a lot more helpful
- understand why many readers do resist the idea that a range of converging environmental crises is about to burst. The last 60 years have been (in the developed countries, and in many of those now joining that group) an unprecedented period of growth and optimism. Accepting all that is going to change is not easy - don't overdo the doom-and-gloom side of what will happen when we start to act. We all have to change, certainly. But the changes need not be painful, and may even give us a better life than before.

Chapter 13: Selling the Story

Every journalist knows that the job involves you in being a bit of a tightrope walker. Every story needs us to perform a balancing act, often a fairly simple one but sometimes not. There's the balance to be struck between getting the story absolutely right and meeting the newsdesk's deadline. There's the need to tell the story as fully as possible, but to stay within the word count you've been given. There's the problem of writing for a mass audience, some of whom may also be quite well-informed: you cannot assume that all your readers will share the story background and details that you know, yet you cannot afford to tell them every little thing they might have missed, because if you do you will be talking down to a lot of them - and understandably they don't like that. One of the hardest tightropes to walk, often, is persuading your editor to run a story you think is important (or not to run one you think is not worth it). This chapter offers some pointers to meeting the demands of readers and editors.

Readers first. There are no hard and fast rules for producing intelligible copy that will make sense to everyone. But it does help if you can develop the habit of recognising jargon and filtering it out of your copy before it leaves your hands. Many sustainable development stories are about science, technology, medicine and politics. And scientists often talk in a way that makes sense to other scientists, but to few other people. Our job is to interpret them, and we do not have to be scientists ourselves to do so (in fact it's often better if we aren't, because then we'll approach the story from the point of view of the ordinary reader, not of a fellow scientist). Politicians talk politics, doctors sometimes talk medical-speak. They have something important to say, otherwise we wouldn't be talking to them. But we are the interpreters. It is sometimes surprising to see how many stories get into print which appear to have been written by journalists who did not understand what they were writing. So we have to get everyone we speak to to explain themselves in terms which we ourselves can make sense of. Then our readers will probably be able to do so too.

Information point:

- UNEP's GRID-Arendal centre in Norway has a page of hints for environment journalists: http://tinyurl.com/y4gfaa
- SciDev.Net, the Science and Development Network, has produced a helpful *e-Guide to Science Communication*: it's at http://tinyurl.com/wkwfl and will be useful for many sustainable development stories
- *The Reporter's Environmental Handbook* (ISBN: 0813532876) provides background and facts on a range of environmental health stories
- Most universities provide lists of experts available to talk journalists through their research or to give background on topical stories. For example, if you go to http://tinyurl.com/rd644 you can register for the University of Oxford's *Online Media Guide* which offers journalists “expert opinion on a wide range of research topics and current affairs"

Each journalist knows their own readers best, or they should do, so it can be dangerous to generalise about what will appeal to a particular readership. Even so, there is one piece of newsroom advice that can often be helpful: the three questions that many readers ask themselves when they read about some new product or development. Obviously they don't apply to a running story like a war or a political conflict, but sustainable development is often about new ways of producing things, or doing them. The three questions are:

- will this make me richer?

- will it make me healthier?
- what will it do for my children?

Part One of this handbook described some of the problems which bedevil the attempts to find a sustainable way of living. If you have the three questions in the back of your mind when you're writing about possible solutions to many of those problems, you'll probably be pressing the right buttons with your readers.

Information point:

- See the Children's Environmental Health Network at http://tinyurl.com/yxq98c for one take on potential problems
- Another, dating back to 1997 but still useful, is from the Natural Resources Defense Council: http://tinyurl.com/uy9xg

One other sometimes useful approach is to think out of the box. A story does not have to have "sustainable development" stamped all over it to make it a good story for us. Many stories about Part One's problems fit into more than one category and can come at the subject at a tangent. For example:

- *water* could include diplomatic talks about sharing water resources across borders
- *energy* might also mean military threats designed to guarantee oil supplies
- *population growth:* that could also legitimately be about psychological attempts to persuade couples that having fewer children is in their own interest
- *species loss* is not just about saving the photogenic animals that tourists want to see, but also agricultural reform which encourages the survival of much humbler creatures
- *resource depletion:* if a politician is proposing economic incentives to decommission fishing fleets then that's potentially a story about sustainable development.

All of these could be stories for specialist colleagues (respectively the diplomatic, defence, health, rural affairs and industry correspondents). They could be stories that lost their place on the main news pages and were relegated to a special interest section like a health supplement or the business pages. But equally they could be general interest stories. And even if the journalist who writes them does so in a way that ignores the sustainable development angle, there is nothing to stop you offering a sidebar, or backgrounder, or feature that will take the story on.

Action point:

- Look at today's splash and page leads. Is there a way you could have ensured it was your byline that was on them? If not, is there a way you could have expanded them and taken them further by using your knowledge and contacts to write some copy to go with them?
- Make sure you know the news desk's plans well enough to know what will be tomorrow's lead and main stories, and what they are working on for the next week ahead.
- Make sure you see a good environment/science diary every day, so you can bid for a story before a colleague lays claim to it.

So what about editors? Oddly, something that can help a reporter is to be able to see the world through the eyes of an editor. It may not be easy, because we naturally want our story to run, and reporters are not the best people to understand the pressures of producing a balanced paper that will sell. But showing your editor that you understand why your story has been cut or spiked may make you a friend for another day.

Editors seldom have the time to acquire much detailed knowledge of a particular subject, and it would be unrealistic to expect many of them to be sustainable development experts. But they will expect a reporter covering the patch to give them reliable advice - advice on the strength of a story, for example, the dependability and independence of a source, and the worth of running a story at all. Knowing when to say no to a suggested story is an invaluable skill.

One argument that usually carries weight with an editor is that a story, or a subject, is something that will attract readers. Increasingly that is true of the environment, which can obviously include almost everything described by the term "sustainable development". Do you have many foreign business people visiting your country? Do you have a thriving tourist industry? Both may well provide a good and enquiring readership for sustainable development coverage (though for different reasons). So it's worth doing what you can to encourage your paper to do regular market research, identifying readers' interests and making sure it is covering them.

There's another side to consistent and good editorial coverage of a subject, too: it can pay a double dividend. The better the copy, the better commercial proposition your paper will be. If you gain a reputation as a must-read journalist for anyone who wants to know the latest national and international news about sustainable development, you'll attract not only readers but advertisers. Several newspapers have found they can use this to their advantage in a virtuous circle, because the more advertisements they carry the more attractive they will be to anybody who may be looking for a relevant product or service - or perhaps a job. One UK national has a weekly supplement which includes several environment pages, and pages of jobs always appear on the same day. Showing your editor a simple way to help to make the paper pay will never hurt a journalist's career prospects.

Information point:

- On attracting advertisements, see for instance the London *Guardian's* page at http://tinyurl.com/y8zvjb. Might it work for you?
- Tourism Concern is about ethical tourism, and gives some idea of the large and growing market, which will be hungry for coverage of sustainable development: http://tinyurl.com/y4qvbf

Action point:

- Talk to business and industry associations, chambers of commerce, groups of importers, and find out from them which foreign companies are operating in your country. Do they have an interest in sustainable development (these days most can hardly afford not to)?
- Find out where most of the tourists to your country stay and what they do, and make sure your coverage is going to appeal to them.
- Constantly prod your advertising colleagues to make sure they attract all the jobs and other possibilities on offer.

Chapter 14: The Sustainability Revolution

Anyone writing about a sustainable world shouldn't be too surprised to be asked what it will be like, how different it will be from this one, and what impact it will have on our lives. In one sense the answer is fairly easy, because we already know what some of the elements of that world will have to be. What we don't know, though, is what the cumulative impact of those different elements - and of others we can't yet foresee - will mean. Beyond that, we can describe some of the physical differences between our world and the one we're aiming at, but we can have less idea of some of the mental changes it will probably both require and cause. But we need some sort of picture of what we hope to achieve.

Climate and energy: the sustainable world relies far more on renewable energy like solar, wind and wave power. It uses energy much more efficiently, getting it to do two jobs instead of one where possible (for instance, producing both electricity and heat), and saves it (not making unnecessary journeys, not leaving appliances on standby). It does not try to find alternative energy for every purpose that consumes energy now, because it realises that sustainability means less need for mobility. So it is a world of self-sufficient communities where people can find what they need within easy reach and do not have to travel long distances for work, leisure or anything else. It values privacy much less than this generation, so public transport is seen as the norm and private vehicles are regarded as anti-social. There is much more sharing of expensive equipment and much less stress on acquiring ever more private property.

Water: it is a world that ensures everyone's basic needs are met before anyone's desires can be satisfied. It uses technology to make every drop count (drip irrigation, for instance, which uses far less water than the usual method). It recognises the need of the natural world for water, so it conserves wetlands. It uses groundwater only as fast as the aquifers can be replenished naturally from the surface.

Pollution: in the sustainable world waste becomes not a problem but an opportunity. Products are designed "from cradle to grave", so that they can be dismantled and their components re-used. Recycling is the norm, and throwing anything away is seen as aberrant. The energy revolution will have gone most of the way to solving the problem of air pollution, and both industry and agriculture will have found ways to stop polluting water sources.

Resource depletion: the world will recognise that the environment does not respect national frontiers, which are therefore always treated as less important than environmental protection and human survival. The global commons (oceans and the creatures that live in them; forests; the atmosphere; the entire biosphere that supports life) are protected by international agreements which are strictly enforced.

Population and poverty: because in this new world we have recognised that being poor is one of the main reasons why people have large families, poverty really has been consigned to history. Everybody is guaranteed a basic standard of living, with adequate food, water, sanitation, housing, health care and education. (Ending poverty implies a radical reform to the world's trading patterns.) There is no compulsion to limit family sizes, but contraception is available to all couples who want it.

Loss of species: there is rigorous protection of so-called "biodiversity hotspots", the tropical areas which contain the richest mix of species. Elsewhere the destruction of habitats is strictly controlled and where possible avoided. There is a massive international research effort to catalogue the Earth's species and to understand both their potential value to humans and their place in the natural order: taxonomy gets the funding and political backing it has never had before.

It's a daunting list - an impossible one, perhaps. It is not the sort of thing to try on a hard-bitten news editor without very careful preparation. But virtually everything on it is *practically* possible. The problems are political. And the sheer improbability of us ever being able to do everything on the list is a reminder of the paradigm shift the world will have to make to move to a sustainable path.

Information point:

- The Centre for Alternative Technology offers practical solutions and aims "to show that living more sustainably is not only easy to attain but can provide a better quality of life": http://tinyurl.com/sl7fh
- The World Council for Renewable Energy is at http://tinyurl.com/y5c64s
- The Association for the Conservation of Energy also has a useful site at http://tinyurl.com/y5qpjc
- BedZED - the Beddington Zero Energy Development - is at http://tinyurl.com/yyzboy
- UNEP has a freshwater portal: http://tinyurl.com/y66hrv
- Its GEO Yearbook has a section on energy and air pollution: http://tinyurl.com/txwo3
- The Global Commons Institute campaigns for atmospheric emission rights to be shared equally worldwide, but its argument can apply to other areas as well: http://tinyurl.com/7gpxf
- A valuable link is the World Resources Institute, and especially its Earthtrends page: http://tinyurl.com/atph
- The UN Population Fund, UNFPA, is at http://tinyurl.com/y3llzo
- The UN Development Programme, http://tinyurl.com/y6oplb, is a good resource on poverty
- Make Poverty History is a campaigners' view: http://tinyurl.com/75o44
- IUCN-The World Conservation Union (it's also known as the International Union for the Conservation of Nature) is an authoritative source on the threats to species and their habitats: http://tinyurl.com/y8597q
- The New Economics Foundation is at http://tinyurl.com/y4rsee. Have a look at its Happy Planet Index: http://tinyurl.com/k7ao8

Action point:

- Draw up your own scenario of what a sustainable version of your country would be like. Then tell your readers, sit back, and wait for their reaction.
- Talk to scientists and find out how sustainability could actually *improve* your readers' lives: no more travelling long distances to work for those living in self-sufficient communities, no more air pollution because they'd be using clean green renewables, etc...
- Interview a government minister on the country's plans for sustainability.

The psychological shifts we'll have to make to build a sustainable world are staggering. They were summed up by the British environmental thinker and doer Sir Crispin Tickell, a former diplomat and then warden of Green College, Oxford. He said: "When it comes to protecting the environment, the hardest thing we have to do is to find new ways of thinking."

One new way of thinking is to recognise an old truth: that we are not so much independent as interdependent, the realisation that the world really does work as a whole - or else increasingly it doesn't work at all. New thinking means new economics, and a new value system, valuing ourselves and others for what each of us can do to

enrich life. It means a system of economics that includes the environment in the way it reckons the costs of what it produces and does. It values quality of life above gross national product. It demands a society which looks after the environment so that the economy can thrive, not the other way round. It means a world which recognises the value of what Nature gives us and does for us, and includes that in the balance sheet.

One of the radical ways to build an economy tailored to real needs will involve a step change in society's system of rewards: setting a maximum wage. Recent political wisdom in the UK and elsewhere has argued for a minimum wage as a safety net, but has shown no interest in limiting the amount people can earn at the other end of the scale. Yet Andrew Simms, policy director of the New Economics Foundation, argues that highly unequal societies tend to fall apart, the opposite of sustainability.

Professor Norman Myers, the British environmentalist and biodiversity expert, is clear what he understands by new thinking. "It's new forms of energy for a start... It's curbing population growth, including in the developed countries, because population growth in a country like Britain is more of a threat to the environment than similar growth somewhere like Bangladesh... New thinking is remembering that the winds carry no passports, and that no island is an island any more. Nowhere is isolated from the rest of us - unless we help China not to build the 550 coal-fired power stations it's planning, we'll all be in trouble... we face threats which are unprecedented in character, scale and gravity. To have any chance of scaling back the damage they will cause we have to move immediately to a wartime footing - economically, politically, institutionally and legally."

New thinking means thinking beyond our own generation. The zoologist Colin Tudge writes of what he calls the "desperately trivial twinklings of time" and argues that we have to find a way to think not just over the next four or five years of the political cycle, but for the long term. "When we take the long view", he writes, "we can see that matters of huge consequence can take many thousands or even millions of years to unfold... how momentous, and long-lasting, it can be to do the kinds of things that we do now as a matter of course: building highways across continents, removing forests, diverting rivers."

There won't be a sustainable world without radically new thinking. It may take some surprising forms, and sometimes it may not even seem new at all. Have a look at the concluding pages of the Club of Rome's *Limits to Growth: The 30-Year Update* (it was written by Donella Meadows, Jorgen Randers and Dennis Meadows, was published in 2004, and is available in the UK from Earthscan at http://tinyurl.com/ycpp2n). The authors write of five tools they say are "not optional; they are essential characteristics for any society that hopes to survive over the long term". The tools are: visioning (or imagining); networking; truth-telling; learning - and loving. That's not a word you hear in too many newsrooms. New thinking looks like being full of surprises, even for journalists.

Annexes

Glossary

A quick reference guide to frequently-used words and terms: you probably know them all already, but just in case.

Acid rain

Damage caused to forests, lakes, rivers and other wild areas by rain and snow containing abnormal levels of nitric and sulphuric acid, produced by the burning of fossil fuels.

Adaptation

A policy which involves accepting that climate change is happening, and that humans should try to adapt to its impacts, for example by developing drought-resistant crop varieties (and see Mitigation).

Anthropocene epoch

The present geological era, in which many scientists say humans are a significant and perhaps the decisive force in shaping the planet.

Biodiversity

The variety of all forms of life.

Biomass

Organic material such as plants and wood which can be used as fuel to produce energy, or in industry.

Brundtland Commission

The World Commission on Environment and Development, chaired by the former Norwegian Prime Minister Gro Harlem Brundtland.

Bushmeat trade

The trade in meat of wild species, particularly in Africa: it is one of the principal threats to the survival of species like gorillas.

Carbon capture/sequestration

A range of techniques for trapping carbon dioxide (CO2), the main greenhouse gas produced by human activities, and storing it (usually underground or beneath the sea) instead of allowing it to escape into the atmosphere.

Clean combustion

Techniques for burning coal (the most abundant fossil fuel) more cleanly than in traditional methods.

Climate change

Used to describe the way in which human activities are intensifying natural climatic variations. It is a more accurate term than "greenhouse effect" (which is entirely

natural, otherwise the Earth would be too cold to support life) or "global warming" (because some parts of the world may in fact become colder).

Ecosystem

A natural area (a forest, perhaps, or a river basin), the total number of species in it, and the way in which they affect (and often depend on) one another.

Endocrine disruptors

Synthetic chemicals which affect hormones in the body and disrupt its normal functioning.

Fossil fuels

Coal, oil and gas, all the products of fossilised animal and plant remains.

Gaia Hypothesis

The theory developed by the British scientist James Lovelock which suggests the Earth functions as a single organism able to maintain the conditions necessary for its own survival.

Greenhouse gases

The gases, some from natural causes but increasingly from human activities, which form a "blanket" round the Earth that traps heat from the Sun near the surface instead of letting it escape back into space. Chief among the gases are carbon dioxide and methane.

Groundwater

Underground lakes which are gradually replenished by water filtering down from the surface.

Hermaphroditism

The state of belonging to both sexes, often accompanied by possession of both sexes' genitals.

Hydropower

Electricity generated by water, which often requires the construction of large dams and reservoirs.

Kyoto Protocol

The international treaty designed to tackle climate change by securing the agreement of developed countries to reduce their greenhouse gas emissions.

Microgeneration

Generating power in local, decentralised ways: it can mean households using small wind turbines, for instance, or solar panels.

Mitigation

A policy which involves trying to reduce the expected impacts of climate change, chiefly by reducing emissions of greenhouse gases (see Adaptation above).

Nuclear fission

Fission works by splitting atomic nuclei to release huge amounts of energy. No-one has yet worked out how to dispose of the waste, which remains dangerously radio-active for thousands of years. Many people also have safety fears about fission reactors and think they could help nuclear weapons to spread, because the technology for generating electricity makes it possible to build an atomic bomb.

Nuclear fusion

Fusion releases energy not by splitting atomic nuclei but by forcing them together. The temperatures needed to make fusion work are above 100 million degrees C. The technology, if it works, would be safer and less polluting than fission, but it is unlikely to be commercially available for at least 40 years.

Particulates

Tiny airborne particles: they can be dust or pollen or other materials, but there is most concern over those from the burning of fossil fuels, as these can damage health when they are breathed into the lungs.

Peak oil

The point at which the world will have produced half of all the recoverable oil. Nobody knows exactly when this will happen, but some experts believe it already has, and that oil production will decline from now on.

Positive feedback

A term used by climate scientists to describe how a warming world can in some circumstances make itself warmer still. One example is the disappearance of ice in the Arctic. While the ice remains, it reflects the Sun's heat back into space. But when it melts the white ice is replaced by darker water which absorbs more heat, speeding up the warming process.

Renewable energy

Energy which comes from sources that, unlike fossil fuels, constantly renew themselves - the Sun, the wind and even ocean waves are some of the main types.

Sustainable development

Development that "meets the needs of the present without compromising the ability of future generations to meet their own needs", according to the Brundtland Report. Or how about "treating the world as if we intended to stay"?

Tipping points

Rapid and irreversible changes in natural systems which could have enormous consequences for life on Earth. Examples of possible tipping points which some scientists think may be coming close include the melting of the West Antarctic ice sheet, and the disruption of the Asian monsoon.

Acronyms

ASEAN	Association of Southeast Asian Nations
ASPO	Association for the Study of Peak Oil and Gas
AU	African Union
CAT	Centre for Alternative Technology (UK)
CBD	UN Convention on Biological Diversity
CSD	UN Commission on Sustainable Development
DfID	UK Government's Department for International Development
ECI	University of Oxford Environmental Change Institute
EU	European Union
FAO	UN Food and Agriculture Organisation
FoE	Friends of the Earth
FSC	Forest Stewardship Council
GCI	Global Commons Institute
GEO	UNEP's GEO (Global Environment Outlook) report series
GRID-Arendal	UNEP's Global Resource Information Database office in Norway
IEA	International Energy Agency
IFPRI	International Food Policy Research Institute
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature and Natural Resources (usually known as IUCN-The World Conservation Union)
MDGs	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
NASA	US National Aeronautics and Space Administration
NEF	New Economics Foundation
NGOs	Non-governmental organisations
SIWI	Stockholm International Water Institute
UKSDC	UK Sustainable Development Commission
UNAIDS	The Joint UN Programme on HIV/Aids
UNDP	UN Development Programme
UNEP	UN Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organisation
UNFPA	UN Population Fund

USAID	US Agency for International Development
USEPA	US Environmental Protection Agency
WBCSD	World Business Council for Sustainable Development
WCI	World Coal Institute
WCU	World Conservation Union (see IUCN above)
WRI	World Resources Institute
WTO	World Trade Organisation
WWF	WWF, the global environmental conservation organisation: still sometimes known as the World Wildlife Fund
ZSL	Zoological Society of London