



United Nations
Educational, Scientific and
Cultural Organization



Media as partners

in education for
sustainable development:
A Training and Resource Kit

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Media as partners in education for sustainable development: A Training and Resource Kit

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Foreword

The United Nations Decade of Education for Sustainable Development (2005-2014) aims to integrate the principles, values and practices that can fulfil the world's present needs without compromising the future of humankind, into all aspects of education and learning.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is the lead co-ordinating agency designated to ensure the implementation of this far-reaching, complex undertaking. It has been entrusted by the United Nations General Assembly with the responsibility of promoting awareness and understanding on sustainable development. Media influence and shape public opinion, and UNESCO therefore invites all electronic and print media organisations, media professionals, training institutions and students to participate in the Decade of Education for Sustainable Development. This can be done by learning, understanding and imparting knowledge that is essential for the survival, growth, protection and development of planet Earth.

Why is media engagement vital in raising awareness on sustainable development? How can the media ensure systematic coverage and disclosure of accountability issues everywhere? Where can the media find accurate and reliable information? What will make the media consider covering sustainable development issues?

Media managers from developed and developing countries broached some of these questions at the World Summit on Sustainable Development in Johannesburg, South Africa, in 2002. They arrived at the conclusion that the greatest problem with sustainable development is that it has not entered the public conscience. They felt that the term 'sustainable development' is United Nations (UN) terminology, and that

media audiences cannot relate to the issues and challenges unless these are profiled through people to whom they can relate. In countries where the struggle for sustainable development is part of daily life, media managers wanted to see more engagement that contributes to a growing, creative, information-sharing platform that is open to constructive discussion and debate.

Media as Partners in Education for Sustainable Development addresses issues that are being discussed on the social, economic and environmental fronts. It does not pretend to know all the answers, but draws on existing experience and recommends resources for further inquiry and research. It encourages the media to engage in public participation and to debate improvements that can lead to sustainable development. It also seeks to contribute to media awareness and understanding of sustainability, as outlined by the *Agenda 21 Plan of Action* for all nations endorsed at the 1992 Earth Summit in Rio de Janeiro.

The media community is urged to use this tool to inquire, investigate and report further so that issues can be disclosed, discussed and debated publicly and democratically.

We believe that this media training and resource kit will assist media professionals in their efforts to report on sustainable development issues, help provide relevant information resources and establish a model for media training on this important topic.



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Introduction

Sustainable development: “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

The World Commission on Environment and Development, known as the Brundtland Commission, 1987¹

The concept of “sustainable development” dates back a long time, but it was at the United Nations (UN) Conference on Human Environment (Stockholm, 1972) that the international community met for the first time to consider global environment and development needs, to define principles for the preservation and enhancement of the natural environment and to highlight the need to support people in this process. Later, in 1992, at the UN Conference on Environment and Development, 178 heads of state adopted three important documents: a comprehensive plan of action entitled *Agenda 21*, the *Rio Declaration on Environment and Development*, and the *Statement of Principles for the Sustainable Management of Forests*.

These plans and principles were reaffirmed at the 2002 World Summit on Sustainable Development in Johannesburg, where tens of thousands of participants gathered to focus the world’s attention and direct action toward improving people’s lives and conserving natural resources. Countries were then asked to re-examine their consumption and production patterns, commit to responsible, environmentally sound economic growth, and work together to greatly expand cross-border cooperation to share expertise, technology and resources.

The UN three years later launched the Decade of Education for Sustainable Development (2005-2014). The Decade aims to integrate the principles, values and practices of sustainable development into all aspects of education and learning, so that sustainable development can be understood by everyone and participation in its attainment can take place at every level of society.

“Sustainable development” is a difficult phrase, because it can mean many different things. Sustainability is about water and food, shelter and energy. It is about how people hope to become rich and secure prospects for good health. It is also about the decisions of world leaders and their agreement and actions on what needs to be done. The UN’s 15 ‘perspectives’ on sustainability show just how wide and critical the issues are (see Table 1: Strategic Perspectives on Sustainable Development).

Media as Partners in Education for Sustainable Development: A Media Training and Resource Kit attempts to provide media professionals with basic information about some priority issues for sustainable development. It also provides practical exercises to inspire investigative reporting, and draws links to existing experience that may enrich the information resources of media professionals. We encourage you always to verify your sources – including those provided in this kit – bearing

in mind the rapid changes and advancements in science and technology.

Reporting on sustainable development

Is sustainable development a subject only for specialist reporters - science journalists, economists, health and diplomatic correspondents, environment writers? It can be, but it is also something your reporting can cover without 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.

A good journalist should, however, learn something about the subject on which they are reporting. Most journalists writing about climate change, for example, will need to gain a rough knowledge of the science involved, because that is what most readers want: something to guide them through the confusions, complexities and even the contradictions of what scientists are saying.

Too much detailed knowledge of science can, however, be a problem for journalists: we need to know just enough to make sense for our audience of what the experts are saying, but not so much that we confuse them with excess detail. Readers will thank you for making sense of the science for them. Sometimes, there is no way of explaining a technical subject without using scientific ideas and language. When you do, your audience will expect a clear translation, so they can understand what you are saying.

Your audience will also be grateful if you can filter out exaggerated claims, and they will want you to put the sceptics’ arguments in context. If you can report the science comprehensively and clearly, you will be giving your readers a chance to make up their own minds.

What you do need when reporting on this subject are the classic and professional skills required of all journalists: excellent writing skills, objectivity and credibility - but also curiosity, persistence and humanity. You need a ‘nose’ for a story, the determination to assess incomplete information and to report a story accurately and comprehensively, and the ability to make it interesting and relevant to your audience. 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 this manual is designed to be useful to both groups. The publication is accompanied by a DVD and a CD containing additional material.

¹World Commission on Environment and Development (1987, led by Dr Gro Harlem Brundtland), Oxford: Oxford University Press; full text online at: <http://ringofpeace.org/environment/brundtland.html>

Throughout this kit, you will find boxes with information about Education for Sustainable Development (ESD) and some of the subjects covered by each chapter. By reading these, you will discover more about why ESD matters and how the idea came into being.

Be sure of your sources and your facts

When you ask the key questions - how serious is environmental damage already? How bad could it be? When will we know? What can people do? - the answers will depend upon who you ask. It is important to decide who you can trust as a source of information, and to check every fact.

Follow closely what your chosen sources report, because what they say is likely to change very quickly, as the science is updating itself all the time. To make sure you are not missing anything essential, keep a regular eye on sources that may offer a different perspective or extra information.

A few words of warning. It is particularly important to treat what you read on the Internet carefully and to make an effort to verify your information. You can find almost anything on the Internet, and some of it will be incomplete, misleading or simply wrong. If you search long enough, you will probably find a scientist who says what you need to back up your story, but is their point of view really credible? Remember to check what you find on the web just as rigorously as you check any other source.

Sustainable development is a fiercely-argued subject. Always keep in mind that 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.

Be aware also that the information in this document presents the opinions of an array of different scientists, commentators and economists around the world. Its authors encourage you to verify and test these opinions and information in your own country and context.

This Media Training and Resource Kit

Section One, *Our Damaged World*, 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 people. There is so much to cover that we can only give you a glimpse of some of the problems – but the information and ideas should be enough to set you thinking about what is happening in your nation.

Section One's separate but linked chapters 1-5 cover climate change, some aspects of the depletion of world resources (forests and fisheries, fresh water, biodiversity), and the impact of pollution.

Section Two of the kit puts the idea of sustainable development in a wider context for the reporter: it sets out some of the questions that any sceptical journalist would ask. Chapter 6 gives a flavour of some of the arguments around the subject – is sustainable development a fantasy? Chapter 7 looks at whether we are

asking the right questions of the right people about our current problems. Chapter 8 reminds us of imminent scientists' warnings: many of them say the world is approaching what they call "tipping points", crises beyond which change will be irreversible.

However good you are as a reporter, there is no point in creating your report if you cannot persuade your editors to run your stories. So Chapter 9 is about salesmanship, offering hints on making the subject matter attractive to editors and to your readers.

Finally, in Section Three, we move towards the future. Chapter 10 details a number of case studies, glimpses of places and situations where people are putting projects in place that will help develop a sustainable way of life. Chapter 11 tries to imagine 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?

At the end of most chapters, there is a list of resources and ideas to pursue for stories or further thinking (a further full list of reading material appears in the Appendices). Each chapter is followed by a training section with exercises related to each chapter's subject matter. These training modules can be adapted by trainers to the needs of individual classes by choosing a chapter or chapters with particular local relevance, or by using a different 'story' as the basis for the training activities. The questions given in the training sections should be updated regularly within the relevant context, place and time.

Resources and ideas

The UN Decade of Education for Sustainable Development

Information

- *The DESD website:* <http://www.unesco.org/education/desd/>
- *Agenda 21, the plan of action on sustainable development set out at the Earth Summit in Rio de Janeiro, 1992:* <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>
- *A booklet on the essential elements of the DESD International Implementation Scheme, in various languages:* <http://unesdoc.unesco.org/images/0014/001473/147361E.pdf>
- *Education for sustainable development toolkit:* <http://www.esdtollkit.org/>
- *Education Today, UNESCO's education newsletter, issue 16 on ESD:* http://portal.unesco.org/education/en/ev.php-URL_ID=46227&URL_DO=DO_TOPIC&URL_SECTION=201.html
- *The United Nations Millennium Development Goals, agreed in 2000 by all UN member states:* <http://www.unmillenniumproject.org/goals/index.htm>
- *The Science and Development Network presents news, views and information about science, technology and the developing world:* <http://www.scidev.net/>
- *The Encyclopaedia of Life Support Systems (EOLSS) is the most reliable source of knowledge on the many aspects of sustainable development, and the world's largest online publication. Regularly updated, the EOLSS is thematically-organised, providing state-of-the-art information, knowledge and expert opinion:* <http://www.eolss.net>

Strategic Perspectives on Sustainable Development

Society

Human rights: respect for human rights is at the heart of sustainable development. Education about sustainable development must enable people to assert their right to live in a sustainable environment.

Peace and human security: the fragile processes of sustainable development are undermined by insecurities and conflicts which cause suffering, pressurise health systems, destroy homes, schools and whole communities, and lead to the large-scale displacement of people.

Gender equality: each member of society must respect others and be able to fulfil their potential. Men and women must see each other as equals, recognising their shared responsibilities and individual roles as caretakers of the environment in which they live and, more broadly, the world around them.

Cultural diversity and intercultural understanding: opportunities for education and development are damaged by a lack of tolerance. Peace is founded on intercultural understanding.

Health: health is closely bound with environment and development issues. Poor health hampers economic and social development, triggering a vicious cycle that contributes to unsustainable resource use and environmental degradation.

HIV and AIDS: the ravages of this pandemic in Africa and rising incidence in Asia and Europe are capable of reversing sustainable development and educational processes.

Governance: sustainable development is best promoted where governance structures enable transparency, full expression of opinion, free debate and input into policy formulation.

Environment

Natural resources (water, energy, agriculture, biodiversity): we must protect the world's natural resources, which are essential for human development and survival – humanity depends upon goods and services provided by ecosystems.

Climate change: climate change involves the entire world, and is bound up with issues of poverty, economic development and population growth.

Evaluate international agreements on the basis of how they impact the environment, the atmosphere and check harmful effects towards the climate.

Rural development: three billion people live in rural areas, and 60% of them are in the developing world.

Sustainable urbanisation: cities have moved to the forefront of global socio-economic change, with half the world's population living in them, and the other half increasingly dependent upon them for their economic, social and political progress. Cities pose threats to sustainable development, but also hold opportunities for economic and social advancement and environmental improvements.

Disaster prevention and mitigation: sustainable development is undermined where communities suffer or are threatened by disasters. Education for disaster risk reduction can reduce vulnerability and improve self-help strategies.

Economy

Poverty reduction: this is the central issue of the economic element of sustainable development, and the overarching concept guiding internationally agreed-upon goals and commitment to world development.

Corporate responsibility and accountability: the economic power and political influence of large multi-lateral corporations indicates a huge potential contribution to, and effect on, sustainable development.

Market economy: the current global market economy poses challenges to the environment that can promote exploitive activities, placing populations in precarious economic conditions.

The confluence of market influences and environmental protection to the advantage of local communities is a hallmark of good governance and also beneficial to overall economic stability and health.

Table 1: Strategic Perspectives on Sustainable Development²

²The Strategic Perspectives are adapted from Section 3, Perspectives, (pp18-20) in the document Framework for the UN DESD International Implementation Scheme: <http://unesdoc.unesco.org/images/0014/001486/148650E.pdf>

SECTION 1: OUR DAMAGED WORLD



CHAPTER 1

Climate Change

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Education for Sustainable Development - Climate Change

The UN Decade of Education for Sustainable Development (DESD) provides an opportunity to promote active learning and suggests ways to make sense of climate change issues in the context of people's daily lives. It seeks to translate passive awareness into active concern and to sustain behaviour change through daily habits.

Education for Sustainable Development intends to raise awareness about the crucial and urgent need to limit damage to the atmosphere and to check harmful climate change. It also informs people about conventions and international agreements using education as a means to build a global lobby for effective action, showing people that they can contribute to lasting solutions.

Educating about climate change and improving awareness about environmental concerns can encourage people to question the way we think, the values we hold and the decisions we make in the context of sustainable development.

The key messages

- Climate change is a global problem, yet each of us has the power to make a difference.
- Even small changes in our behaviour can help prevent greenhouse emissions without affecting our quality of life.
- Actions to address climate change need to be taken at all levels and by everyone.

Climate change

"A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

The UN Framework Convention on Climate Change (UNFCCC), Article 1.

The UNFCCC makes a distinction between “climate change”, where human activities are altering the atmospheric composition, and “climate variability”, which is attributable to natural causes.

Natural climatic variations have occurred throughout the Earth’s history, and the marks on the Earth left by these changes in the atmosphere’s composition have been observed by geologists and other scientists. However, human activities are now interacting with natural systems to create change.

This human-induced climate change is strictly known as “anthropogenic climate change”, but is often referred to simply as “climate change”. It is now widely accepted that global average temperature is rising as a result of the emission of greenhouse gases produced by human activities, which is creating changes not beneficial to the Earth’s atmosphere or to the environment. The Intergovernmental Panel on Climate Change (IPCC) said in its 2007 environmental assessment: “Warming of the climate system is unequivocal”.³

“Climate change” is a more accurate term than “global warming”, because although the average global temperature is rising, some parts of the world may in fact become colder. The “greenhouse effect” is an entirely natural process (without it the Earth would be too cold to support life), but humans have enhanced this effect to the point where it is creating climate change.

Greenhouse gases, some produced naturally but the majority increasingly produced by human activities, are forming a blanket round the Earth. This traps more heat from the Sun near the Earth’s surface, instead of letting it escape back into space.

Chief among the greenhouse gases are carbon dioxide (CO₂) and methane (CH₄). Global atmospheric concentrations of the greenhouse gases i.e. carbon dioxide, methane and nitrous oxide (N₂O) have increased markedly as a result of human activities since 1750 – when industrialisation began in Western countries - and now far exceed pre-industrial values determined from ice cores spanning many thousands of years.⁴

Carbon dioxide is the main contributor. It is produced largely by the burning of fossil fuels – oil, gas and coal. These fuels are used in industry, to run transport from aircraft to private cars, and for heating and cooling buildings. The Keeling Curve shows how CO₂ has increased in the atmosphere of the island of Hawaii in the Pacific Ocean, far from the industrial pollutants of big cities.

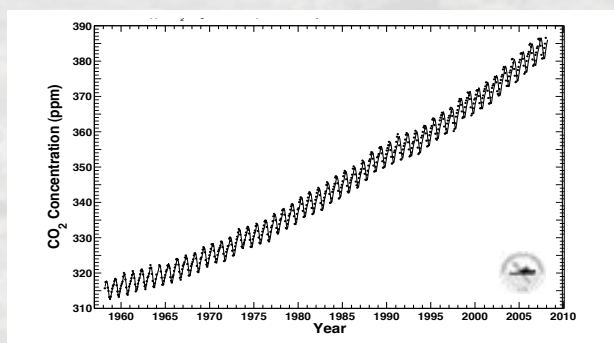


Table 2: Keeling Curve of Atmospheric Carbon Dioxide from Mauna Loa, Hawaii

Global average concentration of carbon dioxide in the atmosphere has increased from 280 parts per million (ppm) in the year 1750 to 368 ppm in 2000⁵. Although these may still seem only minute concentrations, the presence of additional greenhouse gases has been enough to warm the Earth’s surface by 0.74°C in the last hundred years. Population expansion continues to contribute to the use of fossil fuels, and thus the increase in CO₂ in our atmosphere.

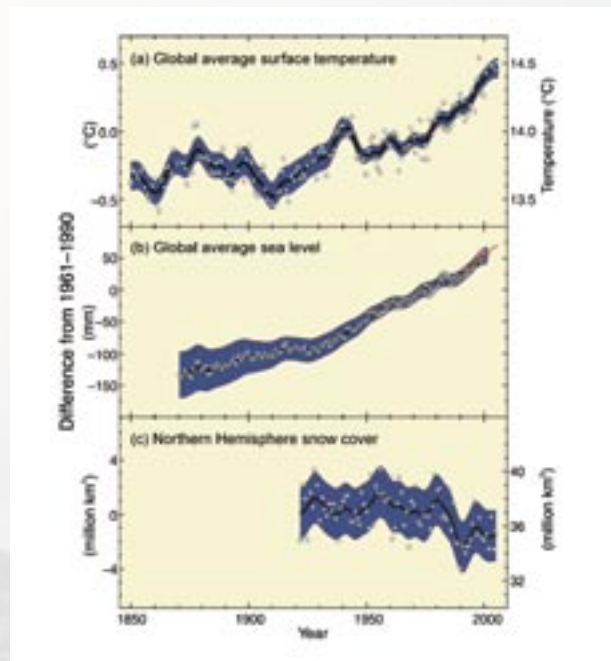


Table 3: Observed changes in (a) global average surface temperature, (b) global average sea level from tide gauge (blue) and satellite (red) data, and (c) Northern Hemisphere snow cover for March-April.

All differences relative to corresponding averages for the period 1961-1990. Smoothed curves represent decadal averaged values while circles show yearly values. The shaded areas are the uncertainty intervals estimated from a comprehensive analysis of known uncertainties (a and b) and from the time series (c).⁶

Methane, or natural gas, also contributes to greenhouse gases, although not on the same scale as CO₂. Even though it occurs in lower concentrations than carbon dioxide, it produces 21 times as much warming as CO₂. Methane accounts for 20% of the ‘enhanced greenhouse effect’⁷. A major source of methane is created by anaerobic micro-organisms in the intestines of livestock, mostly cattle⁸. The world’s taste for meat means that two-thirds of agricultural land is now used to farm animals⁹, contributing considerably to methane concentrations. Other factors of human activity which contribute to greenhouse gases are deforestation, agricultural activities such as rice farming and using fertilisers, and chlorofluorocarbons used in refrigeration. New studies also show that large quantities of methane are produced in the sediments of permafrost lakes, and warming in permafrost areas of Siberia and Canada might significantly increase methane emissions to the atmosphere.¹⁰

The effects of climate change

Changes in temperature have an effect on the whole of the Earth’s system – for example, by altering weather patterns, and thus rainfall, and therefore what we can grow. A warmer atmosphere can hold more water before it condenses to fall as rain.

³ IPCC Fourth Assessment Report, Climate Change 2007, synthesis report at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

⁴ http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

⁵ IPCC Third Assessment Report, Climate Change 2001, synthesis report at: <http://www.ipcc.ch/ipccreports/tar/vol4/english/pdf/spm.pdf>

⁶ http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

⁷ <http://www.bbc.co.uk/climate/evidence/methane.shtml> ⁸ http://www.bbc.co.uk/weather/features/gases_methane.shtml

⁹ http://www.panda.org/about_wwf/what_we_do/policy/agriculture_environment/

¹⁰ <http://earthwatch.unep.ch/atmosphere/climatechange.php#roemmich1995>

The world's oceans and its atmosphere are one linked system and also interact with the biosphere beyond that. The biosphere takes up and produces greenhouse gases (acting as both a source and a sink) and it can change the amount the Earth's surface reflects sunlight.

Results of climate change can take many years to show, and they can last for a very long time. Many of the greenhouse gases which are causing the warming will stay in the atmosphere for years: it will take centuries for the excess carbon dioxide to be taken up by natural sinks. So, even if the world stopped emitting CO₂ tomorrow, the atmosphere would go on warming for a long time ahead. The oceans, meanwhile, are warming up more slowly than the atmosphere, but once they have warmed, they will take many centuries to cool again – they have greater capacity to carry heat than the atmosphere and they overturn from top to bottom very slowly.

Therefore, 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 force the Earth's system so that it cannot return to its conditions before that point.

For example, if we let the global average temperature rise enough to start melting the Greenland ice cap, this melting, 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.¹¹

There is also growing evidence that change is happening much faster than anyone thought possible a few years ago. This is partly because of what scientists call "positive feedback"¹², a process where the warming fuels itself; so the more temperatures increase, the more likelihood that they will increase still more. When ice melts, for instance, earth, rock and water is exposed – and these dark surfaces absorb the Sun's heat instead of radiating it back out into space. If these positive feedbacks are not held in check by natural negative feedbacks, it can create a runaway situation where a relatively small change can sometimes have big consequences. The even cycle each year is explained by the differences in the natural release of CO₂ in winter and summer.

Climate change does not mean a gradual warming that happens evenly all round the planet. Some parts of the world will get hotter much faster than others, and other regions may get colder. The Earth will also get wetter. Australian environmental scientist Professor Tim Flannery says that climate modelling suggests that every degree Celsius of warming leads to a 1% increase in rainfall globally.¹³

This rainfall is not uniform, causing intense downpours in some places and not in others. Shifts in rainfall patterns will have consequences for agriculture, hydro-electric power generation, flood planning and more.

Some commentators, including the UN Under Secretary for

Humanitarian Affairs John Holmes, attribute the increasing frequency of disasters such as the terrible 2007 floods in India, Bangladesh and Nepal to climate change¹⁴. Although these regions have heavy rains and some flooding each year during the Asian monsoon, the 2007 floods affected 28 million people, and killed more than 400. The resulting stagnant water was a lethal breeding ground for disease, water sources were permanently damaged, and millions of hectares of farmland were under water, destroying crops.

No one extreme weather event can strictly be blamed on climate change, as weather has a random element that creates occasional extreme conditions, with or without climate change. However, scientists can predict trends in the overall intensity of weather and climate, and the world is warming up.

The story

Climate change is a news story that has come into its own. Ten years ago, perhaps even five, it was very hard to interest editors in the subject. Now, increasingly, journalists no longer have to push for space to cover the story; the problem now, certainly in the developed world, is satisfying readers' and editors' demand for climate change material.

There are several reasons for this. One is that scientific opinion has become much more certain that the Earth's climate is warming, as more research is undertaken. Another is that this is a story with clear political implications – are governments around the world doing enough about climate change? There are many reasons for inaction, not least the challenge the issues present to our current systems of decision-making, and the level of scientific uncertainty which provides rhetoric for the opponents of action which confuses the issue and leads to delay. Where is the balance between economic development and damage to the environment? How will local custom and tradition contribute to, or hinder, sustainability?

A third reason is that many people and organisations now see climate change as something which is going to affect everyone on Earth in one way or another. In some countries, this has led to growing public pressure for action to limit the impact of climate change - although people may not always have a very clear idea of what that action could mean in terms of changes to their lifestyle. Some countries feel a responsibility to others; the poorest countries have the least ability to adapt and will be the most vulnerable to climate change, yet it is the developed countries that have emitted the most greenhouse gases in the past (though some developing countries are now catching up). Who pays for adaptation of lower income countries?

Not only is much of the science getting clearer and surer, it's also changing very fast. Every week sees a new discovery announced in the pages of scientific 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.

¹¹ <http://news.bbc.co.uk/1/hi/sci/tech/5381456.stm>

¹² <http://news.bbc.co.uk/1/hi/sci/tech/4141348.stm>

¹³ The Observer newspaper, 5 August 2007

¹⁴ http://news.bbc.co.uk/1/hi/world/south_asia/6938350.stm

For the latest overview of environmental and climate change, look at the UN Environment Programme (UNEP)'s GEO4 report, *Global Environment Outlook: environment for development*, published in October 2007¹⁵.

The sceptics' view

On the other side of scientific opinion, there are some sceptical voices saying that climate change is not a story at all, or not in the way it is usually reported. Some argue that the atmosphere is not warming enough for us to be concerned. Others agree that the changes are occurring, but say the causes are entirely natural. For example, they say that changes – such as the amount of heat reaching the Earth from the Sun – are within the limits of natural variation. They believe nothing humans are doing makes any difference to these changes. Another group says nothing that humans can do will have any effect in slowing the warming of the atmosphere in the future. And there are some who say the whole idea of climate change is hugely exaggerated by scientists who simply want to keep funding for their research flowing in.

The sceptics' views deserve reporting. Firstly, because they are held by some fairly influential stakeholders, such as sections of big business and some national governments. Secondly, because although they are a scientific minority, they have a case that deserves to be heard. Science makes progress not through consensus, but by testing ideas until they are proven right.

However, the sceptics' view is sometimes given as much space or airtime as the majority view, to provide "balanced" coverage. In fact, because there are fewer sceptics and much less evidence compared with the majority of scientific opinion, this kind of reporting is injecting an artificial "balance" into an unbalanced reality. Journalists should try to cover both opinions, but reflect the true weight of evidence in their coverage.

Learning about climate change

To help you to report climate change as comprehensively as possible, there are several guides through the mass of detail. Start with the IPCC, which speaks for the governments of the world on climate. Every few years it brings out a report: the Panel's most recent assessment, in 2007, says global average temperatures are likely to rise by between 1.8 and 4 degrees Celsius by 2100¹⁶. This sounds a small change - but note that the difference between today's temperatures and those of the last Ice Age is around 4-5°C.

The IPCC's 2007 report says more clearly than its three earlier reports that humans are at least partly responsible for climate change - that we are intensifying the climate's natural variability: "Most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations. It is likely there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica)"¹⁷.

But journalists also need to be aware of, and report, the scientists who think the IPCC may be understating the real scale of the problem. The IPCC is a cautious, judicious group – one of scientific consensus which says only what the governments who belong to it will accept. Few scientists think it overstates the problem, others think it is too weak. IPCC reports nevertheless provide a useful benchmark for climate science, and should be your starting point if you want to learn more.

Move on to further sources of information about climate change, including UNEP and, if you can access them in print or online, respected publications such as *New Scientist* and *Nature* magazines.

Action against climate change

What can anyone do to prevent climate change? A key part of your job is to tell your audience what is possible, scientifically and politically, and what is actually being done - sometimes there are big differences between the two. There are two strands of action: mitigation and adaptation.

The attempt to limit the effects of the build-up of greenhouse gases is called mitigation. Preventing, or at least reducing, the impact of a warmer world is a strategy governments are pursuing. The world's first attempt at global mitigation is the Kyoto Protocol, which sets out to limit emissions; if it is fully implemented, it will reduce greenhouse gases by about 5%¹⁸. In December 2007, world leaders met in Bali for the UN Climate Change Conference to set about creating a further framework for a low-carbon world.

Governments are also pursuing adaptation - accepting that climate change is happening and will gather pace, and trying to prepare their economies and societies and to influence the behaviour of individuals. If they are vulnerable to climate change, their countries may also be vulnerable to environmental extremes of every kind.

Most governments accept that both mitigation and adaptation are vital. Both strategies could mean radical changes to our societies, or quite small changes that everyone can make in their daily life. Informing your audience about what may lie ahead will help them to come to terms with an uncertain future.

Resources and ideas

Learning about climate change

Information

- *The IPCC's home page, a fairly technical one:* <http://www.ipcc.ch/index.html>
- *Gateway to the UN System's work on climate change:* <http://www.un.org/climatechange/index.shtml>
- *UNESCO and climate change:* <http://ioc3.unesco.org/unesco-climate/>
- *The UNEP Global Environment Outlook 2007 report:* <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=519&ArticleID=5688&l=en>

¹⁵ UNEP Global Environment Outlook 2007; <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=519&ArticleID=5688&l=en>

¹⁶ http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

¹⁷ *ibid*

¹⁸ <http://www.guardian.co.uk/environment/2005/feb/16/sciencenews.environment>

- Past reports to compare with include GEO3: <http://www.unep.org/Geo/geo3/english/143.htm> which has helpful pointers towards regional impacts of climate change
- The UNEP's centre at Arendal, Norway, has a more accessible approach: <http://www.grida.no/Activities.aspx?m=65>
- GRID-Arendal also provides a climate news portal: <http://www.climatewire.org/>
- A 2007 video of UN Foundation President Tim Wirth and UNESCO Director General Koichiro Matsuura discussing climate change and public awareness: <http://www.unfoundation.org/climatevideo/>
- Jim Hansen at NASA's Goddard Institute for Space Studies: <http://environment.newscientist.com/article/mg19125713.300.html>
- The UK's Energy Saving Trust has an interactive guide to the science of climate change at http://www.energysavingtrust.org.uk/your_impact_on_climate_change/
- A more technical description: <http://www.climateprediction.net/science/index.php>
- Basics on earth gases and the Asian monsoon from BBC Weather, at: <http://www.bbc.co.uk/weather/>
- Constantly updated sites on climate change include New Scientist magazine's: <http://environment.newscientist.com/channel/earth/climate-change/>
- Read *The Weather Makers: The History and Future Impact of Climate Change*, by Tim Flannery, published 2006: <http://www.theweathermakers.com>
- Read *The Revenge of Gaia*, by James Lovelock, published 2006
- Read *The Science and Politics of Global Climate Change: A Guide to Debate*, by Andrew E Dessler and Edward A Parson (2006), published by Cambridge University Press.

Points to explore

- What will the probable impacts of climate change be for your country? Will they all be negative, or might you gain something?
- Explore scientific views in your country. For example, you could ask national environment NGOs how helpful they find the IPCC report.
- How would 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?

The sceptics' view

Information

- The Scientific Alliance: <http://www.scientific-alliance.com>
- Tech Central Station: <http://www.techcentralstation.com/>
- Some stories positively invite everyone to be sceptical about climate change: see for a taster <http://environment.newscientist.com/article/mg19225724.000.html>

Points to explore

- 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?

Action on climate change

Information

- The Kyoto Protocol text: <http://unfccc.int/resource/docs/convkp/kpeng.html>. For a Q&A, see <http://www.guardian.co.uk/environment/2005/feb/16/sciencenews.environment>
- World Heritage activities related to climate change: http://whc.unesco.org/en/activities/&pattern=&search_theme=23
- The US Environmental Protection Agency (EPA) on how individuals in the developed world can reduce their global warming impact: <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterToolsCalculators.html>
- The University of Oxford's Environmental Change Unit explains how a personal carbon allowance scheme might work: http://www.eci.ox.ac.uk/research/energy/downloads/40house/background_doc_1.pdf
- CarboSchools initiative: <http://www.carboschools.org>

Training materials

"The consequences of global climate change on agriculture and ecosystems are highly uncertain. Based on simulation models, the most likely impacts are net favourable effects for the cooler margins of the temperate zone, and adverse consequences for the sub-tropical semi-arid zone."

(UNEP)

Group exercise

SCENARIO

You work for a newspaper that is in a landlocked African state called Luz. Government statistics now indicate that projected grain yields will decrease because of climate changes in the next decade. The projection is based on a joint analysis from the UN and The Intergovernmental Panel on Climate Change (IPCC).

Government experts warn this will lead to less availability of staple food such as bread and basic vegetables. A Luz University scientist adds that reduced rainfall will mean more desertification, not only in Luz but also in neighbouring nations.

One sideline is how climate change will harm The Luz Horticultural Project (LHP) which grows carnations and roses for the European market and has seen income rise 32 percent per year. LHP chief executive Elston Howard says the report will create havoc because international backers will lose confidence in his business and he is about to buy US\$2m of

new machinery. This would expand his business and create more jobs.

Based on a workshop of 24, divide into four groups. Each group will have:

Reporter

Write the first three paragraphs of this story and explain which external sources you would use for establishing this article, ensuring balance

News Editor

Prepare four follow up ideas for the next day's paper

Picture Editor

Prepare three ideas for photographs, graphics or illustrations

Sub Editor

Write a two deck broadsheet headline, a tabloid splash headline and a bill poster for the streets

Features Editor

Outline how you would amplify the issue on a feature page without crossing over into news territory

Web Editor

Explain how you would make this a lively interactive issue, ensuring readers of all ages, cultures and socio-economic classes would contribute.

GROUP SESSIONS

30mins

The tutor will oversee how each group meets its challenges, works as a team and prepares for a summary of its ideas. The group will work as a team and be open to constructive comments. The news editor will chair any group session.

GROUP FEEDBACK

20mins

Each group will be assessed by workshop colleagues in an open session and will be able to justify their decision-making or be able to change their decisions based on constructive comments.

Individual exercises

- 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.
- 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 IPCC's 2007 report to write a series of pieces alerting your readers to the probable impact of climate change for your country.
- 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.
- Write a readers' guide to the inadequacies of the Kyoto Protocol and the need for a much more far-reaching agreement to replace it. What is your country doing to meet the demands of the Protocol? And what is the world community doing to progress matters?
- Tell your readers what they can do to reduce their own emissions of greenhouse gases.

LECTURE NOTES

KEY MESSAGES

- **Demand grows for climate change stories**
 - Science is more certain
 - Political ramifications
 - Everyone is affected
- **Reporting the story**
 - Find resources you understand and trust
 - Follow that resource
 - Watch for changes in the story
- **The sceptics**
 - Some say the changes are natural and not caused by people
 - Some say the atmosphere is not changing that drastically
 - Some say the story is fanned by scientists who want to keep their research alive
 - The sceptics deserve coverage but only in context with the overwhelming evidence that climate change is happening
- **Your job**
 - Make sense of the subject
 - Communicate to your audience in a highly understandable way
 - Explain what is possible
 - Explain what is being done
 - Filter out exaggerated claims
 - Keep sceptics' comments in context

KEY LEARNING POINTS

- Keep up to date on the subject of climate change
- Teams work best when they have a common understanding in order to present facts on climate change
- Teamwork helps sharpen the focus of an individual
- Working together and being open to change is vital
- Case studies will reflect problems and solutions
- Knowledge about climate change is still contested. Group evaluation will give an insight into how others form ideas

ADDITIONAL NOTES FOR TRAINERS

SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To teach the workshop the ability to work as a team in reporting a fictional scenario based on climate change

OBJECTIVES

By the end of the session, members will

- Identify key points in the scenario
- Delegate responsibility to individual group members
- Offer and receive constructive comments to improve work
- Publicly state their proposals and change their material if improvements are valid

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims & Objectives	Lecture	Power Point	5mins
Intro group What they know Key issues	Discussion	Flip Chart	15mins
Review Key points	Open discussion	Flip Chart	5mins
Task	Groups	Power Point Hand Out	30mins
Group Feedback	Open discussion	Flip Chart	20mins
Review/Reflect	Open discussion		5mins
Q/A Aims	Lecture	Power Point	5mins



CHAPTER 2 Resource depletion: forests and fisheries

Photographer: Rhett Butler © UNEP/Still Pictures

Education for Sustainable Development - Forests and Fisheries

Education for Sustainable Development builds on and reorients education towards an integrated vision for society that is not only sustainable ecologically but also socially, economically and politically. ESD focuses on production, but also on social aspects such as forest use and economic aspects such as marketing marine products. ESD also addresses the cultural component of forestry and fishing to ensure the survival of proven traditional and/or indigenous production systems and practices. ESD presents both the challenges and opportunities offered by proper use of forests and fisheries.

The key messages:

- Fishing people rely on an in-depth knowledge of the natural milieu for their livelihood, thus their knowledge is key in fisheries' science and management.
- There is a need to increase the understanding and appreciation of the environmental, social and economic potential of forests and of the link between the forest and everyday wood products.

This chapter examines two possible crisis points for the world's vanishing resources - forests and fisheries. Both are especially important, as they provide food, fuel and income for millions of people.

Forests

Why do they matter?

Forests contain large areas chiefly covered with trees and undergrowth that offer a wide range of plants and fungi – from shrubs, lichen and ferns to mushrooms, yeasts and mould. They are also a source of timber and fuel. Forests are built up over thousands or millions of years, and are impossible to reproduce in their original form once they are destroyed.

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, improve freshwater and soil quality. They absorb carbon dioxide and they help prevent erosion and floods. They are home to two-thirds of the world's species, some of these highly endangered, and act as a stronghold to safeguard biodiversity.¹⁹

About 40% of forests are large, relatively intact and undisturbed. These play a particularly essential role in maintaining biodiversity. Forests are very different from tree plantations which often contain only one tree species, all of the same age. Tree plantations

¹⁹ <http://www.earthwatch.unep.ch/emergingissues/forests/forestloss.php>

contain less biodiversity and are much more susceptible to disease, pests and fire damage. Many such plantations in Asia and South America are created purely for industrial timber use²⁰.

Vanishing trees

Forests suffer from over-harvesting of fuel wood and overgrazing, air pollution, extreme weather, drought and infestations. They are under increasing threat. As economies grow, consumption increases and expanding populations need more land for food and other natural commodities.

Around half the world's forests occur in the tropical zone. These are disappearing at a rate of 70,000 to 170,000 square kilometres each year. These forests are likely to be far slower at regenerating than boreal and temperate forests, and their loss will have a negative impact on other plant and animal species²¹.

According to Earthwatch, almost half the planet's original forest has been destroyed during the last three decades. During the 1990s, the world lost 4.2% of its natural forests, most of which disappeared from the tropics²².

Deforestation contributes to the continued loss of forests and diminishes the potential for air purification and other environmental support. In the Amazon, 10-12% of the original rainforest is now gone²³ - much of it to make space to grow soya to be exported to North America and Europe for cattle feed. South East Asia is another example of heavy deforestation: the island of Sumatra, Indonesia, has lost all its lowland forests in 25 years²⁴. The Congo Basin loses nearly 1.5 million hectares of forest cover every year²⁵.

Survival and sustainability

Livelihood pressures force people to cut down forests for fuel and create space to grow crops. Reliance on wood as a source of energy in the home not only causes damage to forests and their ecosystems but also has an impact on people's health and education. The International Energy Agency (IEA)'s Chief Economist Dr. Fatih Birol points out that without electricity, 2.5 billion people cannot read or study after dark, lack refrigeration to preserve food and medicines and spend long hours gathering fuel that produces harmful fumes when used in poorly designed biomass stoves²⁶.

Earthwatch highlights the dilemma of poor local populations which need to cut down trees to survive, balanced with the need to protect the forests. It argues that forest management, trade management and compensation have a role to play in improving the situation. On a more local scale, community-based management programmes and education for small and medium sized businesses can help reverse the situation, argues the International Institute for Environment and Development (IIED)²⁷. The involvement of local people in preserving their forests is critical, giving due respect to local traditions and culture.

The international organisation the Forest Stewardship Council (FSC) works with organisations large and small around the world to help provide responsible stewardship of our forests. It has schemes which cover over 78 million hectares in more than 82 countries, and provides certification of projects which work sustainably. For example, in Costa Rica, the Foundation for the Development of the Costa Rican Volcanic Mountain Range (FUNDECOR) has blended the needs of conservation with those of local people. It has introduced forest management plans into local activities, demonstrating new ways to make better use of the forests for the benefit of everyone. At the same time, it has used FSC certification of products from small wood producers to connect them to local and international markets, generating large volumes of trade²⁸.

However, sustainable forest management does not always appeal to those who want to exploit the forests. Big companies want to use forest land to grow crops - and at a local level, some farmers make better money from crops of soya beans while other communities generate funds from illegal logging.

More people in the West are becoming aware of the harm caused through the destruction of forests and they are campaigning actively to change this. For example, people refuse to buy forest products that are not branded by sustainable managers such as the FSC.

In Kenya, Nobel Peace Prize Laureate Professor Wangari Maathai founded the Green Belt Movement which involves nearly 900,000 rural women who have established nurseries and planted trees to reverse deforestation. Now international, the Movement has planted more than 30 million trees throughout Africa²⁹.

The need for action

UNESCO's *Man and the Biosphere (MAB)* programme emphasises the need for human resource training to ensure integrated management of tropical forests, effective collaboration with local communities, and improved conditions for local populations.

Studies indicate that poverty leads to more extraction from forests to meet the demand not only for fuel but also for healing herbs and natural medicinal cures. Although logging procedures and management guidelines exist for timber exploitation, these are lacking for a wide range of localised problems - from traditional medicine to new farming community settlements. A well-informed media can help to create better understanding of local issues and can influence the decisions of policy makers and the actions of the public.

In the words of UNEP Executive Director, Achim Steiner, "Sustainably managing ancient and old-growth forests and avoiding deforestation must be our watchwords... It is also in our wider interests to restore, reforest and recapture the lost and degraded forest and woodland ecosystems that have, all too often, fallen to short-term and narrow economic interests."³⁰

²⁰ <http://www.earthwatch.unep.ch/emergingissues/forests/forestloss.php> ²¹ *ibid* ²² *ibid*

²³ http://www.panda.org/about_wwf/where_we_work/latin_america_and_caribbean/region/amazon/problems/amazon_deforestation/index.cfm

²⁴ <http://www.earthwatch.unep.ch/emergingissues/forests/forestloss.php>

²⁵ http://www.panda.org/about_wwf/where_we_work/africa/publications/index.cfm?uNewsID=8825

²⁶ http://www.iea.org/Textbase/Papers/2007/Full_Birol_Energy_Journal.pdf

²⁷ http://www.iied.org/NR/forestry/projects/sm_med_enterprise.html

²⁸ http://www.fsc.org/en/about/case_studies/success_stories/8

²⁹ http://www.unep.org/billiontreecampaign/Statements/i_Wangari.asp

³⁰ http://www.unep.org/billiontreecampaign/Statements/i_exec.asp

Fisheries

Overfishing

Fishing is one of the most conspicuous demands on the world's natural resources. Fish don't respect national boundaries: they swim where they can, so no country can usually claim them as its own, except in waters immediately around it. If nobody owns the fish, nobody is responsible for them - so everyone takes them.

Earthwatch reports that world fishery reached 122 million tonnes in 1997, six times that of 1950. Seventy percent of marine fisheries are so heavily exploited that reproduction of species can barely keep up with catch levels. For example, swordfish in the North Atlantic have declined by about 70% over 20 years, and populations of cod, hake, haddock and flounder fell by 95% from 1989 to 1995³¹.

The Worldwide Fund for Nature (WWF) and the wildlife trade monitoring network, Traffic International, believe that there soon will be no commercially viable shoals of fish left to catch in international waters.

The Global International Waters Assessment 2006 Report (GIWA) highlights that excessive catches are fuelled by US\$20 billion a year in fishing subsidies, poor enforcement of fishing laws and destructive fishing practices³².

Destructive methods

Many fishing methods are destructive to the environment, such as bottom trawling, blast or bomb fishing, and fishing with poisons such as cyanide.

Trawler boats return high numbers of fish to the sea, seeking only the perfect-sized fish and right species for the end-consumer - but only after the unwanted fish have died from exposure to the air. One quarter of the world's annual catch is thrown back into the water. 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 catch³³." Earthwatch comments on the slaughter of other species caused by driftnets and long lines, including dolphins, sharks, sea turtles and sea birds³⁴.

Bottom trawling and scallop dredging both dramatically affect marine ecosystems. The weighted nets catch not only all mid-water marine life, but crush, bury or expose to predators the sea creatures living on the seabed. The nets also send up clouds of sediment, altering seabed biochemistry³⁵. The area of seabed exposed to bottom trawling methods each year is equal to twice the size of the contiguous USA. Some rocky areas were once naturally protected from trawling, but new technologies seem to ensure encroachment is everywhere.

Blast fishing – using dynamite to bring fish to the surface – is one of the major threats to coral reefs. These most fragile of underwater environments cover less than 1% of the ocean floor

but support perhaps 25% of its marine life. They are breeding grounds for fish, natural breakwaters, and contain chemical compounds which may form the basis for medicines, such as those for HIV and cancer. Sixty percent of reefs have suffered damage from overfishing, blast and cyanide fishing, pollution, seagrass and mangrove habitat loss and uncontrolled coastal development³⁶. Blast fishing in Indonesia is expected to cost the country at least US\$3 billion over the next 20 years, according to the GIWA. A sustainable hook and line fishery could generate net benefits of US\$320 million for Indonesia over the same period³⁷.

Fish farming

More than 220 species of finfish and shellfish are farmed today, says Earthwatch. Many of these aquaculture operations are unsustainable. For example, carnivorous fish such as salmon or shrimp require more wild fish to feed them than are produced by the farms – 1.9 kg of wild fish is required for every 1kg of farmed fish. The small pelagic fish used for feed are being overexploited and are affected themselves by the warming of the seas. Outbreaks of disease at shrimp farms in the Humboldt Current, for example, have cost US\$600 million annually, not including damage to wild stocks³⁸.

Meanwhile, more and more coastal wetlands and mangrove swamps are being taken up for aquaculture. Hundreds of thousands of hectares of these richly biodiverse ecosystems have been destroyed, while some farms take wild post-larvae to stock their ponds, thus damaging wild population renewal.

However, new policies could hold hope. According to UNEP, community management of fisheries, certification of fish and the extension of marine parks are promising. In Kenya, catches at the Bamburi Marine Park have more than doubled since the park was created³⁹.

Resources and ideas

Forest depletion

Information

- *Convention on Biological Diversity*: <http://www.cbd.int/default.shtml>
- *The UN's special Forum on Forests*: <http://www.un.org/esa/forests/>
- *The UN's Earthwatch*: <http://earthwatch.unep.net/forests/index.php>
- *The World Heritage Centre's programmes on forests*: <http://whc.unesco.org/en/activities/>
- *Try the UN Food and Agricultural Organisation (FAO) forestry site*: <http://www.fao.org/forestry/en/>
- *The FAO's Global Forest Resources Assessment for the latest on deforestation*: <http://www.fao.org/forestry/site/1191/en/>
- *WWF forest section*: http://www.panda.org/about_wwf/what_we_do/forests/index.cfm
- *2007 WWF report: The Amazon's vicious cycle: drought and fire in the greenhouse*: http://www.panda.org/about_wwf/what_we_do/forests/index.cfm?uNewsID=118741
- *The Forest Stewardship Council (FSC)*: <http://www.fsc.org/en/>

³¹ <http://www.earthwatch.unep.ch/emergingissues/oceans/oceanfisheries.php>

³² <http://www.giwa.net/>

³³ http://www.panda.org/news_facts/publications/index.cfm?uNewsID=80860

³⁴ <http://www.earthwatch.unep.ch/emergingissues/oceans/oceanfisheries.php>

³⁵ *ibid*

³⁶ http://www.icran.org.more_CR.html

³⁷ <http://www.giwa.net/>

³⁸ <http://www.earthwatch.unep.ch/emergingissues/oceans/oceanfisheries.php>

³⁹ <http://www.giwa.net/>

- Friends of the Earth's table of illegal tropical timber imports to Europe is at <http://www.foe.co.uk/pubsinfo/briefings/html/20010904154032.html>
- The Guardian report on a planned boycott of soya from the Amazon: <http://www.guardian.co.uk/international/story/0,,1827296,00.html>
- Illegal logging: <http://www.illegal-logging.info/>

Points to explore

- Are your forests healthy, or dwindling? Who is responsible for them, and who profits from them?
- Do you have an efficient 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.
- Does your country have a forest certification programme? Are your forests certified by the FSC?
- What rare or endangered species live in your forests? How long can they survive?

Fishing

Information

- UNEP on overfishing: <http://www.un.org/events/tenstories/story.asp?storyID=800>
- UNESCO's LINKS programme on coastal management and knowledge of oceans: www.unesco.org/links
- The Global International Waters Assessment for an extensive and area-specific picture of fisheries, pollution and usage: <http://www.giwa.net/>
- The World Heritage Centre's marine programme: <http://whc.unesco.org/en/marine/>
- The World Heritage Centre's Man and Biosphere Programme looks at the relationship between people and their environment: <http://www.unesco.org/mab/mabProg.shtml>
- Traffic International: <http://www.traffic.org/Home.action>
- The Sea Around Us Project at the University of British Columbia researches policies to reverse harmful trends in fishing – see your country's fishing 'footprint': <http://www.seaaroundus.org/project.htm>
- The International Coral Reef Action Network: <http://www.icran.org>
- Read The End of the Line: How Overfishing Is Changing the World and What We Eat, by Charles Clover.
- For more on fishing, see the UN Environment Programme's Ten Stories the World Should Hear More About.

Points to explore

- 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?
- What will people for whom fish is a staple diet eat when the fish become too scarce or too expensive?

Training materials

"Overfishing cannot continue," warned Nitin Desai, Secretary General of the 2002 World Summit on Sustainable Development, which took place in Johannesburg. "The depletion of fisheries poses a major threat to the food supply of millions of people."

(UNEP website)

Group exercise

Press Conference

15mins

In this imaginary scenario, the United Nations Environment Programme calls a sudden press conference in Maka, a small South Pacific independent island nation. It is releasing the results of an analysis of the local fishing industry.

Those present are:

Dr Jaswinder Patel

Ian Jones

Professor Zhang Chen

Mrs Naveen Haq

This is the essence of the conference:

UNEP is calling for an immediate ban on fishing within 750 miles of Maka to stop international fleets from trawling for tuna. It says if the current level of fishing continues, there will be no more tuna of a certain breed called Blue Tip. Dr Jaswinder Patel, a specialist in the species, says at least 16 countries, including North Korea and Japan, are to blame as they value the fin of the fish as a rare delicacy. Ian Jones from the WWF says the fishing industry has blatantly ignored any serious discussion of the ban to stop the eradication of the tuna. He says that local fishermen, who sell their catch to big ships, should also be banned. Professor Zhang Chen, from UNEP, says it is extremely delicate because Japan is one of Maka's most powerful business partners as it supplies microchips for the island's infant industrial base.

Island President Mrs Naveen Haq says the world just wants to turn its back on the worldwide problem of vanishing fish stocks and warns that 58 percent of Maka's fragile economy is based on the sea.

GROUP SESSION

25mins

Separate into three groups:

Print

Using Professor Chen's and Mrs Haq's comments, assess the story and use research sources to widen the foundation of the issue. Then create an outline for a large scale feature story. How would you approach this? How would you entice the reader to take the time and effort to read the story? What's the opening peg? How would you illustrate it? How much space would you give to the other side of the issue?

Broadcast

Create a treatment for a 30 minute documentary. Budget does not allow for international travel.

Online

Deliver a plan to make this an interactive story. What would be the links or sidebars? How do you create balance? Include podcast, live webcam, blog, vlog.

GROUP FEEDBACK

20mins

Each group will summarise its tasks in an open discussion and be assessed by workshop colleagues. They will justify decision making or be able to change their decisions based on constructive comments.

Individual exercises

- Write a story about which countries in the developed world are buying your timber and other forest products (like nuts and fruit). Then ask Non-Governmental Organisations (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. Raise questions about how loggers can find alternative incomes.
- What should the politicians do? Write an op-ed exploring ways of conserving the fish and the fishing industry.

LECTURE NOTES

KEY MESSAGES

- **Present trends**
 - They will not stay the same
 - Population will increase causing more demand
 - Higher living standards will cause more demand
 - Rich use resources more than poor- creating more poverty problems
- **Crisis point: Forestry**
 - One in five people worldwide depends on forests for a living
 - An area the size of 36 football pitches disappears each minute
 - Human need for fuel and income leads to deforestation
 - Corporate pressure for profits leads to deforestation
- **Crisis point: Fishing**
 - Difficult for nations to control fish stocks because of movement patterns
 - Some fishing methods such as dynamite are dangerous
 - Real threat to commercially worthwhile fish left in international waters.
- **Your job**
 - Explain that the present use of resources is changing
 - Explain that this will create more demand
 - Communicate to the audience in an easily understandable manner

KEY LEARNING POINTS

- Keep up to date on resource depletion
- A press conference can deliver key points of information
- There can be on the record and off the record ways of communication
- Different disciplines - print, broadcast and online - will approach the press conference in different ways
- Different media will use the same material but in different formats

ADDITIONAL NOTES FOR TRAINERS

SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

1. To teach participants how to approach a press conference and extract the best material from the event when there is little time to prepare
2. To approach the writing of a print, broadcast or online idea on the issue

OBJECTIVES

By the end of the session, the workshop will

- Know how to ask the correct questions
- Identify key players
- Identify off the record and on the record comments
- Use the material to achieve aims for different media

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims/Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip chart	10mins
Press Conference	Role Play/No intro	Press release	15mins
Review Key points	Discussion	Flip chart	5mins
Task	Workshops		25mins
Group Feedback	Discussion	Flip Chart	20mins
Review/Reflect	Open Discussion		5mins
Q/A/Aims	Lecture	Power Point	5mins



CHAPTER 3

Resource depletion: fresh water

Photographer: I.Uwanaka © UNEP/Still Pictures

Education for Sustainable Development - Water

Water education is a strategic entry point to developing a new ethic for water governance. Education for Sustainable Development promotes awareness of the positive and negative impacts of human activities on the water cycle, in order to avoid degradation and the unsustainable use of water resources. ESD disseminates existing local knowledge and expertise and shares innovative approaches and best practices that are relevant to local conditions. Examples of the UNESCO-related programmes producing useful ESD materials for formal and informal educators include: the World Water Assessment Programme. These capabilities are also enhanced by the UNESCO-IHE Institute for Water Education in Delft, the Netherlands, the water-related centres operating under the auspices of UNESCO and the UNESCO Chairs.

The key messages:

- There is a need to develop and implement education programmes leading to a broader understanding of water issues and to resolve water problems.
- Of all the social and natural crises we, humans, face, the water crisis is the one that lies at the heart of our survival and that of our planet Earth.⁴⁰
- Water education projects can help engage priority sectors in the community in saving and protecting water resources.

Water resources

Very little of the water on Earth is available for us to use. Approximately 98% is salty seawater, and most of the rest is locked up in icecaps and glaciers. Of what remains, much is in remote and inaccessible regions, and much arrives in sudden violent downpours as monsoons and floods, vanishing before it can be used. Freshwater lakes and rivers make up less than 0.01% of water on earth, and groundwater 0.28%⁴¹. Yet, even when so little of the Earth's water is available for us to exploit, it should still be enough to meet everyone's basic needs – if it is managed properly⁴². But at the moment, a child in the developed world consumes 30 to 50 times more water than one born in the developing world⁴³.

Over the next 20 years, the use people make of this limited supply is estimated to increase by about 40%, for two reasons: population is increasing every day, and we all want to live more comfortable lives. A third of the world's population lives

⁴⁰ UNESCO Director-General Koïchiro Matsuura, UN Report Warns of Diminishing Water, Washington Post, March 6 2003.

⁴¹ <http://www.bbc.co.uk/nature/environment/conservationnow/global/freshwater/>

⁴² <http://news.bbc.co.uk/1/hi/sci/tech/3747724.stm>

⁴³ http://www.unesco.org/water/wwap/facts_figures/basic_needs.shtml

in water-stressed countries now. By 2025, this is expected to rise to two-thirds⁴⁴.

Experts often consider countries which have less than 1,700 cubic metres of fresh water available for every citizen to be in "water stress". Those with less than 1,000 cubic metres are defined as experiencing "water scarcity". Water scarcity already affects every continent, and more than 40% of the people on our planet, says the UN. By 2025, around 2.8 billion people will be living in countries or regions of water scarcity⁴⁵.

However, the available water resources seem sufficient to meet reasonable water needs for the development activities of the 80 countries affected by severe water shortage – but only if they take measures to manage water demand and supply⁴⁶.

There is great inequality in access to water, and to clean water. Millions of people do not have enough to feed their bodies or to keep them healthy. The UN says over one billion people (almost one in six people alive today) lack access to safe drinking water and over 2.4 billion have no basic sanitation⁴⁷. The World Health Organisation (WHO) reports that water-related diseases are the leading global cause of disease and death, killing more than 3.4 million people annually. Most of those who die are young children, killed by illnesses like diarrhoea from drinking water contaminated with sewage⁴⁸.

Freshwater shortages also create environmental change. The GIWA 2006 Report said modifications in the way water flows, partly put in place to try and address shortages, have damaged the environment. In some cases, dams, river diversions and water transfers can obstruct migration routes and reduce fish spawning habitats. For example, the Berg River estuary in South Africa suffers high salt levels which are affecting birds, fish and other creatures, because too much water is being taken out upstream⁴⁹. The Ganges-Brahmaputra River system has 30 dams, barrages and river diversions, resulting in up to a 60% reduction of dry season river flows in Bangladesh⁵⁰.

Water for people

The UN estimates that everyone needs 20 to 50 litres a day for drinking, washing, cooking and sanitation⁵¹ (a running tap uses 7-12 litres a minute, garden sprinklers and hoses about 20 litres, and flushing a toilet uses between six and 20 litres).

To provide everyone in the world with the basic supply of 50 litres a day by 2015 would take less than 1% of the amount of water we use today. It would not be tremendously expensive, in terms of world spending. The United Nations Children's Fund (UNICEF) says meeting the Millennium Development Goals (MDGs) on water and sanitation would cost approximately an additional US\$11.3 billion each year⁵². To put that in context, people now spend around US\$ 50 billion on bottled water each year.

Small changes, which mostly come through education, can

help improve supplies in water-poor areas: for example, helping communities find ways of harvesting rainwater during the wet season and storing it, training farmers in water management and irrigation, and improving local distribution. Cleaning up people's water supplies on such a big scale will take sustained government and civil society intervention. And the figure of 50 litres per person does not include food production.

Water for food production

Most of the world's water supply, about 70%, is used in agriculture, with the rest shared by industry, households and nature⁵³. When water runs short, therefore, hunger threatens. Besides those places already affected by lack of water, growing water scarcity will affect countries including Pakistan, South Africa, and large parts of India and China⁵⁴. As water reduces, they will not have enough to irrigate their crops, and thus to feed their people. So they will have to import food - if they can find enough at affordable prices.

Virtually every kind of food or drink uses water at some point in its production. Growing 1 kg of potatoes requires only 100 litres of water, whereas 1 kg of beef requires 13,000 litres⁵⁵. A report 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..."⁵⁶. Malnutrition, according to the World Health Organisation, is "the silent emergency", a factor in at least half the 10.4 million child deaths which occur every year⁵⁷.

Improving irrigation may be one answer to water shortages. The first United Nations World Water Development Report, *Water for People, Water for Life* (UNESCO, 2003), 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 good⁵⁸. One of the UN's Millennium Development Goals promises to halve the proportion of hungry people by 2015. But this UN 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

Climate change may make water problems worse. Exactly which regions of the world will become wetter or drier is still unclear, but trends are emerging. For example, one vulnerable group could be the millions of people in Asia and South America who depend on water from melting snow and glaciers. Rising temperatures may mean more rain and less snow in the mountains, and snow melting earlier in the year. As a result, rivers and streams may carry more water much earlier in the year than in the past. Areas with small reservoirs, or none, will be unable to hold the extra water, which will flow away and be lost. Once glaciers have melted, there will be no other water source for the people who have relied on them⁵⁹.

⁴⁴ <http://news.bbc.co.uk/1/hi/sci/tech/3747724.stm> ⁴⁵ http://www.unwater.org/wwd07/downloads/documents/wwd2007qanda_en.pdf

⁴⁶ 2nd UN World Water Development Report, http://www.unesco.org/water/wwap/wwdr2/pdf/wwdr2_ch_2.pdf

⁴⁷ http://www.unesco.org/water/wwap/facts_figures/basic_needs.shtml ⁴⁸ <http://www.who.int/topics/water/en>

⁴⁹ <http://www.giwa.net/> ⁵¹ http://www.unesco.org/water/wwap/facts_figures/basic_needs.shtml

⁵² http://www.unicef.org/wes/index_31600.html ⁵³ <http://www.giwa.net/>

⁵⁴ International Water Management Institute map, reported at <http://news.bbc.co.uk/1/hi/sci/tech/5269296.stm>

⁵⁵ <http://www.worldwatercouncil.org/index.php?id=25&L=0%2Ffil> ⁵⁶ <http://www.siwi.org/>

⁵⁷ <http://www.who.int/mediacentre/news/releases/2004/pr58/en/> ⁵⁸ <http://www.unesco.org/water/wwap>

⁵⁹ <http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=512&ArticleID=5600&1=en>

The world's great rivers, upon which whole agricultural communities depend, are also facing problems due to changes in temperature and rainfall (and sometimes also land use). The UN's second World Water Development Report, *Water, A Shared Responsibility* (UNESCO, 2006), says that in most years, the flow of one of China's great watercourses, the Yellow River, is now 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 billion cubic metres of water a year, now carry just two billion. The Indus in Pakistan has lost 90% of its water since 1945⁶⁰.

Australia's Murray River now reaches the sea only one year in two. Australia, the driest inhabited continent, has faced drought since 1998. The UN IPCC predicts that by 2050, the annual water flow in Australia's huge food-growing region, the basin of the Murray-Darling rivers, will fall by 10-25%⁶¹.

The Horn of Africa faces continuing desertification of its land, as lack of rain kills plants and leaves a landscape devoid of sustenance for animals and people. In 2005, the UN's Food and Agriculture Organisation (FAO) reported that 11 million people needed food aid in Ethiopia, Kenya and Djibouti because of drought⁶². Ways of living which depend on herding animals to find the best sources of food are collapsing.

Desertification

Desertification is degradation of land in arid, semi-arid and dry sub-humid areas. It is a gradual process where soil productivity declines and vegetative cover thins, because of human activities and climatic variations. It already affects a quarter of the total land surface of the Earth, and roughly one third of the world's land surface is threatened by the process⁶³. Over 250 million people are affected by desertification. Twenty four billion tons of fertile soil disappears annually. Estimates are that the decline will affect two-thirds of arable land in Africa by 2025, one-third of arable land in Asia and one-fifth in South America⁶⁴.

High temperatures cause droughts that prevent vegetation from growing, but human activities make the situation worse. Overgrazing and deforestation remove the vegetation and trees that stop erosion, and over-cultivation exhausts the soil. Poor irrigation methods cause the amount of salt in the soil (salinity) to rise and can dry out rivers that feed large lakes. The Aral Sea bordering Kazakhstan and Uzbekistan, and Lake Chad in Africa have shrunk dramatically in this way⁶⁵.

Desertification affects individuals - as with other water issues, it is usually the poorest people who are hit hardest. People are forced to extract as much from the land as they can, but desertification then creates even more poverty. It also forces people to migrate from their traditional ways of life, particularly nomadic, grazing cultures, into cities and overseas. It affects economies. The World Bank estimates that the annual income foregone in areas affected amounts to US\$42 billion each year (fighting it, the Bank believes, would cost US\$2.4 billion a year)⁶⁶. It affects the environment, making areas flood-prone, damaging water quality and silting rivers and reservoirs.

Desertification can be combated by simple fertilisation from compost, which regenerates soil. Barriers can be constructed to reduce wind scouring and land stabilised by planting trees (which also nourish the soil). Sustainable agricultural practices are also key, including leaving land fallow and un-grazed for periods⁶⁷.

There is a 1994 United Nations Convention to Combat Desertification, and governments around the world are pledged to try to improve the situation. There is also activity from NGOs on the ground who are working with individual communities to manage the land more sustainably. For example, in Niger, people move their flocks with the seasons, and depend on an increasingly sparse network of wells, seasonal lakes and ponds, pastures and shade woodlands. SOS Sahel, a charity which works to improve lives in the arid belt to the south of the Sahara, has helped representatives of the communities using the Takieta Forest in Niger to reach agreement with the government on managing these resources more effectively for the community⁶⁸.

Groundwater

If too little rain is falling to feed the rivers, is there another source beneath our feet? Some regions have huge amounts of water in underground reservoirs (or 'aquifers') where it has accumulated, sometimes over millions of years.

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 Jakarta⁶⁹. Groundwater systems provide between 25% and 40% of the world's drinking water⁷⁰. The reservoirs are often being emptied faster than they can refill themselves. UNEP in 2003 said excessive demand for groundwater in coastal cities such as Bangkok, Dhaka, Jakarta, Karachi and Manila has led to saline intrusion and ground subsidence. 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, heavy abstraction from urban aquifers has led to the water table falling by as much as 40 metres⁷¹.

Water management

The GIWA 2006 Report pointed out that management of water in developing countries is particularly difficult because governments do not know the size of the resource, especially of underground aquifers, or the precise patterns of supply and demand.

One longer term solution may be factoring in the environment to the value put on water. Ecosystem service payments would value the goods and services provided by natural water features like freshwater rivers and lakes, coral reefs and wetlands. Landowners of wetlands in Mexico, the GIWA says, could be paid for the waste water treatment provided by these natural pollution filters⁷². Payment schemes for 'watershed services' have been tried successfully around the world, where good upstream practices such as organic farming, sustainable forestry or soil conservation, are rewarded, reports the IIED. Projects range in size from a few families to a Chinese programme that aims to reach 15 million farmers⁷³.

⁶⁰ <http://www.unesco.org/water/wwap> ⁶¹ The Observer newspaper, 5 August 2007 ⁶² <http://news.bbc.co.uk/1/hi/world/africa/4587584.stm>

^{63/64/65} http://www.wateryear2003.org/en/ev.php_URL_ID=2205&URL_DO=DO_TOPIC&URL_SECTION=201.html

⁶⁶ http://www.wateryear2003.org/en/ev.php_URL_ID=5137&URL_DO=DO_TOPIC&URL_SECTION=201.html

⁶⁷ <http://www.unesco.org/mab/ecosyst/drylands.shtml> ⁶⁸ www.sahel.org.uk

⁶⁹ <http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=321&ArticleID=4026>

⁷⁰ http://www.unesco.org/water/wwap/wwdr2/facts_figures/index.shtml

⁷¹ <http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=321&ArticleID=4026> ⁷² <http://www.giwa.net/>

⁷³ <http://www.iied.org/mediaroom/releases/070816watersheds.html>

Recycling of water will also need to improve. At the moment, says the GIWA, freshwater withdrawals in agriculture only return 30% of the water to the environment – compared with the recycling of 90% of household water⁷⁴.

There are ways of improving things, if concerted efforts are made. For example, a November 2006 report by UNEP and the World Agroforestry Centre highlighted the massive potential of rainwater harvesting in Africa⁷⁵. By implementing rainfall collection into small, community-based storage systems – rather than vast dams which lose huge amounts of water to evaporation – lives of households, communities and even wildlife could be transformed. Not all rainwater can or should be harvested (a third is needed for the wider environment), but better implementation of these simple technologies would provide more than adequate supplies for many people in Africa.

The report says that in Ethiopia, for instance, where only around a fifth of the population are connected to domestic water supplies and almost half the population suffer hunger, there is the potential to harvest water for a population of 520 million people⁷⁶. Rainwater harvesting in containers and mini-reservoirs in a Maasai community in Kenya has led to improved food production, and women are gaining four hours a day to devote to education, child care and cultivation which they had previously spent finding and fetching water.

Water conflicts and cooperation

There are 263 trans-boundary basins in the world. They cover around 45% of the globe's surface and they represent a necessary resource for the life and development of 40% of the world's population; the competition is clear. Needs are also growing: during the twentieth century the world's population increased three-fold while water withdrawal increased six-fold. In addition, climate variability is worsening an already complicated situation, multiplying the uncertainties. All these ingredients create a negative forecast for the future of sharing water resources. So we must be vigilant – but not alarmist: creating fear and panic among water users is not conducive to the constructive and creative management of shared water resources, whether at the inter-state level or between two neighbouring farmers using the same well⁷⁷.

The story

You can write about water from a variety of angles: how much there is, and why that may be changing; inequality of supply; what the politicians are doing about shortages; what farmers and industry are doing to improve their record of water use; how individuals can change their habits; how tourism could be affected by changes in wildlife habitat.

If you live in a country with ample water supplies, your readers may find it difficult to see why their water consumption matters – but research can show you how more equitable water consumption is a necessity: if the world wants to live sustainably, then water is a story for everyone.

If water depletion continues, whole cities and agricultural communities could fall under threat. What are we doing about it?

Resources and ideas

World water resources

Information

- *UNESCO Water Portal*: <http://www.unesco.org/water/>
- *UNESCO-IHE, Institute for Water Education*: <http://www.unesco-ihe.org/>
- *The state of global water resources from the UN World Water Development Reports*: <http://www.unesco.org/water/wwap/>
- *More on global water resources from the UNFAO's Aquastat, its global information system on water and agriculture*: <http://www.fao.org/nr/water/aquastat/main/index.stm>
- *The UNEP's freshwater portal*: <http://www.unep.org/themes/freshwater/>
- *For a visual representation, UNEP's Vital Water Graphics*: <http://www.unep.org/dewa/assessments/ecosystems/water/vitalwater/>
- *Information about desertification from the UNEP's site on International Water Year 2003*: http://www.wateryear2003.org/en/ev.php-URL_ID=5137&URL_DO=DO_TOPIC&URL_SECTION=201.html
- *Details on bottled water consumption at the Earth Policy Institute*: <http://www.earth-policy.org/Updates/2006/Update51.htm>
- *SOS Sahel*, <http://www.sahel.org.uk>, and *Arid Lands Network*: <http://www.alin.or.ke/default/index.asp>
- *On water scarcity in 2025 at the International Water Management Institute*: <http://www.iwmi.cgiar.org/>
- *Bottled water facts*: <http://www.guardian.co.uk/g2/story/0,,1555111,00.html>
- *Wateraid is an international NGO dedicated to the provision of safe domestic water, sanitation and hygiene education to the world's poorest*: www.wateraid.org

Points to explore

- *Is your country already suffering water stress or scarcity? What will be the probable situation in 2025?*
- *Does anyone go short of water today? Who, and why? How many people lack piped water and basic sanitation? Why? What solutions are available? How is your government responding?*
- *What is the incidence of water-borne disease? Is it rising or falling?*
- *How fast is water consumption rising? How long can your country meet projected demand, taking into account population growth and rising living standards? How can people conserve water?*
- *Spend a day with a woman who has to fetch water because she has no domestic supply. What causes her problems, and what possible solutions are there?*
- *Where does your water supply come from? What issues are associated with this supply – economic, political, environmental and commercial?*
- *How much do people have to pay for their water? What happens if they cannot afford it? How can efficiency be improved?*
- *How widespread is the practice of illegally taking water from the public supply?*
- *How can people avoid water contamination?*
- *Are learning resources available nationally or locally to help preserve water? Are there community-based or technical courses to look at water issues in your region?*

⁷⁴ <http://www.giwa.net/>

^{75/76} <http://www.unep.org/Documents.Multilingual/Default.asp?ArticleID=5420&DocumentID=485&l=en>

⁷⁷ <http://www.unesco.org/water/wwap/pccp>

Action on water

Information

- Millennium Development Goals: <http://www.undp.org/mdg/>
- The UN International Decade for Action, Water for Life, (2005 to 2015): <http://www.un.org/waterforlifedecade/>
- UN-Water, a multi-agency initiative: <http://www.unwater.org/flashindex.html>

Points to explore

- 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?

Climate change and water supply

Information

- UNESCO's 2006 report, Water, a shared responsibility: <http://www.unesco.org/water/wwap/wwdr2/index.shtml>
- UNEP's report, Groundwater and its Susceptibility to Degradation: <http://www.unep.org/DEWA/water/groundwater/>
- The Earth Policy Institute: <http://www.earth-policy.org/>
- Melting glaciers: http://www.raonline.ch/pages/np/nat/np_glacier01e1.html and <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=452&ArticleID=4916&I=en>
- Information about groundwater and how we depend on it, from Lester R. Brown, President of the Earth Policy Institute in Washington DC, in his book Plan B: Rescuing a Planet Under Stress and a Civilization in Trouble (New York: W.W. Norton & Co, 2004.).

Points to explore

- 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?
- Does your country rely on groundwater? How fast is it being depleted? Is the water table falling? If so, how are people managing to get their water?
- 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 – and the associated tourist spend.

Depletion of the world's wider resources

Information

- Limits to Growth: The 30-Year Update, written by three authors from the Club of Rome: Donella Meadows, Jorgen Randers and Dennis Meadows, is helpful on resource depletion, particularly Chapter 2 on 'exponential growth'. It is available from the publisher Earthscan: <http://www.earthscan.co.uk/>
- The Club of Rome, a global think tank: <http://www.clubofrome.org/>

- The IIED works for 'more sustainable and equitable global development', including resources: <http://www.iied.org/NR/index.html>
- Bullet points on resource depletion on the UK newspaper, The Guardian: <http://education.guardian.co.uk/higher/research/story/0,,1447996,00.html>
- To check your country's footprint, whether ecologically it is in the red or the black on the Global Footprint Network: <http://www.footprintnetwork.org/>
- The IEA: <http://www.iea.org/> The IEA's World Energy Outlook and related factsheets: <http://www.worldenergyoutlook.org/factsheets.asp>
- UNESCO pages on energy and renewable energies: http://portal.unesco.org/sc_nat/

Training materials

Most countries in the Middle East and North Africa can be classified as having absolute water scarcity today. By 2025, these countries will be joined by Pakistan, South Africa, and large parts of India and China. This means that they will not have sufficient water resources to maintain their current level of per capita food production from irrigated agriculture.

(International Water Management Institute.)

Group exercise

GROUP SESSION

30mins

Split into four groups.

Using website resources, explain the water issues visually. Use statistics and graphics to simply depict what the world faces when it comes to lack of water, overuse of water and recent depletion of water. Each group will use a flip chart to explain to the workshop what it will do.

The goal is to understand the power of the visual graphic, whether in print, online or to augment the moving image for TV. A subsidiary goal is to understand how overuse of graphics can harm the impact of a story.

CLASS FEEDBACK

20mins

Each group will summarise its tasks in an open discussion and be assessed by workshop colleagues. They will justify use of specific visuals or be able to change their decisions based on constructive comments.

Individual exercises

- Write an editorial telling your government how it could maintain food supplies in 20 years from now, when global water supplies are under more pressure.

- Write an op-ed explaining what you think your country's priority should be when water runs short: agriculture, industry or households?

LECTURE NOTES

KEY MESSAGES

- **Supply**
 - 98% of water is too salty
 - Much of remaining water is locked in ice
 - Only a fraction can be used for cooking, washing, drinking, sanitation
 - But it is enough for everyone if it were managed properly
 - UN says there should be 20-50 litres per person per day
- **Demand**
 - Over one billion people lack access to safe drinking water
 - 2.4 billion lack access to basic sanitation
- **Problems**
 - Water related diseases are the leading worldwide cause of illness and death
 - These diseases kill 3.4 million people per year
 - Most who die are children
 - Growing water scarcity will affect countries including Pakistan, South Africa, and parts of India and China
- **Climate change**
 - It will increase water problems but it is unsure which parts of the world will be hit hardest
 - Rising temperatures may mean less snow, earlier rains
 - Smaller glaciers means less water for those dependent on them
- **Your job**
 - Understand present issues over water
 - Explain how climate change may affect water supply
 - Communicate issues in a highly understandable manner

KEY LEARNING POINTS

- Keep up to date on water issues
- Teams work best when they have a common understanding in order to present issues about water
- Be open to change and alter ideas if change is for the good
- Use of visual graphics is important when facts are crucial
- Overuse of visual graphics can impede understanding
- Different media will use the same material but in different formats
- Different media will use graphics and visuals in a different manner

ADDITIONAL NOTES FOR TRAINERS

SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To learn how to use visuals to tell a story

OBJECTIVES

By the end of the session, the workshop will:

- Identify websites to extract facts for illustrations
- Identify key elements
- Identify which key elements can be used for visuals
- Identify and outline which kinds of visuals are relevant for different media

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims & Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues Visuals	Discussion	Flip Chart	15mins
Review key issues	Open discussion	Flip Chart	5mins
Task	Group workshops	Handouts	30mins
Group Feedback	Discussion	Flip Chart	20mins
Review/Reflect	Lecture		5mins
Q/A Aims	Discussion	Power Point	5mins



CHAPTER 4 Biodiversity and extinction

© Brunner/UNEP/Still Pictures

Education for Sustainable Development - Biodiversity

Education for Sustainable Development addresses biodiversity by focusing on the interlinking issues of biodiversity and livelihoods, agriculture, livestock, forestry, fisheries, and other topics. The Decade for ESD offers an opportunity to develop a better understanding of how consumption impacts biodiversity at local and global levels and to sensitise children and young people to their role and responsibility in this process. It offers a chance to advance progress made in human resource development, education and training, to prevent habitat loss and degradation, species loss and pollution. It also offers possibilities for more innovative ways of learning about biodiversity.

Through ESD, people come to realise that the products they consume can have an impact on the biodiversity in their own communities and in those of far-off lands. ESD can also inform people on conventions and international agreements related to biodiversity, such as the Convention on Biological Diversity (CBD), or the Ramsar Convention. ESD can build a global lobby for effective action, showing people that their actions can contribute to lasting solutions.

The key messages:

- A major challenge for sustainable development is to reconcile biodiversity preservation with human needs.
- Habitat destruction and climate change are two of the greatest threats facing the planet's biodiversity.
- Well-trained and committed people are key to addressing ecological and sustainability issues.

Biodiversity (or biological diversity): the uncounted variety of living things on the planet. These living organisms, interacting among themselves and with the non-living environment, comprise the ecosystems of the world⁷⁸.

UNEP

Biological diversity means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems⁷⁹.

As species evolve, there has always been extinction. In mammals and birds, the probable natural extinction rate (scientists call this "the background rate") was about one species a year. But experts think that today's rate is perhaps a thousand times greater⁸⁰. The Earth has lived through five previous mass extinctions: the last was the catastrophe that wiped out the dinosaurs about 65 million years ago. The planet recovered from each of these disasters, though a different set of species emerged each time to replace those lost. Today, species and ecosystems are being destroyed so fast that many scientists believe the Earth is entering a sixth great wave of extinction⁸¹. Most changes to ecosystems are being made to meet the dramatic growth in human demand for food, water, timber, fibre and fuel.

Scientists have not yet been able to count how many species share the planet with humans. It could be as few as three million, or as many as 100 million - nobody can say. Science has managed so far to describe fewer than two million of them. Nobody

⁷⁸ <http://news.bbc.co.uk/1/hi/sci/tech/3667300.stm>

⁷⁹ <http://www.cbd.int/convention/articles.shtml?a=cbd-02>

⁸⁰ <http://www.millenniumassessment.org/documents/document.356.aspx.pdf>

⁸¹ http://www.unep.org/geo/geo4/report/05_Biodiversity.pdf

knows, either, how fast species are sliding into extinction. We are profoundly ignorant about almost everything else that makes up the web of life, the planet's biodiversity.

We need to know far more than we do, if life on Earth is to be sustainable: firstly, because many other species can be useful to sustaining human life; secondly, because the Earth, and all its species, works as a giant, interdependent ecosystem. How can we find a sustainable balance between developing our world and destroying the organisms we rely on?

How humans depend on other species

Nature – including the entire biodiversity of the Earth – creates the environment humans need. Natural forces and organisms oxygenate the atmosphere, purify drinking water, fix nitrogen, recycle nutrients and waste, and pollinate crops. Nature lets photosynthesis take place: this interaction between the Sun's energy and plants and bacteria produces the oxygen we need to breathe. Trees absorb carbon dioxide and so slow climate change. Mangrove swamps and coral reefs helped to lessen the impact of the 2004 Asian tsunami.

These benefits, or “ecosystem services”, supply food, drinkable water, medicines, timber and fuel. There are three main categories of ecosystem services:

- *provisioning services*: food (crops, livestock, capture fisheries, aquaculture, wild foods); fibre (timber, cotton, hemp, silk, wood fuel); genetic resources; biochemicals, natural medicines and pharmaceuticals; and freshwater
- *regulating services*: air quality regulation; climate regulation (at global, regional and local levels); water regulation; erosion regulation; water purification and waste treatment; disease regulation; pest regulation; pollination; natural hazard regulation
- *cultural services*: spiritual and religious values; aesthetic values; recreation and ecotourism.

People are easily attracted to stories about the “charismatic mega-fauna”, as zoologists call big mammals and other attractive and photogenic creatures which live in the world's wild places, such as elephants and tigers. But in fact, it is plants, insects and tiny micro-organisms which are equally if not more valuable to the human race.

We use between ten and twenty thousand plant species for medicine. About 80% of people in the developing world rely on traditional plant-based medicines, while in 2002–2003, 80% of new chemicals introduced globally as drugs by pharmaceutical companies could be traced to or were inspired by natural products⁸². For example, the rosy periwinkle, found in the forests of Madagascar⁸³, 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 cancer⁸⁴.

Animal species are also valuable. The cone snail family has around 500 distinct species. An article in the journal *Science* (Chivian, Roberts and Bernstein, 2003) reported: “Tropical cone snails may contain the largest and most clinically important

pharmacopoeia of any genus in Nature”. Each cone snail species has its own set of about 100 toxins, and so far only about 100 of the estimated 50,000 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 being killed 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.” There could be many other species with great potential to support and improve human life, but we haven't yet identified them – and some may already have become extinct.

The countless numbers of microscopically small species which live in the soil are also important to us. The health of the soil depends on things like nematodes (roundworms) and micro-organisms, but many of them are disappearing before anyone has even recorded their existence. They are vanishing because humans are destroying huge tracts of wilderness, converting entire ecosystems for our own use. Often the land is being used not to produce foodstuffs for the home country, but for export to Western markets. The trees of south-east Asia are being cut down so fast that the “wild man of the forests”, the orang-utan ape, is unlikely to survive in the wild beyond about 2025⁸⁵.

A group of US researchers estimated the value of the goods and services the natural world provides to the global economy – it was nearly twice the value of what humans were themselves making. So there is a huge amount at stake⁸⁶. UNEP estimates that 40% of the global economy is based on biological products and processes⁸⁷.

The world ecosystem

The Earth 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 natural community known as an “ecosystem” – a complex system of living organisms constantly interacting between each other and with their environment. An ecosystem may be as small as a forest or a river basin, as large as an ocean, and the plant and animal species within it affect and depend upon each other.

Removing one species can affect the entire ecosystem, often in ways which no-one foresees. For example: to supply the restaurant trade in Europe, where the indigenous frog population was decimated by over-harvesting and pollution, Bangladesh in 1977 recognised a trade opportunity and began killing frogs. The scheme succeeded, reducing the frog population by 60%, with disastrous results. Frogs ate insects, reduced the spread of tropical diseases and fertilised rice paddies. Without them, Bangladesh had to increase its imports of petro-chemical fertilisers and insecticides by a quarter⁸⁸. Another example:

⁸² http://www.unep.org/geo/geo4/report/05_Biodiversity.pdf

⁸⁴ www.portfolio.mvm.ed.ac.uk/studentwebs/session2/group13/taxol.html

⁸⁶ <http://www.guardian.co.uk/science/2005/mar/30/environment.research>

⁸³ www.livingrainforest.org

⁸⁵ www.unep.org/cpi/briefs/Brief03Sept04.doc

⁸⁷ <http://www.unep.org/Themes/Biodiversity/About/index.asp>

degradation of the mangroves in the Volta River Basin in Ghana has changed the composition of fish species by no less than 70% since 1969, shifting a whole ecosystem and way of life⁸⁹.

Replicating a species away from its ecosystem to farm it separately seems a good way to save resources. But it may fail, because so many species need to live in communities. The late Al Gentry, a world-renowned botanist from Missouri Botanical Garden, described how attempts to grow Brazil nuts commercially failed. The nut, found in the Amazon basin, is worth a lot to forest dwellers, as it can fetch a good price, but the trees would not bear fruit outside the forest⁹⁰.

If we look after one aspect of the world's biodiversity, we are protecting a whole raft of benefits. For example, there is a major UN-supported programme called *Wings Over Wetlands* which aims to protect the migratory birds of Eurasia and Africa by conserving and re-establishing the birds' wetland habitats⁹¹. Wetlands lie on coasts, estuaries and floodplains, and represent one of the richest ecosystems in terms of biodiversity, with insects, plants, trees, migratory birds, fish, amphibians and insects. They provide flood protection, income from fishing and tourism, and are a water source in some of the world's poorest areas. Around 50% of wetlands have disappeared since 1900, many in tropical and sub-tropical areas since the 1950s⁹². They have been drained for agriculture, settlement and urbanisation, polluted and depleted through hunting. Poor management has led to their loss, and to the destruction of the environmental services and products upon which the vulnerable poor depend. So – look after the birds, and their habitats, to gain immeasurably.

Stopping the decimation

In 1987, the World Commission on Environment and Development (known as the Brundtland Commission) said: "Economic development must become less ecologically destructive," and called for a new era of environmentally sound economics. Its sentiments were echoed in 1992, at the Rio Earth Summit, when 150 countries signed up to the United Nations Convention on Biological Diversity.

The Convention is an international agreement to sustain the rich diversity of life on earth, recognising that diversity is about people and their interaction with the Earth's ecosystems, as well as about plants and animals. The Convention aims to conserve biodiversity, use the components of biodiversity in a sustainable way, and to share the benefits from commercial and other use of genetic resources in an equitable way. In 2002, parties to the Convention signed up to the 2010 Biodiversity Target, promising to put into place measures to reduce the current rate of diversity loss and so to contribute to poverty alleviation and benefit all life on Earth.

There are many other international and national protocols, laws and agreements to protect biodiversity. But is it all enough? Rates of habitat destruction are falling in the temperate region, but in tropical parts of the world, the rate of loss is continuing to rise.

In 2005 UNEP published its *Millennium Ecosystem Assessment (MEA)* and looked at the consequences of ecosystem change for human wellbeing. Its findings provide a state-of-the-art appraisal of the condition of, and trends in, the Earth's ecosystems and the services they provide. It gives the scientific basis for action to conserve and use resources sustainably. 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 generations⁹³. They said:

- a third of amphibians were threatened with extinction
- a fifth of mammals were threatened with extinction
- an eighth of birds were threatened with extinction
- an estimated 90% of 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 eighteenth and nineteenth 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.

The story

You may be able to identify species that are disappearing from your country, or your neighbour's, but your readers will want to know why it matters - what effect extinctions could have on their way of life.

The other major angle is to look at 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 towards extinction⁹⁴. These certainly contribute, especially where a species (such as the gorilla) is already seriously threatened.

However, the scale of landscape change and clearance is a far greater factor in destroying the habitat where creatures live. But whole national economies rely on the crops grown on the land which is cleared. In south-east Asia, it is the clearance of forest for palm-oil plantations that spells the end for the orang-utans⁹⁵. Much of the deforestation happening in the Amazon is to clear land to grow soya, which is exported to provide cattle and chicken feed, in turn to put cheap meat on Western tables⁹⁶. At one remove, climate change itself is threatening some species – for example, in drying up river basin habitats – and the causes of that could lie in industry on the other side of the world.

Sometimes the damage is done for the best of reasons: damming rivers or draining wetlands to provide vital cropland and water can be lethal for the natural world – is this kind of development sustainable? Where does the balance in your society lie? Humans easily forget that we are not separate from that world, but part of it.

⁸⁸ <http://www.eap.mcgill.ca/MagRack/SF/Fall%2094%20G.htm>

⁸⁹ <http://www.giwa.net/>

⁹⁰ <http://www.bertholletia.org/bertholletia/CC/cc.html>

⁹¹ <http://www.wingsoverwetlands.org>

⁹² <http://www.wetlands.org/>

⁹³ <http://www.millenniumassessment.org/en/index.aspx>

⁹⁴ http://www.panda.org/news_facts/publications/index.cfm?uNewsID=62780

⁹⁵ http://www.panda.org/news_facts/publications/index.cfm?uNewsID=62940

⁹⁶ http://www.panda.org/about_wwf/where_we_work/latin_america_and_caribbean/region/amazon/problems/amazon_deforestation/index.cfm

Resources and ideas

Extinction of species

Information

- The Convention on Biological Diversity (<http://www.cbd.int/default.shtml>) is the UN treaty that aims to slow the rush to extinction.
- The value of ecosystem services: see UNEP's GEO4 report: http://www.unep.org/geo/geo4/report/05_Biodiversity.pdf
- Biodiversity: <http://www.scidev.net/ms/biofacts/index.cfm?pageid=421>
- The implications of a sixth mass extinction: <http://www.guardian.co.uk/print/0,,4309534-103690,00.html>
- What Nature does for us: <http://www.guardian.co.uk/science/2005/mar/30/environment.research>

Points to explore

- 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 species vanish? Who profited?
- How much wilderness have you lost in the last 50 years? What is it being used for now? Who makes a living from it now?

The Earth's ecosystem

Information

- About wetlands: <http://www.wingsoverwetlands.org> and <http://www.wetlands.org>
- The lost frogs of Bangladesh: <http://www.eap.mcgill.ca/MagRack/SF/Fall%2094%20G.htm>
- Why Brazil nut plantations don't work: <http://www.bertholletia.org/bertholletia/CC/cc.html>

Points to explore

- Find out from your planning or environment ministry, if you can, 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.

The speed of extinction

Information point

- The World Conservation Union (IUCN), an authoritative source of information on threats to biodiversity: <http://www.iucn.org/> (see especially its Red List of Threatened Species)
- The Millennium Ecosystem Assessment which looks at the reduction in biodiversity, but also sets out some options for a more sustainable future: <http://www.millenniumassessment.org/en/index.aspx>
- Traffic monitors wildlife trade: <http://www.traffic.org/Home.action>

Points to explore

- Has your government ratified the Convention on Biological Diversity? What does it do 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?

The causes of extinction

Information point

- The UNESCO Man and Biosphere Programme: <http://www.unesco.org/mab/mabProg.shtml>
- GRASP: <http://www.unep.org/grasp/>
- The bushmeat trade and Africa's apes: <http://www.4apes.com/bushmeat/report/bushmeat.pdf>
- The orang-utans' plight: http://www.wwf.org.uk/core/wildlife/fs_0000000026.asp
- The environmental cost of soya: <http://www.guardian.co.uk/international/story/0,,1827296,00.html>
- The story of the Mississippi river: http://www.usatoday.com/tech/science/2005-08-30-new-orleans-wetlands_x.htm

Points to explore

- How can poor people in your country feed themselves, if they shouldn't kill bushmeat? Is that trade illegal, and how are laws enforced?
- How can your government earn enough foreign exchange to pay for development without destroying forests and rivers?
- What strategy does your government have to take care of this generation without damaging the prospects for your descendants?

Training materials

"Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fiber and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth."

(from the Millennium Ecosystem Assessment website)

Group exercise

SCENARIO

You work for a newspaper in Madagascar. You receive a phone call from a rural reader who warns that the majority of jobs in his remote village will disappear because of unreasonable protests by environmentalists over insects. You call a scientist who explains that the villager is talking about the fate of cone snails. They are about to become extinct. But the scientist explains that international drug companies need the snail's natural toxins to help treat lung cancer. The hunt for the snails, which creates jobs in the rural areas, is out of control and will impact on the biodiversity of the island, threaten the cone snails' existence and harm cancer treatment even more.

How do you sell this story to your news editor, your publication and to your reader or listener? How do you balance it?

GROUP SESSION

Based on a workshop of 24, divide into four groups. Each group will have:

Reporter

Write the first three paragraphs of this story and explain which external sources you would use for establishing this article, ensuring balance and non bias

News Editor

Prepare four follow up ideas for the next day's paper

Picture Editor

Prepare three ideas for photographs, graphics or illustrations

Sub Editor

Write a two-deck broadsheet headline, a tabloid splash headline and a bill poster for the streets

Features

Outline how you would amplify the issue on a feature page without crossing over into news territory

Web

Explain how you would make this a lively interactive issue ensuring readers of all ages, cultures and socio-economic classes would contribute

GROUP SESSIONS

30mins

The tutor will oversee how each group meets its challenges and works as a team and prepares for a summary of its ideas. The group will work as a team and be open to constructive comments. The news editor will chair any group session.

CLASS FEEDBACK

20mins

Each group will be assessed by workshop colleagues in an open session and will be able to justify their decision-making or be able to change their decisions based on constructive comments.

LECTURE NOTES

KEY MESSAGES

- **Loss**
 - Number of species is unknown
 - Loss of 'biodiversity' difficult if not impossible to reverse
 - Many scientists believe the earth is entering a sixth great wave of extinction
- **Why we need to know more:**
 - Other species are helpful
 - Up to 20,000 plant species used for medicine
 - Many prescription drugs use plant extracts
 - No species lives in isolation, they are interdependent
 - Removing a species can affect the entire ecosystem

Your job

- Understand extinction issues
- Explain how extinction issues affect others
- Communicate issues in a highly understandable manner

KEY LEARNING POINTS

- Keep up to date on issues concerning extinction
- Teams work best when they have a common understanding in order to present issues about extinction
- Teamwork helps sharpen the focus of an individual
- Be open to change
- Case studies can reflect on how extinction issues affect people
- Accept there are many unknowns
- Group evaluation will give an insight into how others form ideas

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To teach the workshop the ability to work as a team in reporting a fictional scenario based on the threat of species extinction

OBJECTIVES

By the end of the session, members will

- Identify key points in the scenario
- Delegate responsibility to individual group members
- Offer and receive constructive comments to improve work
- State proposals and change material if improvements are valid

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims and Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip Chart	15mins
Review Key points	Open discussion	Flip Chart	5mins
Task	Groups	Power Point Hand Out	30mins
Group Feedback	Open discussion	Flip Chart	20mins
Review/Reflect	Open discussion		5mins
Q/A Aims	Lecture	Power Point	5mins



CHAPTER 5 Pollution

Photographer: Yu Qiu © UNEP/Still Pictures

Education for Sustainable Development - Pollution

Contamination can come from many different sources, such as rubbish, urban runoff, insanitary conditions, pesticides and nitrates and environmental disasters. Education for Sustainable Development offers an opportunity to understand more about different types of pollution and how they affect all aspects of daily life. Prevention is the best solution and education is the best prevention tool. ESD educates stakeholders and encourages community participation in order to reduce and prevent pollution.

The key messages:

- Our personal habits play a role in preventing pollution.
- All of us share the responsibility both for creating the problems of pollution and for finding ways to solve the problems.
- If they have a choice, people must learn to make environmentally smart choices about the products they use – for example, choosing food from agricultural producers who respect the environment and use fewer pesticides, chemicals and water.

Pollution is everywhere, above us, below us, in what we eat and in how we dispose of our waste. It affects the health of the Earth, and the health of its people. In this chapter, we touch on some of the key issues – pollution is such a vast topic that we can only give a brief overview, and leave you to research the areas you think are most important to report on for your home nation.

Air pollution

As well as the effects of polluted air on the Earth's atmosphere, air pollution is a direct killer. The WHO reports that 800,000 people a year die because of outdoor pollution⁹⁷ (65% of these in Asia's developing countries⁹⁸). There is even evidence that poor air can damage the lungs of children before they are born. Healthy people may not notice what polluted air is doing to them, but for someone with lung disease or heart problems, poor air can exacerbate ill health.

Air pollution cuts 8.6 months off the life of the average European⁹⁹. In China in 2005, satellite measurements of one polluting gas, nitrogen dioxide, showed concentrations above the country had increased by 50% in ten years, and the rate of increase was speeding up¹⁰⁰. Nitrogen monoxide and dioxide, highly toxic gases, are formed when nitrogen in the air meets

⁹⁷ <http://www.who.int/heli/risks/ehindevcoun/en/index.html>
⁹⁹ <http://www.who.int/mediacentre/factsheets/fs292/en/>

⁹⁸ <http://www.unep.org/geo/yearbook/yb2006/057.asp>
¹⁰⁰ <http://www.nature.com/nature/journal/v437/n7055/abs/nature04092.html>

the high temperatures of factory furnaces or vehicles' internal combustion engines.

It is very difficult to clean up air pollution, because the pollutants are part of life. Power stations, factories and even domestic fires all contribute. Cars and trucks contribute - diesel engines are a particular problem, especially if they are not well maintained. They produce tiny particles of soot, fumes and unburned fuel which can penetrate deep into people's lungs and cause cancer.

In the developing world, 2.5 billion people rely on traditional biomass for their energy needs, and suffer the consequences of indoor air pollution. Shockingly, the WHO estimates that 1.6 million people die each year as a result of fumes from indoor biomass stoves in their own homes¹⁰¹. There are ways of burning this fuel more efficiently, but they cost money.

To improve the situation is not impossible. The IEA's Dr. Fatih Birol argues that to provide LPG (liquefied petroleum gas) cylinders and stoves to everyone using biomass for cooking by 2030 would boost world oil demand by a mere 1% and cost US\$18 billion a year¹⁰². That is less than the profits of several major energy companies and would have a tremendous value in social welfare and human development. But, it means using more oil - is this a sustainable alternative? On a small scale, charities such as Practical Action are making improved cooking stoves, which burn one third of the firewood, available to impoverished communities in developing countries. They also provide alternatives such as micro-hydro plants to mill grain or provide power, small biogas plants and small scale wind power generators¹⁰³.

Water pollution

This is another killer. More than two million people die every year from diarrhoea and similar diseases spread in water, says the WHO¹⁰⁴. Water is also associated with diseases such as malaria, Japanese encephalitis and hepatitis A. Diarrhoeal disease alone amounts to an estimated 4.1 % of the total global burden of disease, and is responsible for the deaths of 1.8 million people every year - the majority attributable to unsafe water supply and poor sanitation and hygiene. The majority of these deaths are of children under five in developing countries.¹⁰⁵

Often the reason why people have to rely on polluted water is because they have no sanitation; the river they use to drink from is someone else's toilet. There is also pollution caused by discharges from factories and farms: when rain runs off farmland into rivers and lakes it can be carrying fertilisers and pesticides that have washed off plants and soil.

The UN reports that one billion people (one in six people alive today) lack access to clean, safe water and more than twice as many have no basic sanitation¹⁰⁶. UNICEF says meeting the Millennium Development Goals on water and sanitation would cost approximately an additional US\$11.3 billion each year¹⁰⁷. By comparison, the Stockholm International Peace Research Institute in 2006 put global military expenditure at US\$1,204 billion¹⁰⁸.

Water pollution is also affecting species other than humans. For instance, suspended solids deposited in watercourses through deforestation and agriculture have severely affected coral reefs, seagrasses and river habitats in a fifth of the areas studied around the world for the GIWA 2006 Report. Oxygen deficiencies caused by agricultural fertiliser run-off, sewage discharges and air pollution are present in lakes and rivers in many parts of the world, including Europe, Central Asia and sub-Saharan Africa, leading to the extermination of river and lake inhabitants¹⁰⁹.

Chemical pollution

Nobody really knows how much of a problem chemical pollution is, because its effects can be so subtle. Apart from the obvious examples when people have been directly 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 is probable that they are a risk to humans as well.

Chemicals can build up over time in the body, and they can move up the food chain - so, for example, contaminated, plant-eating fish can affect those animals that eat them, and people who eat top predators (such as tuna) can be harmed even more. Children are at particular risk because their bodies are still developing. The WHO says humans may "be conducting a large-scale experiment with children's health"¹¹⁰. One example of a damaging chemical is mercury, which occurs in the natural environment in small quantities, and can enter soil, air and water through coal-fired power generation, waste incineration, manufacturing and mining. The most common way of being exposed is to eat fish from contaminated seas and rivers. Mercury is a powerful neurotoxin, which passes easily into the brains of the foetus and young child, affecting brain development.

There is clear evidence linking one group of man-made chemicals, endocrine disruptors, to changes in the sex hormones and genitals of animals like polar bears - significant numbers of polar bears are showing signs of hermaphroditism¹¹¹. These chemicals interfere with glands and hormones - and may be doing the same to humans.

Dangerous chemicals can spread far and wide. There is virtually no industry in the high Arctic, yet pollutants have reached the polar bears there, carried north by winds and ocean currents. National frontiers do not protect anyone against pollution.

One problem is that these chemicals are often necessary for human life and well-being, and there is a difficult line to tread between their good and bad effects. Producers say their products are safe; campaigners say the opposite. There are about 70,000 chemicals on sale worldwide, with around 1,500 new ones coming onto the market annually¹¹². At least 30,000 of them are thought never to have been tested for their potential risk to people¹¹³. And the number of chemicals tested for their combined effects is small, although they can behave quite differently when used together.

Some dangerous chemicals occur naturally in groundwater because of the underlying geology, notably arsenic and fluoride.

¹⁰¹ http://www.euro.who.int/Document/EHI/ENHIS_Factsheet_3_3.pdf

¹⁰² http://www.iea.org/Textbase/Papers/2007/Full_Birol_Energy_Journal.pdf

¹⁰⁴ http://www.who.int/water_sanitation_health/diseases/diarrhoea/en/

¹⁰⁵ http://www.who.int/water_sanitation_health/publications/facts2004/en/index.html

¹⁰⁶ http://www.unesco.org/water/wwap/facts_figures/basic_needs.shtml

¹⁰⁷ http://www.unicef.org/wes/index_31600.html

¹⁰⁸ <http://yearbook2007.sipri.org/mini/>

¹⁰⁹ <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=471&ArticleID=5234&l=en>

¹¹⁰ <http://www.who.int/bulletin/volumes/82/11/editorial31104html/en/>

¹¹¹ <http://environment.independent.co.uk/article337581.ece>

^{112/113} <http://www.who.int/bulletin/volumes/82/11/editorial31104html/en/>

In Bangladesh, high concentrations of arsenic were found in tube wells in 61 out of 64 districts, for example. Even in very small amounts, the chemical can cause severe and irreversible health problems, eventually affecting internal organs¹¹⁴.

Fluoride is found in high levels in some groundwater sources, particularly in certain areas such as the East Africa Rift Valley and the geological belt from Turkey through to China¹¹⁵. Too much fluoride can cause symptoms from dental discolouration to crippling deformations of the skeleton. Tens of millions of people could be affected – no one knows the full number, but in India, half of its states have endemic fluorosis. In China, people are affected not only from the groundwater, but through breathing airborne fluoride released by burning fluoride-laden coal¹¹⁶.

Contaminated land

Contaminated land is often literally an invisible problem – one cannot see pollution in soil. But industry and agriculture can pollute the land, making it less productive or even unsafe.

The UK newspaper *The Independent* reported (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 nutrients¹¹⁷.

Nitrates, a basic ingredient in artificial fertilisers and used widely in modern agriculture, cause excessive nitrogen loading of the environment on a global scale. It causes "eutrophication" of lakes and rivers, where an oversupply of nutrients disrupts aquatic ecosystems, causing mass growth of algae and plants. This depletes oxygen and kills aquatic organisms, leaving the water sterile. Nitrates also get into drinking water. They can interfere with the blood's ability to carry oxygen to the body tissues, which is most associated with "blue baby" syndrome in infants.

Sometimes, land is poisoned when pesticides, other chemicals and waste are illegally dumped. The Basel Convention (on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal) is an international treaty designed to reduce the movement of hazardous waste, specifically to prevent its transfer from developed countries to less developed areas. However, international treaties banning dumping are not always effective and there are still problems, especially in developing countries where governments can earn valuable income from accepting shipments of foreign waste.

Warfare is another major source of contamination. The International Campaign to Ban Landmines says that between 15,000 and 20,000 people are killed every year by landmines – 40 a day. Despite the Ottawa Treaty of 1977, when 122 countries pledged never to use landmines and to clear their land of them, landmines are still being laid today. These, and mines from previous conflicts, do not distinguish between a soldier and a child, and cause horrific injuries if not death. In Cambodia, for example, there are 45,000 landmine survivors from the years 1979-2005, and 20,000 people were killed during that period¹¹⁸.

Landmines also deprive people in some of the poorest countries of their land and infrastructure. They hold up the repatriation of refugees, they hamper reconstruction and aid, deprive communities of their breadwinners and kill livestock and wildlife. Another problem is also developing for armament-heavy countries: how to dispose of obsolete weapons? Chemical and nuclear weapons will deteriorate and become unstable, making them an environmental disaster waiting to happen unless they are dismantled and neutralised.

Waste

Waste causes pollution, even when the waste is not itself dangerous; the right product discarded in the wrong place can cause huge problems for animals and people. Countries such as India¹¹⁹, Kenya¹²⁰ and Bangladesh found this to their cost with the humble plastic bag. Depending on how they are made, plastic bags can take 20 - 1,000 years to decompose. They create litter all over the world, and can clog drains with major consequences – serious floods in Bangladesh in 1988 and 1998 were partially blamed on blocked drains, and the country banned plastic bags in 2002 as a result¹²¹. In a marine environment, the bags are particularly damaging, because they look like jellyfish to sea creatures. Whales, seals, turtles and birds eat them and then die from intestinal blockage; their bodies usually decompose far faster than the bag, which is released back into the water again to do more damage. Even camels in arid lands have been known to die from eating plastic bags.

Poor waste disposal can contaminate air, land and water. The organic (biodegradable) component of waste also provides habitat for disease carriers such as rats and mosquitoes. Rodents and insects can transmit diseases such as dysentery, typhoid, salmonella, cholera, yellow fever, plague and parasites.

One answer is, of course, to throw much less away, and to make products which last longer or can be recycled. The USA now recycles more than a third of its waste¹²² – a change which has been made not only through legislation, but by creating an understanding of the need to recycle. This kind of cultural shift shows the power of the media, as well as governments, in educating for positive change. There is often also an economic driver at work: one person's waste is another's opportunity. Recycling can be a very profitable business in itself, and America's entrepreneurs were quick to take up the challenge.

However, change is relative. UNEP's advice on waste management notes that while people in Bangalore, India and Manila, Philippines, produce 400 grams of solid waste each day (paper, plastics, metal and so on), people in Sunnyvale, California produce 2,000 grams.¹²³

Disposal of the waste we produce is an issue for urban planners. In the rush to develop economically, it is very easy to put off creating properly managed waste management systems, resulting in lost resources and terrible damage to people and the environment. However, the amount of waste people produce tends to increase with development, and good, early planning can save money later – and generate income. The organic waste residue which makes up at least 50% of waste weight in most

¹¹⁴ UN report Children in the New Millennium, <http://www.unep.org/ceh/>

¹¹⁷ <http://news.independent.co.uk/world/africa/article354781.ece>

¹¹⁹ http://news.bbc.co.uk/1/hi/world/south_asia/3132387.stm

¹²¹ <http://www.abc.net.au/science/features/bags/default.htm>

¹²³ http://www.unep.or.jp/ietc/Publications/spc/Solid_Waste_Management/Vol_I/5_6-Part1_Section-chapter1.pdf

^{115/116} <http://www.unep.org/ceh/>

¹¹⁸ <http://www.icbl.org/what>

¹²⁰ <http://news.bbc.co.uk/1/hi/world/africa/4292205.stm>

¹²² <http://pueblo.gsa.gov/usagovnews/usagovnews6-12.htm#recycle>

developing countries, can be “recovered” or recycled as compost for agriculture¹²⁴. More technically, it can also be used to generate energy, either biologically, producing methane, or thermally, using burning to produce heat.

Good management of sewage and waste water is also critical. A well planned and maintained sewage infrastructure protects people from disease by preventing contamination of drinking water, protects local ecosystems from damage and allows the recycling of nutrients. Waste water can be reused in agriculture, industry, cities, and to protect the environment through enhancing waterways and recharging groundwater¹²⁵. It can also be managed to minimise damage during drought, flood and disasters such as earthquakes.

The story

The reality of pollution and waste is unattractive, but powerful as a story. Pollution is all around us, in the form of air, water and chemicals. It can be a real health threat. It can have an international angle – is waste from richer countries being dumped in yours? It can have an economic slant: cleaning up pollution can be very profitable.

A story that can provoke reaction is to personalise the reader’s response, for example, by comparing figures for lung or heart problems with increases in factory emissions or traffic volume. It will probably startle many of your readers, viewers or listeners if you simply tell them what air pollution does to the human body – and how it is almost certainly shortening their lives; but you must follow up with ways these problems could be reduced, and use journalistic rigour to make sure all your facts are verified.

First-person accounts usually bring stories to life, especially where a piece is dealing with huge, intangible issues like pollution. Talk to people who cause air pollution (taxi drivers, farmers, power station workers) but whose living depends upon this work, and to those who suffer its effects. Take a rural example and spend an hour in a smoky home burning biomass, and look at whether there are any alternative sources of fuel.

Resources and ideas

Air pollution

Information

- WHO’s indoor air pollution database for basic facts: http://www.who.int/indoorair/health_impacts/databases_iap/en/index.html
- The Global Environment Outlook 2006, one of a series published annually by UNEP: <http://www.unep.org/geo/yearbook/yb2006/index.asp>
- Smoke - the killer in the kitchen, report by Practical Action, a UK-based charity, particularly dealing with women and children: http://practicalaction.org/?id=smoke_report_home
- General information on European/UK air pollution and policy at The National Society for Clean Air: http://www.nasca.org.uk/pages/topics_and_issues/air.cfm

- Information on particulates: <http://www.env.gov.bc.ca/air/particulates/fpwtaaht.html>
- On acid rain: a site combining simple and more technical information: http://www.ace.mmu.ac.uk/eae/Acid_Rain/acid_rain.html

Points to explore

- Find out hospital admissions for heart and lung problems if you can, and compare them with increases in traffic.
- What are the sources of pollution in your country? What is the cost of cleaning them up, and how does it compare 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 does your country pollute others? Who pays?

Water pollution

Information

- A basic guide to water pollution from WWF: http://www.panda.org/about_wwf/what_we_do/freshwater/index.cfm
- More on water pollution from New Internationalist magazine: <http://www.newint.org/issue354/facts.htm>
- Polluted oceans: <http://www.unep.org/geo/geo3/english/315.htm>

Points to explore

- How many children in your country die before reaching their fifth birthday? How many of these had to live on polluted water and had no sanitation (assuming you have ruled out other factors as causes of death)?
- 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 instead?
- What is your country’s annual military expenditure? How much would it take to provide sanitation for everyone? What budgetary choices have to be made?
- What laws have been passed to protect water quality? How are they enforced?

Chemical pollution

Information

- Are there easy answers? What does the WHO think?: <http://www.who.int/mediacentre/news/releases/2006/pr50/en/index.html>
- Examples of how chemical pollution affects children, in UNEP’s report, Children in the New Millennium: <http://www.unep.org/ceh/>
- The contamination of the Arctic, from the Polar Environmental Centre: <http://www.nilu.no/pomi/>
- Some chemicals are leading to animals in effect changing sex: <http://www.nrdc.org/health/effects/qendoc.asp>
- Pollution is not a national problem: it needs countries to work together: http://www.ace.mmu.ac.uk/eae/Acid_Rain/Older/International_Agreements.html

Points to explore

- 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 (perhaps used in agriculture

or manufacturing), and if there is any protection against them. Are chemicals being used correctly and safely?

- Ask your environment ministry - or an international agency like UNEP - what potentially harmful chemicals could safely be phased out and replaced with safer alternatives.

Land contamination

Information

- The Basel Convention: <http://www.basel.int/>
- The International Year of Sanitation : <http://www.unsgab.org/>
- The International Campaign to Ban Landmines: <http://www.icbl.org>
- Examples of land contamination from Pakistan: <http://www.dawn.com/2004/12/05/local5.htm>
- Ivory Coast: http://www.boston.com/news/world/europe/articles/2006/09/19/un_ivory_coast_dumping_a_violation/?rss_id=Boston.com+%2F+News
- Ghana: <http://www.ens-newswire.com/ens/apr2003/2003-04-30-02.asp>
- Soil contamination: <http://www.isric.org/>

Points to explore

- 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 does your country's income from accepting shipments of foreign waste compare with what it incurs in health costs as a result?
- Spend time in any communities that have been affected by hazardous waste, whether domestic or imported.

Waste

Information

- See what waste can do - and what people can do about it: <http://www.waste.nl/>
- Why are plastic bags a long-lived menace?: <http://www.abc.net.au/science/features/bags/default.htm>
- Zero waste is possible, says Argentina: <http://www.greenpeace.org/international/news/ZerowastevictoryArgentina>

Points to explore

- 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?

Wider health issues

Information

- The WHO's World Health Report 2007, and previous reports: <http://www.who.int/whr/>
- The UNEP/UNICEF/WHO 2002 report, Children in the New Millennium: <http://www.unep.org/ceh/>

Training materials

"Industrial production results in hundreds of millions of tonnes of wastes every year. These wastes include chemical by-products that are hazardous to human health and the environment because they are poisonous, eco-toxic, explosive, corrosive, flammable, or infectious. Sometimes wastes are shipped off illegally to faraway places, exposing unsuspecting communities to terrible dangers."

(The Basel Convention on Hazardous Waste)

Group exercise

SCENARIO

You are a journalist working in Latin America. You receive a phone call from a farmers' union which claims that, in a remote agricultural town, 14 small children have been born with serious and similar limb disabilities in the past three years. It claims the disabilities are caused by nearby polluted land where chemical waste still is being dumped by international companies.

The government acknowledges the waste is being placed in the landfill. But a spokesman says it is done under strict controls led by highly skilled monitoring teams.

TASK

Split into three groups: Print, Broadcast (TV or radio) and Online. Create an action plan for researching the story to find out:

- If there is any substance to the allegations
- How to prove the allegations
- How to balance the reporting
- How to make this controversial issue a gripping story with a human element

GROUP SESSION

30mins

The tutor will oversee how each group meets its challenges and works as a team to prepare for a summary of its ideas. It is not necessary for delegates to be linked to their own discipline. This will aid thinking laterally in convergence media.

GROUP FEEDBACK

25mins

Each group will summarise its tasks in an open discussion and be assessed by workshop colleagues. They will justify decision making or be able to change their decisions based on constructive comments. Print will think about sidebars, Broadcast will have a shot list of visuals ready and Online will show how it can respond with active reporting such as diaries, blogs and vlogs.

Individual exercises

- Write a story on the potential risks of commonly-used chemicals and the benefits they offer. This could be pesticides or fertilisers.
- Investigate what international treaties on limiting pollution your country has ratified, and how good it is at living up to them.
- Explore the idea of zero waste in a feature article. Could this work for your country?

LECTURE NOTES

KEY MESSAGES - Pollution

- **Air Pollution**
 - Outdoor pollution causes 800,000 deaths per year
 - Smoky stoves in homes causes 1.6 million deaths per year
 - Solutions are expensive
- **Water pollution**
 - Leads to two million deaths per year
 - One in six people worldwide do not have safe water to use
- **Chemical pollution**
 - 70,000 chemicals on sale worldwide
 - 30,000 never tested for potential risk to people
- **Land contamination**
 - Industry and agriculture can contaminate land
 - Three quarters of farmland in Africa is plagued with severe soil degradation
- **Waste**
 - Waste causes pollution
 - The US now recycles over one third of its waste
- **Your job**
 - Make sense of the subject
 - Explain different types of pollution, how they are caused and their effects on people
 - Ensure subject is easily understandable

KEY LEARNING POINTS

- Keep up to date on pollution
- Investigate claims before publication or transmission
- Team work helps sharpen the focus of each individual
- Different disciplines- print, broadcast and online- use the same material but in different formats
- An action plan helps organise work
- Coverage often involves sharing ideas and negotiating over key factors. This includes group evaluation

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM:

To teach the fundamentals of researching and preparing a story in different media. Each delegate will understand how differing disciplines arrive at a plan to cover a story.

OBJECTIVES:

By the end of the session, the workshop will

- Identify key points of a fictional pollution story
- Discuss how to prove – or disprove- serious allegations about pollution and unexplained childhood disabilities
- Demonstrate the ability to develop a strategy for reporting the story in each discipline
- Deliver a strategy for print, broadcast and online

LESSON PLAN:

Detail	Method	Resources	Time
Intro/trainer Aims and Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip Chart	15mins
Review Key points	Open discussion	Flip chart	5mins
Task	Media groups	Hand out	30mins
Group Feedback	Open discussion	Flip Chart	25mins
Review/Reflect	Open discussion		5mins
Q/A Aims and Objectives	Lecture	Power Point	5mins

CHAPTER 6 Discussing sustainability

Photographer: Jusuf Jeremiah © UNEP/Still Pictures

Education for Sustainable Development - Sustainability

Education at all levels can shape the world of tomorrow, equipping individuals and societies with the skills, perspectives, knowledge and values to live and work in a sustainable manner. Striking a balance between human and economic well-being, cultural traditions and respect for the earth's natural resources depends on effective educational methods which foster respect for human needs and the way the Earth's resources are used.

Improving the quality and coverage of education and reorientating its goals to recognise the importance of sustainable development must become a world priority. Education for Sustainable Development must also reflect developments and reforms in education, particularly linked to the Dakar Framework for Action on Education for All, the UN Literacy Decade and the Millennium Development Goals.

Applying ESD requires partnerships among governments, academic and scientific communities, teachers, NGOs, local communities and the media.

The key messages:

- Education for sustainable consumption is a social strategy to enable people to take informed and responsible decisions and actions, now and in the future.
- Understanding sustainable development is the foundation for people to play their roles as conscious consumers and responsible citizens.
- Education is a critical complement to other social, cultural and economic policies, and for improving dissemination and implementation of new ideas and practices.

The economics of sustainable development

Can modern societies be both economically and environmentally sustainable? There are environmental writers who criticise the very idea of "sustainable development" as a contradiction in terms. They say no development can be sustainable. "Development" inevitably means growth, and economic policies based on concepts of growth and the continued depletion of resources cannot be "sustainable" - resources will not remain dependably constant. Resources like oil, for example, are 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.

Other commentators think sustainability and capitalism are compatible. Jonathon Porritt is Chairman of the UK's Sustainable Development Commission (UKSDC) and founder Director of Forum for the Future. He has observed: "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 decline¹²⁶”

Perhaps, if capitalism is inevitable, then the way we work it can be changed? Environmental commentator Sir Crispin Tickell has looked at world economics, and thinks capitalism could work for sustainable development if it operated on 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”¹²⁷. In short without a healthy environment, there can be no healthy economy.

But there is a real difficulty in how to assess economic 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 the cost 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.”

Sustainability: who gains?

Apart from the question of whether and how we could achieve sustainable development, some people ask why we should. As journalists routinely ask: who will gain from this?

Suppose the world did find a way of living sustainably, continuing indefinitely as it is at the moment, without having to fear running out of resources. Some critics argue that this would be ideal for those who have enough already, because it would preserve their way of life. But it would do nothing for those in need - the pattern of development today is skewed in favour of the rich, so it is already unsustainable, so there is no point in trying to preserve it.

There was some support for this view in the annual *State of the World* report, published in 2006, by the Worldwatch Institute, which argues that the Earth does not have enough resources for everyone to attain Western living standards¹²⁸. 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”¹²⁹.

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.” But unless the people of every nation do agree to negotiate on how to share the planet’s limited resources, sustainable development may become unattainable.

Resources and ideas

Economics of sustainable development

Information point

- ‘What is sustainability’ information at the Sustainable Technology Project: <http://www.stepin.org/index.php?id=sustainabilityexplained>
- A brief introduction to Our Common Future, the report of the commission chaired by the former Norwegian Prime Minister Gro Harlem Brundtland: <http://brundtlandnet.esbensen.dk/brundtlandreport.htm>
- Sir Crispin Tickell’s website: <http://www.crispintickell.com/page0.html>
- For Jonathon Porritt, see the Open Democracy site: <http://www.opendemocracy.net/home/index.jsp>
- Forum for the Future: <http://www.forumforthefuture.org.uk/index.aspx>
- The UK Sustainable Development Commission (SDC): <http://www.sd-commission.org.uk/>
- Ethical Performance is a newsletter reporting on socially responsible business: <http://www.ethicalperformance.com/>
- 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: <http://www.societyandbusiness.gov.uk/>
- YouthXchange on youth and sustainable lifestyles: <http://www.youthxchange.net/main/home.asp>

Points to explore

- Which of the economic views is right – if any of them? Is there another way to allow everyone to lead lives which indefinitely become richer? Do we need another way to define wealth?
- Research the protection of the environment in countries which have rejected capitalism.
- Find out what the environmental record of business and industry is in your country – the indigenous capitalists and the foreign companies operating there.
- What would your economy look like if prices reflected all the environmental costs of goods and services on a “cradle-to-grave” basis?

Difficult questions

Information

- On equal rights to emit greenhouse gases, and the “Contraction and Convergence” proposal for sharing emission rights, see Mark Lynas’s piece in the New Statesman: <http://www.newstatesman.com/200610230015>

Point to explore

- What is sustainable development trying to sustain? If we managed to achieve sustainable development, who would gain and who would lose?

¹²⁶ http://www.opendemocracy.net/globalization-climate_change_debate/capitalism_3074.jsp

¹²⁷ <http://www.crispintickell.com/page1.html>

¹²⁸ <http://www.worldwatch.org/>

¹²⁹ <http://www.worldwatch.org/node/3866>

Training materials

“The project, involving 50 rural households in Kajjado and Western Kenya, devised appropriate technology to reduce pollution in people’s kitchens. Results showed that the introduction of smoke hoods, eaves, windows and improved, fuel efficient stoves can reduce these damaging particles by approximately two thirds.”

(Practical Action)

Group exercise

SCENARIO

Your editor decides to begin a campaign to show there is a way of improving a local environment with a wide ranging series of features. It is called ‘Ray of Hope’ and it will detail how small projects can create positive changes to people’s lives. The thrust of the campaign is that, though the world is beset with problems, there can be solutions.

Task:

Split into three groups: Print, Radio and Online. Create an action plan for researching the story to find out:

- One developmental problem that can be illustrated
- How to illustrate that problem
- How to illustrate one project that can solve the problem
- How to create a gripping story
- How to humanise the piece without devaluing the people involved
- How to weave in how large organisations such as the UN or ASEAN help to try and solve the problem

GROUP SESSION

30mins

The tutor will oversee how each group meets its challenges and works as a team to prepare for a summary of its ideas. It is not necessary for delegates to be linked to their own discipline. This will aid thinking laterally in converging media.

GROUP EVALUATION

25mins

Each group will summarise its tasks in an open discussion and be assessed by workshop colleagues. They will justify decision-making or be able to change their decisions based on constructive comments. Print will think about sidebars, Radio will think about use of interviews and actuality and Online will show how it can react with active reporting such as diaries, blogs and vlogs.

Individual exercises

- 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?

- 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 their impact on the environment.

LECTURE NOTES

KEY MESSAGES

- **For every problem, there is someone trying to find a solution for:**
 - climate change
 - energy
 - pollution
 - water
 - fishing
 - species loss
 - population
 - poverty
- **Your job**
 - Make sense of the subject
 - Highlight key factors
 - Illustrate how key factors can be confronted and overcome
 - Identify how the story reflects a worldwide campaign to improve lives
 - Communicate stories in a factual and entertaining way

KEY LEARNING POINTS

- Keep up with latest developments about sustainable development
- Individuals’ stories graphically illustrate major issues
- Different disciplines - print, broadcast and online - use the same material but in different formats
- Thinking laterally to create a story that will attract an audience
- Covering a story often involves sharing ideas and negotiating over key factors, which includes evaluation

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To teach the fundamentals of researching and preparing a story in different media. Each delegate will understand how differing disciplines arrive at a plan to cover a story.

OBJECTIVES

By the end of the session, the workshop will

- Identify key points
- Discuss how to approach the campaign story
- Demonstrate the ability to develop a strategy for reporting the story in each discipline
- Deliver a strategy for print, radio broadcast and online

LESSON PLAN

Detail	Method	Resources	Time
Intro/Trainer Aims and Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip Chart	15mins
Review: Key points ID	Open discussion	Flip Chart	5mins
Task	Media groups	Hand out	30mins
Group Feedback	Open discussion	Flip Chart	25mins
Review/Reflect	Open discussion	Flip Chart	5mins
Aims/Objectives Q/A	Lecture	Power Point	5mins



CHAPTER 7 Asking the right questions

Photographer: Christopher Uglow ©UNEP/Still Pictures

Education for Sustainable Development - Stakeholders

Sustainable development is an evolving concept – it aims to meet the needs of the present without compromising the needs of future generations. It is a moral precept as well as a scientific concept. It obviously concerns the protection of the environment and world natural resources. But it is also linked to peace, human rights, equity and culture.

Education is one of the most effective forces to bring about the changes in knowledge, values, behaviour and lifestyles required to achieve sustainability and stability within and among countries, and to guarantee democracy, human security and peace.

The complexity of sustainable development challenges requires a collective commitment from everyone, including individuals, communities, national and international organisations, governments and businesses. Each of us is an agent of change. We can individually and together work for a better world.

The key messages:

- Education for Sustainable Development is everyone's business.
- Let us turn the idea of sustainable development into a reality for all the world's people.
- Partnerships play a vital role in developing education for sustainability.

An investigative report, based on sound evidence, can attract attention to issues of long-term public interest. By acting as watchdog, a journalist can ultimately hold decision-makers accountable for their actions (or inaction).

However, if the subject under investigation is a controversial one, journalists in some countries may face extreme situations – from earning the title of hero to serving a prison sentence for defamation. The route to fame or fall can depend on whether you are asking the right questions of the right people, and whether you are presenting sound evidence.

Media professionals may find it useful in this context to explore and understand where decision-making lies in their nation's social, economic, political, scientific or cultural environment.

National governments are responsible for the protection and wellbeing of their citizens. Nearly 200 countries operate 200 separate management systems for one planet – yet what happens in one place can rapidly affect other distant parts of the globe. Politicians can lead constructive thinking and mobilise action on sustainability. Regional, district and town governments also have an important role in raising awareness among their communities and of initiating political discussion at policy level.

Regional organisations and financial institutions include the African Union (AU), the Association of South-East Asian

Nations (ASEAN), Asia-Pacific Economic Cooperation (APEC) with its membership of Pacific Rim countries, the European Union (EU), the League of Arab States, MERCOSUR, the Southern Common Market for some South American countries, the Organisation of American States (OAS), representing North, Central and South America and Caribbean nations – and many others. You will be aware of the organisations operating in your region.

The EU, for example, has helped to drive up anti-pollution standards across Europe, but it also continues to subsidise its potentially damaging farming and fishing industries. Another example: ASEAN's Vision 2020 calls for: "mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of its natural resources and the high quality of life of its peoples". It has set out strategies and measures to achieve these objectives among its member states. The African Union, meanwhile, in 2001 established the New Partnership for Africa's Development (NEPAD), with objectives which include promoting sustainable growth and development. Its programmes focus largely on agriculture, human resources development (especially in health, education, science and technology), infrastructure, market access and intra-African trade and preservation of the environment.

Worldwide organisations like the United Nations, the World Bank and the World Trade Organisation (WTO) influence political decision-making and promote treaties and conventions such as the Kyoto Protocol and the Convention on Biological Diversity. These organisations form an important network that enables the mobilisation and exchange of wide-ranging resources to help resolve human development issues at many levels.

Multi-national corporations often control more wealth than small or medium-sized countries. They also provide employment to millions of people. Some organisations act responsibly while others inevitably cause damage to the environment. Multinational corporations are a source of media scandal and political controversy due to exploitative practices, corruption, income equality, and barriers that discourage innovation and entrepreneurship. On the other hand, their ability to maintain responsible business practices and build social capital contributes to broad based development and sustainable markets.

The individual contribution: none of us can avoid having an impact on the Earth – that is part of being alive. Those of us who live in the industrialised world tend to think only in terms of our own lives: we think using our car for a journey will do nothing to warm the atmosphere; that eating steak will not threaten the forest; that abandoning traditional ways of living will not impact on the health of our children or our environment. What we forget is the combined impact of millions of individual choices. We must now teach ourselves, as no other generation has ever had to do, to recognise our combined impact on the Earth.

In every country, we need to recognise that the world works like a single organism. When damage is done to one element, it may be causing effects on the other side of the globe. Examples include the way chemicals produced in the industrial world are harming polar bears. The consequences of even the smallest actions can have a wide ripple effect.

Links

- African Union (AU): <http://www.africa-union.org/>
- Asia-Pacific Economic Cooperation (APEC): <http://www.apec.org/>
- Association of South-East Asian Nations (ASEAN): <http://www.aseansec.org/>
- European Union (EU): <http://europa.eu/>
- League of Arab States: <http://www.arableagueonline.org/>
- MERCOSUR: <http://www.mercosur.int/msweb/>
- Organization of American States (OAS): <http://www.oas.org/>
- United Nations (UN): www.un.org/ and at <http://www.unglobalcompact.org/>
- World Bank: <http://www.worldbank.org/>
- World Trade Organisation (WTO): www.wto.org/

Training materials

"To enjoy healthy lifestyles, people require knowledge and skills combined with an environment that makes healthy choices possible throughout their lives."

(ASEAN)

Group exercise 1

Split into four groups.

Take today's papers - ensure they represent a full range. Look at the front page, inside news pages and the commentary pages.

- How can you turn these stories around to entail a sustainable developmental line that shows our impact on the environment?
- How can you take large scale stories and give them a relevant local slant that readers will want to digest?
- How can these stories be used as a peg for a feature or a sidebar?
- How can you humanise the articles to tell a first person story about how you personally could improve your ways of living?

GROUP SESSION

20mins

GROUP FEEDBACK

15mins

Each GROUP will outline ideas in an open discussion and be assessed by workshop colleagues. Each person will justify their decision-making or be able to change decisions based on constructive comments.

Group exercise 2

GROUP SESSION

20mins

One representative from each group will pitch their ideas to a trainer who will represent a news editor - a busy news editor who will want to hear very clearly why the news agenda should change.

GROUP FEEDBACK

10mins

Each group will outline ideas in an open discussion and be assessed by workshop colleagues. Each person will justify decision-making or be able to change decisions based on constructive comments.

LECTURE NOTES

KEY MESSAGES

- **Politics and sustainability**
 - Global groups such as the UN or WHO
 - Regional groups such as the EU or ASEAN
 - National governments
 - Local governments such as district councils or village meetings
 - Individual voters
- **Industry and business**
 - Can sometimes be more powerful than a medium sized country
 - Can impact on
 - energy
 - food output
 - natural resources
 - employment
 - pollution
- **Your job**
 - Make sense of the subject
 - Highlight key factors
 - Identify key points in current newspapers
 - Communicate the key factors in clear manner

KEY LEARNING POINTS

- Keep up with latest developments about sustainable development
- Expand news stories to take in sustainable development issues
- Telling your own story as a first person narrative is an effective way of raising awareness
- Be aware of how hard news can be used for features or sidebars
- Explaining and 'selling' the story to your news editor/editor is an important skill
- Have the tools and facts to successfully 'sell' a story to a news editor.

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To learn how to expand coverage

OBJECTIVES

By the end of the session, the workshop will

- Identify key elements in today's papers
- Identify which key elements can be expanded or changed or used to produce sidebars or special features
- Be able to sell the idea to a news desk, keeping mind the readership

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims and Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip Chart	10mins
Task 1	Workshops	Handouts Newspapers	20mins
Group Feedback	Discussion	Flip Chart	15mins
Task 2	Open discussion		20mins
Group Feedback	Discussion	Flip Chart	10mins
Review/Reflect	Discussion		5mins
Aims Q/A	Lecture	Power Point	5mins



CHAPTER 8

Delivering warnings

Photographer: Lin Joe Yin © UNEP/Still Pictures

Importance and Priority of Education for Sustainable Development

"We have no longer a choice: either we adopt behaviours that respect sustainable development, either we stop polluting the environment, allow for renewal of natural resources and contribute to the improvement of the well-being of all, or sooner or later we sign our own death warrant." Koichiro Matsuura, Director-General of UNESCO.

Education for Sustainable Development should not be equated with environmental education. The latter is a well-established discipline, which focuses on humankind's relationship with the natural environment and on ways to conserve and preserve it and properly steward its resources. Sustainable development encompasses environmental education but sets it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life. Given the advanced stage of environmental initiative in support of ESD, it will be challenging to incorporate the other elements of sustainable development. However, these other pillars – society, environment and economics, with culture as an underpinning dimension – must be addressed and not subordinated to environmental concerns.

The key messages:

- ESD is not an option but an imperative.
- Giving a central place to the human being and his or her culture in ESD is one condition for a successful Decade of ESD.
- Living together and changing society through ESD is important for a viable future.

The warnings

The Club of Rome is a global think tank and centre for scientists, economists, businessmen, senior international civil servants and former heads of state, headed by Prince Hassan of Jordan. As early as 1972, the Club published one of the best known and most criticised warnings of environmental crisis, entitled *The Limits to Growth*. It argued that resources were finite but that human population was not, and that therefore the world would sooner or later run out of raw materials.

In 1992, about 1,700 of the world's leading scientists, including most Nobel laureates in the sciences, issued the *World Scientists' Warning To Humanity*¹³⁰. 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."

The scientific community spoke up again in a Declaration from over a thousand scientists from the four great global research programmes, at Amsterdam¹³¹ 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

¹³⁰ <http://deoxy.org/sciwarn.htm>

¹³¹ http://www.sciconf.igbp.kva.se/Amsterdam_Declaration.html

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 *International Herald Tribune* published, in 2004, 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 that year 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"¹³².

The same year the Club of Rome published *The Limits to Growth: The 30-year Update*¹³³. 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."

Is it too late to act?

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 UK's *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."

Whether we choose to believe we have time or not, the scale of the problem is enormous - and difficult to communicate. All these crises are coming to a head at the same time; if the world were facing climate change alone, 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, energy, population, and everything else, in a linked and complicated cycle.

Let's take the biggest example of all: the Amazon rainforest, which as the WWF says has "become a global symbol of humanity's dependence on natural ecosystems". The Amazon affects our climate on a huge scale by absorbing solar energy, creating evaporation and thus clouds and rain. It is a major 'sink' for carbon

dioxide, helping reduce greenhouse gases. And the water it discharges into the Atlantic represents 15-20% of the world's total river discharge, perhaps enough to influence whole ocean currents.

A 2007 report by WWF says this extraordinary resource is now threatened by a cycle of climate change and deforestation. The world's growing demand for agricultural crops, land for livestock and logging is already decimating the forest, along with the pressures created by local population expansion. The reduction of forest releases billions of tons of CO₂ into the atmosphere. Now, scientists believe that climate warming could reduce rainfall by over 20%, causing the area's temperature to rise by 2-8°C, creating forest dieback and bringing fire-prone bush in its place. This will increase even more carbon into the atmosphere, further influencing climate change - and so the cycle could continue if drastic action is not taken¹³⁴.

Moreover, 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. Leading environmental scientist Professor John Schellnhuber, of 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 systems¹³⁵. 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 former 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."¹³⁶ Most people don't want to have to work that hard.

Problems for journalists

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 some respected scientists saying it's a waste of time? These are all issues that many newspapers and other media will have to take a stance on, if they have not already done so.

It is worth pointing out that many of the warnings uttered in the past must have sounded unlikely to come true - who in 1972 would have thought the Earth could run 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 is now much more accurate and can examine our world in much greater depth than it could 30 years ago - it is harder now to refute the warnings of a majority of scientific opinion. More and more people are prepared to accept there are critical points ahead.

¹³² <http://news.bbc.co.uk/1/hi/uk/3814607.stm> ¹³³ <http://www.clubofrome.org/>

¹³⁴ 2007 WWF report: The Amazon's vicious cycle: drought and fire in the greenhouse, at http://assets.panda.org/downloads/amazonas_eng_04_12b_web.pdf

¹³⁵ <http://news.bbc.co.uk/2/hi/science/nature/3597584.stm>

¹³⁶ http://www.guardian.co.uk/nuclear/article/0,2763,1668592,00.html#article_continue

But there are still significant problems for journalists trying to tell the story. There are no glib, easy answers: telling people what they are not ready to hear is never simple. But there are some pointers which may be useful:

- Never over-write the story. The prospects for avoiding crisis and building a sustainable world are dire enough already, so the story does not need exaggerating. The more sober and restrained and factual your copy is, the greater the chance it will be believed
- At the same time, do not pretend the crisis is not real. Tell your audience that they can look forward to a future of surprises and hard work, rather than gently and comfortably adjusting to predictable and manageable changes
- Set the story in context. Telling your audience 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 people do resist the idea that a range of converging environmental crises is about to burst upon us. 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 that this will change is not easy
- Do not frighten people unnecessarily about how awful things could become for them when we start to act in favour of sustainability - we all have to change, but the changes need not be too painful, and may even give us a better life than before.

A difficult story to tell

Stories announcing that “The End of the World is Nigh” usually find someone to publish them. However, unless reports are based on sound and verifiable facts, audiences used to the constant stream of bad news stories will fairly soon get tired of them and stop believing anything the authors say; that is the dilemma for many journalists writing on sustainable development. For others, with a readership seeing their economy booming and much higher standards of living within their grasp, it will be difficult to put across the need for caution amid the noise of (unsustainable) development.

The facts *are* sound, the science is persuasive. But there is still a credibility gap to be crossed – many audiences are very sceptical. They think they have heard it all before, or they think all journalists are prone to exaggerating claims.

It can be helpful to know how to show audiences that, this time, the warnings are real and the crisis imminent. In some parts of the world with ready access to media reporting on the subject, attitudes are beginning to change: people are aware that climate change is happening and threatens us all, even if they are not yet thinking of doing anything about it.

In parts of the developing world, fewer people will have heard the warnings. Those living in rural poverty are only concerned with survival. Those living in smog-filled cities, working in the very factories which are most polluting our skies, may feel their lungs suffering, but are not in a position to see the wider picture. It is perhaps a question of putting across the message to their governments, to the companies which operate in unsustainable

ways, and to a burgeoning middle-class which could begin to question the relentless drive towards Western ways of living. It will be important to respect the culture and traditions of every country, at whatever stage of economic development.

One problem is the slowness of movement towards obvious crisis. Everyone reacts more quickly to an instant emergency than to one that takes time to develop. With a slowly-developing emergency, it's impossible to identify a point at which people will feel they simply must act. David Clark, of the Massachusetts Institute of Technology, said: “Things get worse slowly. People adjust. The problem is assigning the correct degree of fear to distant elephants”.

Perhaps some people have just got too used to hearing warnings, even sober and well-founded ones? The developed world has been reading and forgetting about the world's diminishing resources for decades. It is now crucially important that everyone, everywhere, hears and understands the potential impact of what's happening to our Earth.

Resources and ideas

Is it too late to act?

Information

- *Club of Rome*: <http://www.clubofrome.org/>
- *World Scientists' Warning To Humanity*: <http://deoxy.org/sciwarn.htm>
- *The Anthropocene epoch in the International Herald Tribune*: http://www.ihf.com/articles/2004/01/20/edwall_ed3_.php
- *James Lovelock*: <http://www.ecolo.org/lovelock/index.htm>
- *The Take Part Too web-based project focusing on democracy, communication and negotiation*: <http://www.takparttoo.org/>
- *21st Century Dialogues – What future for the human species and prospects for the planet?*: <http://unesdoc.unesco.org/images/0014/001487/148741m.pdf>

Points to explore

- *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.*

Training materials

“World leaders say climate change is one of the most serious threats facing humanity. Are they right? If they are, who is going to do what about it? Who will benefit and who will pay?”

(Open Democracy website)

Group exercise

SCENARIO

A government researcher, Dr Yusef Lateef, has written an unpublished analysis of your country's efforts at correcting environmental imbalance. The secret document, which you have received, states in stark terms that sustainability in your region is simply not possible without large sectors of the economy feeling the effects. A fishing quota will harm seaside and lakeside communities; a clampdown on hunting will harm the tourist trade; a cutback in industrial pollution will set back an infant heavy engineering base in the cities. His confidential report accepts this runs counter to sustainable development. But he says he is morally correct in stating his opinions.

Separate into four groups

GROUP SESSION

30mins

Goals:

- Select an editor
- Hold an editorial conference
- Decide whether to even publish/broadcast this exclusive report. Would it be illegal to give it to the public? Would it be considered stolen property? Or against state interests? Or do you have a professional obligation to let the public see it?
- If you decide to go ahead:
 - Decide who to interview
 - Decide how to project the story
 - Decide how to balance it...or does it need balance?

Decide how to illustrate the story; how to humanise it and which people to hang the stories on.

GROUP FEEDBACK

20 mins

Each group will summarise its tasks using a flip chart. They will be assessed by colleagues in an open session. They will justify decision making or be able to change their decisions based on constructive comments.

LECTURE NOTES

KEY MESSAGES

- Two questions to ask:
 - Can modern societies be truly sustainable?
 - Who gains from sustainability?
- Your job:
 - Make sense of the subject
 - Ask the key questions
 - Analyse the solutions and how they can create more problems and questions
 - Communicate stories in a factual and entertaining way

KEY LEARNING POINTS

- Keep up with latest developments about sustainable development
- Identify problems based on religion, politics, focus groups or big business-that can evolve from solutions
- Dealing with an issue in a news meeting means sharpening

- your focus and taking on board the ideas of others.
- Feedback by others is constructive
- There are many ways to approach news and story telling

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 1 hr

(These are estimates. Timings can change according to class size and duration)

AIM

To teach the workshop the ability to work as a team in decision making and preparing a report based on a fictional scenario

OBJECTIVES

By the end of the session, members will:

- Identify key points in the scenario
- Decide whether to pursue the story
- If pursued, decide how to go ahead with the story
- Offer and receive constructive comments to improve work
- Publicly state their proposals and change their material if improvements are valid

LESSON PLAN

Detail	Method	Resources	Time
Intro/Trainer Aims and Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip Chart	15mins
Review: Key points ID	Open discussion	Flip Chart	5mins
Task	Groups	Power Point Hand Out	30mins
Group Feedback	Open discussion	Flip Chart	20mins
Review/Reflect	Open discussion	Flip Chart	5mins
Aims/Objectives Q/A	Lecture	Power Point	5mins



CHAPTER 9 Selling the story

© IPDC/UNESCO

The Education for Sustainable Development story

For citizens to be able to face the challenges of the present and future, trained decision-makers will:

- acquire competences and skills that are critical, creative, communicative, reconciliatory and solutions-oriented
- respect the Earth and life in all its diversity
- commit to democracy, the free-flow of information, inclusion and peace.

Educators and learners must:

- reflect critically on their own communities
- identify non-viable elements in their way of living
- become empowered to develop and evaluate alternative visions of a sustainable future
- assume responsibility for creating and enjoying a sustainable future
- ensure access to competing schools of thought
- work collectively to fulfil these visions.

The key message:

- What will be your next action in favour of sustainable development?

One of the hardest tasks facing a journalist has nothing to do with the difficulties and challenges of getting a story: it is persuading your editor to run a story you think is important. This chapter offers some pointers to meeting the demands of readers and editors.

Appealing to readers, viewers, listeners and editors

Jargon and scientific complexity: our job is to present what we learn about every story within a context that is relevant to our audience, and true to the intent in which the information was imparted. We do not have to be experts or specialists in any particular field to accomplish this - in fact it is often better if we are not, because then we approach a story from the point of view of the news consumer, not as an expert. If you take this approach, the likelihood is that a news story will come across free of jargon and in the vernacular language of the local community.

Keeping it simple not only makes for a good story, but also for a good pitch to the editor. As soon as a story pitch takes longer than

it would take to present the facts on the page or in a broadcast, the editor will have lost interest.

As an exercise, count the number of times the word “sustainable” appears in the story you are preparing. The more you repeat the phrase, the less you will have explained and the more difficult it will be to sell your story. This is because the term “sustainable” is laden with meaning that can only be understood and appreciated if it is unfolded and described.

Take a look at the two examples below. In the first, the story appeals to a policy person, someone familiar with terminologies and the subject matter.

In the second, an attempt is made to introduce the concept by first drawing in the news consumer with a play on words (neck-deep in trouble), a statement of universal acceptance (local flooding) and then a simple explanation toward problem solving (the role of Education for Sustainable Development).

Neither story is complete, but both highlight the importance of drawing in the audience and then beginning the gentle process of informing.

Example 1

Sustainable development encompasses sustainable environmental education but sets it in the broader sustainable context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life.

The community elders report that they are aware of the flooding plains, which they use for grazing cattle during the dry season. The sugar manufacturer which pushed them off their land in 1978 claims that the floods are worsening due to overgrazing. A neighbouring community has confirmed that the rivalry for pastureland started when the new settlers encroached upon their land in 1978.

Example 2

If you take water for granted, then be prepared to be neck-deep in trouble. Recent flooding in our area has heightened awareness of a problem that may be as much about lack of knowledge as it is about competing interests for scarce resources. Through programmes that promote education for better managing resources, chances are that solutions can be found that sustain the community and protect the livelihoods of individuals, while exploring avenues to progress.

This effort comes under a variety of approaches that includes something called Education for Sustainable Development or ESD, which promotes awareness of the positive and negative impacts of human activities on, in this case, the water cycle. ESD disseminates existing local knowledge and expertise and shares innovative approaches and best practices that are relevant to local conditions.

Appeal to the individual: One useful piece of newsroom advice is to ask the three questions that many people ask themselves when they read about some new product or development. The three questions are:

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

Addressing these questions is of course no substitute for telling a good, relevant story, and the questions do not apply to every story. But sustainable development is nevertheless often about new ways of producing or doing things. When you are writing about the problems described in Section One of this resource kit, keep the questions in mind to help you respond to the issues that are uppermost in the minds of your community.

Find a new angle: Think about a story that could have a sustainable development slant, without having “sustainable development” as its obvious focus. Many stories about the Earth’s environmental challenges fit into more than one category and can deal with the subject from a fresh angle. For example:

- *water* could be reported on from an international relations angle, where water resources cross borders
- *energy* might be covered in the context of the environmental impact of nuclear or fossil fuels
- *population growth* might be about people adopting children as opposed to adding to an already crowded planet
- *species loss* might include the impact on the economy of the loss of eco-tourism or the agricultural impact of scarce pollinators.

All these could be stories for local reporters or for journalists who cover specific areas like diplomacy, health, or agriculture. Even if an initial report misses the sustainable development angle, follow-up reports could keep the story alive and deepen your audience’s understanding of a topic. This is also an approach that can resonate with an editor.

Appealing to editors

Try to see the world through the eyes of an editor. We naturally want our story to run, and do not always understand the pressures of producing a balanced paper that will sell or a programme that will expand its audience. Showing your editor that you are trying to understand the demands they face, however, may encourage them to listen to you now and in the future.

What makes your story reliable: Editors seldom have the time to acquire detailed knowledge of a particular subject, and they will not be experts in sustainable development. They will expect a reporter covering the topic to give them reliable advice on the strength of a story, the dependability and independence of a source, and the worth of running the story.

Why will readers, listeners or viewers like it? An argument that usually carries weight is that your story will attract the audience. Simply saying this will not convince your editor – you need to prove it. Put yourself in their position, and argue from an editor’s point of view. They will want to know, among other things:

- why will people be interested?
- what is the story’s impact?
- what local issues are addressed?
- is the story relevant to this community?
- has the news organisation failed to recognise a potential threat to the community?

- what is the competition doing?
- are there financial consequences or benefits to running the story or not running the story?
- what is the follow-up?

Good copy sells, relevance sells even more: First and foremost, your reports must meet the highest standards of journalistic excellence, possessing the hallmarks of good reporting: fairness, balance and accuracy. Good journalism is also about storytelling based on provable fact. The final ingredient is relevance - contextualising a story for your audience. This is important in all journalism, but particularly when reporters move into specialised areas of reporting like sustainable development. It is critical to ensuring an understanding of all the factors that may have an impact on a community because of some activity that is planned.

It is not enough to do one story, for example, about a plan for a new beachfront resort. Who are the winners? The losers? What is the impact? A beachfront resort may bring jobs and other forms of economic prosperity to a community, but what will its impact be on traditional professions, such as fishing? Guests at the resort will want to taste the local fare, so ensuring development is sustainable for the community and the environment that supports it is critical information for all the stakeholders.

Know your newsdesk

Work with editors and fellow reporters to explore ways in which new angles and approaches can be included or added to a story plan. Is there a sustainable development angle that is being overlooked? Even if a story breaks, there is always interest in ways in which to keep it alive. Take a look at how a story might evolve over days and even weeks. Stories on the economy, for example, often begin with a government announcement, but are then expanded on over the coming days by looking at ways in which the economic data reflects changes in the society, opportunities for the future or preparations for rough times ahead.

Resources and ideas

Readers

Information

- *Page of hints for environmental journalists at the UNEP's GRID-Arendal centre in Norway:* <http://www.grida.no/Activities.aspx?m=38>
- *SciDev.Net, the Science and Development Network, has produced a helpful e-Guide to Science Communication:* http://www.scidev.net/ms/sci_comm/
- *The Reporter's Environmental Handbook (ISBN: 0813532876) provides background and facts on a range of environmental health stories.*
- *Some universities provide lists of experts available to talk journalists through their research or to give background on topical stories – find out locally.*
- *A site for young reporters, with environment information:* <http://www.youngreporters.org/>.

Editors

Information

- *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://www.tourismconcern.org.uk/>

Points to explore

- *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?*

Training materials

“Scientists do not share their findings of scientific research about local resource management... in the language that people understand. They connect globally but get disconnected locally.”

(Anil Gupta, Honey Bee Network)

Group exercise 1

GROUP SESSION

20mins

Split into four groups.

Take today's papers - ensure they represent a full range. Look at the front page and page three.

- How can you turn these stories around to entail a developmental or environmental angle?
- How can you take stories that might be of national interest and give them a relevant, local slant that readers want to digest?
- How can these stories be used as a peg for a feature or a sidebar?
- How can you humanise the articles to tell stories about people?

Remember that the ultimate aim is to entice the reader. Don't aim too high or low for that specific publication.

GROUP FEEDBACK

15mins

Each group will outline ideas in an open discussion and be assessed by workshop colleagues. Each person will justify their decision-making or be able to change decisions based on constructive comments.

Group exercise 2

GROUP SESSION

20mins

One representative from each group will pitch their ideas to another member of the group, who will represent a news editor - a busy news editor who will want to hear very clearly why the news agenda should change. The trainer may prompt the dialogue.

GROUP FEEDBACK

10mins

Each news editor 'pitch' will be assessed in an open session. Each person will justify their decision-making or be able to change decisions based on constructive comments.

LECTURE NOTES

KEY MESSAGES

- **Dealing with balance**
 - Get the facts correct
 - Understand work pressure
 - Persuading editors to run a story
 - Deadlines
 - Word count
 - Coping with different levels of understanding among colleagues and managers

- **Dealing with readers/audience**
 - Stay away from jargon
 - Think laterally
 - Three guidelines to interest readers/audience
 - Will it make me richer?
 - Will it make me healthier (safer)?
 - Will it have an effect on my children?

- **Dealing with editors**
 - Understand pressure at the top
 - Understand the need to expand audience and advertising
 - Understand the different types of audience
 - citizen
 - business owners
 - political

- **Your job**
 - Know why you want to write your story
 - Be aware of the pressures on balance
 - Be aware how to approach your audience
 - Communicate stories in a factual and entertaining way

KEY LEARNING POINTS

- Keep up with latest developments about sustainable development
- Think laterally and see how stories not specifically about sustainability can be used as a peg
- Think how worldwide or regional stories can be used as a peg for localised stories
- Be aware of how hard news can be used for features or sidebars
- Have the tools and facts to successfully 'sell' a story to a line manager or news editor

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To learn how to expand coverage

OBJECTIVES

By the end of the session, the workshop will:

- Identify key elements in today's papers
- Identify which key elements can be expanded, changed or used to produce sidebars or special features
- Be able to sell the idea to a news desk keeping in mind the readership

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims/Objectives	Lecture	Power Point	5mins
Intro/group What they know Key issues	Discussion	Flip Chart	10mins
Review Key points	Open discussion	Flip Chart	5mins
Task 1	Workshops	Handouts Newspapers	20mins
Group Feedback	Discussion	Flip Chart	15mins
Task 2	Workshops		20mins
Group Feedback	Discussion	Flip Chart	10mins
Review/Reflect	Discussion		5mins
Aims Q/A	Lecture	Power Point	5mins

CHAPTER 10 Positive examples

Photographer: Wong The Tuan © UNEP/Still Pictures

Good Practices and Education for Sustainable Development

The UN Decade of Education for Sustainable Development aims to involve individuals in the global movement for sustainable development.

Good practices:

- focus on the educational and learning dimensions of sustainable development
- develop and create solutions to common problems
- demonstrate a tangible impact on living conditions and quality of life
- improve living conditions, integrate economic, social, cultural and environmental components
- provide models for projects across disciplines and communities
- offer some elements of evaluation, by both experts and the people concerned.

This vision has no single starting or ending point because there is no “right” way to do it, but activities will stem from the same principles that underpin a commitment to sustainable development.

The key message:

- The vision of quality education for sustainable development is an approach not a recipe.

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 – they are often small projects, but give us hope that change is possible. At the end of the chapter are places to find more case studies, but you may also be able to find examples locally.

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, livestock, and irrigation: it has developed photo-voltaic water pumps. These pumps 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 Zimbabwe¹³⁷.

Energy

Sweden runs a biogas-powered passenger train between Linköping, south of Stockholm, and the Baltic coast city of Västervik. Biogas, obtained from decomposing organic matter, produces much less carbon than traditional fossil fuels¹³⁸. Sweden 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 use it: parking is free in many areas, companies pay less tax on biogas cars for their employees, and biogas itself is tax-free, so it costs 20-25% less than petrol. There are plans to introduce biogas trains in India.

Water

In the Indian state of Maharashtra, 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 projects¹³⁹. The Program requires villagers to agree to temporary bans on tree-cutting and grazing on land designated for regeneration.

For example, Darewadi village in Maharashtra's most drought-prone district was by 1996 on the verge of becoming a desert. Rainfall supported only three to four months of agricultural work a year, so villagers had to migrate for seasonal work. In Darewadi, the Program's work has 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. Locally managed marine areas (LMMAs) were introduced, which combine traditional local conservation practices with modern monitoring methods. The aim is to improve local incomes by replenishing local waters¹⁴⁰.

The kaikoso, a clam found in shallow mudflats and seagrass beds, is culturally important to the people of the village of Ucuivanua and is also a food staple and source of income. The villagers began working with the University of the South Pacific and after two years of training in environmental education and community planning, set up a 24-hectare tabu (closed) area, so the clam population could recover and more larvae would also settle in adjacent fishing areas. 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 northern Namibia, where there was rampant poaching of elephant ivory and rhino horn and severe over-use of drought-prone land¹⁴¹. Wildlife populations, including the desert elephant, endangered black rhino, zebra, lion, impala and oryx, were plummeting.

The country developed an anti-poaching programme, 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".

Populations of elephant, zebra, oryx, and springbok have now risen several-fold in many conservancies because poaching and illegal hunting have fallen. People are being helped out of poverty, with more than 95,000 Namibians benefiting: gains include jobs, training, game meat, cash dividends and social benefits like school improvements and water supply maintenance funded by conservancy revenue.

Pollution

More than two billion people are without grid-connected electricity and in India, over 100 million families rely on kerosene lamps which give poor light and emit smoke which can damage health and add to air pollution. Many accidents and deaths have occurred when kerosene lamps have been knocked over.

An Indian businessman from the solar industry has developed a low-cost solar lamp¹⁴². The industry had previously concentrated on more commercial products, ignoring the needs of those in remote rural areas, which had not been considered commercially viable. The new solar lamp can provide a bright, constant white light for up to three hours. It costs just UK£19 (1,500 rupees), so most people can afford it, but there is a scheme to lend the money to 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.

Resources

Information

Also have a look at the Global Plant Clinic: <http://194.203.77.76/globalplantclinic/>

Climate change

- GTZ, the German development corporation: <http://www.gtz.de/en/>

Energy

- See: http://www.handson.tv/info/series7/01_energy_wise_reports/report4.html

¹³⁸ http://www.handson.tv/info/series7/01_energy_wise_reports/report4.html

¹³⁹ <http://www.grida.no/wrr/047.htm>

¹⁴⁰ http://lmmnetwork.org/Site_Documents/Grouped/Fiji_LMMA_case_study_WR_R2005.pdf

¹⁴¹ <http://www.grida.no/wrr/046.htm>

¹⁴² <http://www.ashdenawards.org/winners/nest>

Species loss

- See the World Resources 2005 case study slide shows: <http://multimedia.wri.org/worldresources2005/wealthofthepoor.cfm>

More sources

Information

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

- 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: http://www.un.org/esa/sustdev/partnerships/case_studies.htm
- 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://www.wbcsd.ch/templates/TemplateWBSCSD5/layout.asp?type=p&MenuId=ODY&doOpen=1&ClickMenu=RightMenu>
- The Earth Charter Youth Initiative: <http://www.earthcharterinaction.org/youth/>
- The Around the World campaigns orchestrated by Veolia Environment in co-operation with UNESCO: <http://www.veolia.com/globe>
- The UK's Department for International Development (DfID) has a poverty research portal, R4D, Research for Development: <http://www.research4development.info/caseStudies.asp>
- A long list of case studies, mostly academic and arranged helpfully by both topic and country, is available at <http://www.colby.edu/personal/t/thtieten/cases.html>
- Hands On, a TV series from Television Trust for the Environment and Practical Action, has case studies: <http://search.atomz.com/search/?sp-q=case+studies&Go2=Go&sp-a=sp1003536c&sp-p=all&sp-f=ISO-8859-1>
- The UK Government's Sustainable Development Dialogues page lists projects under way in China, India, Brazil, South Africa and Mexico: <http://www.sustainable-development.gov.uk/international/Dialogues/index.htm>
- Greencom: <http://www.greencom.org/index.asp>
- Baltic Sea Project: <http://www.bspnews.kiss.pl>
- ESD good practices in the UNECE region: <http://www.unece.org/env/esd/GoodPractices/index.html>
- Sustainable development case studies: <http://webapps01.un.org/dsd/caseStudy/public/Welcome.do>
- CCIVS project "the Beauty and the Beast": <http://www.unesco.org/ccivs/New-SiteCCSVI/CcivsOther/esd/ESD2007.htm>
- Young reporters for the environment: <http://www.youngreporters.org>
- "Planet Earth: from Space to Place": a multimedia exhibition at UNESCO: <http://www.unesco.org/confgen/exhibition2007/planetearth.html>

Training materials

"Cities in ASEAN countries are in varying stages of development but they face somewhat similar environmental problems, viz. air pollution from industries and vehicles, absence or shortage of sewerage and drainage infrastructure and inadequate solid waste management facilities. These problems often are aggravated by rapid industrialisation and urbanisation, resulting in ever-increasing demand for water and energy as well as solid waste management infrastructure."

(ASEAN document)

Group exercise

SCENARIO

You work for a news organisation in a South-east Asian country fraught with political and religious problems. You have been given the job of creating a special Schools Section to deal with the environment. The managing editor says you must give the facts but also, importantly, show how the children see the solutions. The print section will be used as a basis for a TV show and an online edition. Your target audience is:

- Children between eight and ten years old
- Boys and girls
- Mixed religion schools that are secular in design

GROUP SESSION

30mins

Split into four groups

Each group will consist of:

- **News Editor:** find four follow up stories for the next day
- **News Reporter:** explain how you would report this task
- **Picture Editor:** explain how you would illustrate this story
- **Sub Editor/Bill Poster Designer:** how you would create headlines and a street bill poster
- **Web Editor:** how would you create inter activity aimed at children

The goals are

- pitch a story or group of stories to children.
- Let the children air their views

GROUP FEEDBACK

20mins

Each group will outline ideas in an open discussion and be assessed by workshop colleagues. Comments will be used to improve group focus and results.

LECTURE NOTES

KEY MESSAGES

- **There are many positive examples of the ways people are tackling the problems**
- **Helpful tips**
 - Do not over-write a story or make it too sensationalist
 - Explain context and how environmental issues fit together
 - Understand reasons for audience resistance
 - Keep away from overwhelmingly gloomy forecasts.
 - Explain solutions
- **Your job**
 - Make sense of the subject
 - Be aware of the problems of reporting on the subject
 - Be aware of helpful ways to approach the stories
 - Communicate stories in a factual and entertaining way to children, for children and by children

KEY LEARNING POINTS

- Keep up with latest developments about sustainable development
- Explain issues to children in a thoughtful and careful manner
- Allow children to express their views
- Dealing with an issue in a news meeting means sharpening your focus and taking on board the ideas of others
- Evaluation by others can be constructive

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins

(These are estimates. Timings can change according to class size and duration)

AIM

To teach delegates how to create a feature campaign based on children's attitudes to environmental issues.

OBJECTIVES

By the end of the session, the workshop will

- Identify key elements of a story
- Identify the audience
- Identify which key elements can be used to launch a children's campaign on the environment
- Be able to deliver a consensual outline of how to aim the stories and features
- Use visual representation
- Think laterally for broadcast and online

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims/Objectives	Lecture	Power Point	5mins
Intro group What they know Key issues	Discussion	Flip Chart	15mins
Review	Open discussion	Flip Chart	5mins
Task	Workshops	Handouts	30mins
Group Feedback	Discussion	Flip Chart	20mins
Review/Reflect	Open discussion		5mins
Q/A/Aims	Lecture	Power Point	5mins



CHAPTER 11 A sustainable world

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The Decade of Education for Sustainable Development (2005-2014)

In December 2002, resolution 57/254 on the United Nations Decade of Education for Sustainable Development (2005-2014) was adopted by the United Nations General Assembly. UNESCO was designated as lead agency for the promotion of the Decade.

The Decade aims to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour which will enable a more viable and fairer society for everyone.

During this Decade, Education for Sustainable Development aims to enhance five kinds of fundamental learning: learning to know, learning to do, learning to be, learning to live together, and learning to transform oneself and society.

The Decade addresses the way we live, our value and our behaviours. Because of that, ESD is not a subject to teach, but rather cuts across many subjects. It also means that education must be of a high quality, not merely passing on knowledge but changing the way people think. The principle of sustainable development must find its place in children's schooling, higher education, non-formal education, the media, and community-based learning activities, for example. This means education will have to change so that it addresses the social, economic, cultural and environmental problems we face in the twenty-first century.

The key messages:

- Let us improve quality of education for achieving sustainable development.
- A decade of ESD will contribute to building a better world for us and future generations.
- ESD contributes to facing challenges of the present and future and making relevant decisions for a viable world.

When you are writing about a sustainable world, you will probably be asked what such a world would be like - how different will it be from this one, and what impact will it have on our lives? We already know what some of the elements of that world will have to be. What we do not know is what the cumulative impact will be of those different elements - and of others we cannot yet foresee. We can describe some of the physical differences between our world and the one we are aiming at, but we probably cannot imagine how our thinking will change, or be forced to change. This chapter presents ideals of what we hope to achieve and you are invited to evaluate whether or not these are realistic in relation to your local context.

Observable changes

Climate and energy: the sustainable world relies far more on renewable energy like solar, wind and wave power. It uses energy much more efficiently, doubling its use where possible (for instance, producing both electricity and heat). It saves energy (for example, by not making unnecessary journeys). A sustainable world will not need to find alternative energy sources for every purpose that consumes energy now, because it will change the way we do things. It is composed 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, and where production - of food for example - is nearby. 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: the sustainable world that ensures everyone's basic needs are met before anyone's desires can be satisfied. It uses technology to make every drop of water count (drip irrigation, for instance, rather than traditional methods). 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.

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.

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. International research is focusing on cataloguing the Earth's species and understanding both their potential value to humans and their place in the natural order: taxonomy (classification of species) receives the funding and political backing it has never had before.

Pollution: in the sustainable world, waste becomes an opportunity and not a problem. 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 solved much of the problem of air pollution, and both industry and agriculture will have found ways to stop polluting water sources.

Population and poverty: in this new world, we have recognised that being poor is one of the main reasons why people have large families - so poverty 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.

It is a daunting list – impossible? Perhaps. It is not the sort of thing to try on a tough news editor without very careful preparation. However, virtually everything on it is practically possible. The problems are political and cultural. The sheer improbability of our ever being able to do everything on the list is a reminder of the conceptual shift the world will have to make to move to a sustainable path.

New ways of thinking

The psychological shifts we will have to make to build a sustainable world are staggering.

First, we will have to recognise that we are an interdependent world. New thinking means new economics: a system that includes the environment in the way it calculates the cost of products and services - recognising the value of what Nature gives us and does for us, and including that in the balance sheet. It means a new value system, valuing ourselves and others for what each of us can do to enrich life; a system which puts 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.

One of the radical ways to build an economy tailored to real needs could be to set a maximum wage. Some countries set a minimum wage as a safety net, but politics has shown no interest in limiting the amount people can earn at the top 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 sustainability¹⁴³.

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 [these] 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 legally¹⁴⁴."

We must take into account future generations. 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 rivers¹⁴⁵."

The way we perceive our world and our societies will need to change radically. In the concluding pages of the Club of Rome's *Limits to Growth: The 30-Year Update*, the authors write of five tools they say 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 will probably be full of surprises, even for journalists.

¹⁴³ <http://www.neweconomics.org/gen/>.

¹⁴⁴ From an unpublished interview with environmental journalist Alex Kirby

¹⁴⁵ Colin Tudge (1995), *The Day Before Yesterday: Five million years of human history*, published by Jonathan Cape.

Resources and ideas

A sustainable world

Information

- UNEP's freshwater portal: <http://www.unep.org/themes/freshwater/>
- UNEP GEO Yearbook's section on energy and air pollution: <http://www.unep.org/geo/yearbook/yb2006/054.asp>
- UN Population Fund (UNFPA): <http://www.unfpa.org/>
- UN Development Programme (UNDP): <http://www.undp.org/>, is a good resource on poverty
- IUCN is an authoritative source on the threats to species and their habitats: <http://www.iucn.org/>
- 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://www.gci.org.uk/>
- The World Resources Institute, and especially its Earthtrends page: <http://www.wri.org/>
- The World Council for Renewable Energy: <http://www.wcre.de/en/index.php>
- The Association for the Conservation of Energy: <http://www.ukace.org/>
- BedZED - the Beddington Zero Energy Development: <http://www.peabody.org.uk/pages/GetPage.aspx?id=179>
- Earth Charter Initiative: <http://www.earthcharter.org/>
- Make Poverty History campaigners' view: <http://www.makepovertyhistory.org/>
- The New Economics Foundation: <http://www.neweconomics.org/gen/>
- The New Economics Foundation's Happy Planet Index: <http://www.happyplanetindex.org/list.htm>

Points to explore

- Draw up your own scenario of what a sustainable version of your country would be like, and see how your readers react
- Talk to scientists and find out how sustainability could actually improve your readers' lives
- Interview a government minister on the country's plans for sustainability

Training materials

"If we want to survive in the future without a huge environmental and humanitarian crisis, our best hope lies with understanding and working with natural processes, rather than trying to conquer nature."

(Centre for Alternative Technology)

Group exercise

INTRODUCTION: 5mins

INDIVIDUAL TASK 10mins

Participants will draw up a list of actions needed to help their own country move towards a more sustainable future in relation to a resource issue specific to their country e.g. water, pollution or climate change. Individuals will write the **Challenges** associated with moving towards a sustainable future on a yellow piece of post-it paper and the **Solutions** to these on a green piece of post it paper.

GROUP TASK 30mins

The **Challenges** and **Solutions** will be collated on a flip chart by the trainer. Discussion of the key challenges and the responses to these will take place in groups allocated to specific challenges. This will allow participants to consider the key challenges in the move towards sustainable development and examine the range of **Solutions** identified.

GROUP FEEDBACK 20mins

A spokesperson from each group will report back on his/her group's response to the solutions identified. Individuals will be given the opportunity to respond to the issues raised by the groups and explain and expand on the solutions they devised.

LECTURE NOTES

KEY MESSAGES

- **The future**
 - Each problem has a solution
 - Energy/climate/water/pollution/resources population/poverty/species loss
 - Problem of mental attitude
 - Problem of politics
- **New ways of thinking**
 - Interdependent and not independent
 - New economics that include the environment
 - Value on nature
 - The long term
- **Your job**
 - Understand the key pressures on both the planet and your own country
 - Communicate these pressures in an easy to understand manner and format
 - Explain solutions
 - Explain difficulties of solutions

KEY LEARNING POINTS

- Stories are attractive if they are localised
- Illustrations and visuals aid a story
- Local sources are vital
- Working as a group can mean sharing ideas and evaluating each other

ADDITIONAL NOTES FOR TRAINERS & SUGGESTED LESSON PLAN

Class size: 24

Time: 90mins.

(These are estimates. Timings can change according to class size and duration)

AIM

To think about the future and how it can be reported in one's own culture.

OBJECTIVES

By the end of the session, the workshop will:

- Identify key problems
- Identify solutions to key problems
- Identify strengths and weaknesses in colleagues' approach to the task

LESSON PLAN

Detail	Method	Resources	Time
Intro/trainer Aims/Objectives	Lecture	Power Point	5mins
Intro group What they know Key issues	Discussion	Flip Chart	15mins
Review Key points	Lecture	Flip Chart	5mins
Individual Task	Workshops	Post Its Flip Chart	10mins
Group Task	Workshop	Post Its Flip Chart	25mins
Group Feedback	Discussion		20mins
Review/Reflect	Lecture	Power Point	5mins
Summary Q/A	Lecture	Power Point	5mins

Appendices

Glossary

A quick reference guide to frequently-used words and terms.

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

APEC	Asia Pacific Economic Cooperation
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
EPA	United States' Environmental Protection Agency
ESD	Education for Sustainable Development
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
GIWA	Global International Waters Assessment
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)
LLMA	Locally Managed Marine Area

MDGs	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
MERCOSUR	Southern Common Market, South America
NASA	US National Aeronautics and Space Administration
NEF	New Economics Foundation
NGOs	Non-governmental organisations
OAS	Organization of American States
SIWI	Stockholm International Water Institute
UKSDC	UK Sustainable Development Commission
UN	United Nations
UNAIDS	The Joint UN Programme on HIV and AIDS
UNDP	UN Development Programme
UNEP	UN Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organization
UNFCC	UN Framework Convention on Climate Change
UNFPA	UN Population Fund
UNICEF	UN Children's 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)
WHO	World Health Organisation
WRI	World Resources Institute
WTO	World Trade Organisation
WWF	WWF, the global environmental conservation organisation: still sometimes known as the World Wildlife Fund or the World Wide Fund for Nature
ZSL	Zoological Society of London

Additional resources

Cultures of Populations, Population Dynamics and Sustainable Development

Paris, UNESCO, 2001

392 p.

This book analyses how sensitivity to socio-cultural knowledge is crucial for active participation in population issues and sustainable development. Established, new, and emerging socio-cultural research methodologies are also addressed in that they are invaluable tools in furthering the understanding, promotion, and utilisation of action-orientated, participatory and policy-relevant socio-cultural research.

On-line version: <http://unesdoc.unesco.org/images/0012/001240/124028eo.pdf>

29.4 Mo

Ref. 334.89

Education and Population Dynamics: Mobilizing Minds for a Sustainable Future

Paris, UNESCO, 1999

52 p.

EPD-99/WS/1

How should the world respond to continuing population growth? How can an adequate rate of economic growth be achieved in the developing world and for poor people everywhere? How will we enable the environment to bear the "wear and tear" imposed upon it by a growing population and increased economic activity? These are some of the issues examined in this monograph from an educational standpoint.

On-line version: <http://unesdoc.unesco.org/images/0011/001163/116355eo.pdf>

4.5 Mo

Ref. 334.87

Educating for a Sustainable Future: A Transdisciplinary Vision for Concerted Action

International Conference on Environment and Society Education and Public Awareness for Sustainability

Paris, UNESCO, 1997

49 p.

Document prepared by UNESCO as a contribution to the Work Programme of Education, Public Awareness and Training of the United Nations Commission on Sustainable Development. Its objective is to stimulate and reflect a new vision of education as a means to achieving a sustainable future.

On-line version: <http://unesdoc.unesco.org/images/0011/001106/110686eo.pdf>

3.8 Mo

Ref. 333.92

Education for Sustainability. From Rio to Johannesburg: Lessons Learnt from Decade of Commitment

World Summit on Sustainable Development, Johannesburg, 26 August-4 September 2002

Paris, UNESCO, 2002

46 p.

UNESCO has prepared this report on these key lessons in its role as 'task manager' for Chapter 36 of Agenda 21, the action plan

agreed to by all governments at the Earth Summit, and the International Work Programme on Education, Public Awareness and Sustainability of the Intergovernmental Commission for Sustainable Development (CSD).

On-line version: <http://unesdoc.unesco.org/images/0012/001271/127100e.pdf>

196 Ko

Ref. 333.111

Greening Science Education

Jerath, Neelima; Saxena, S.K.

Punjab, Punjab State Council for Science and Technology/ UNESCO, 2001

193 p.

This publication highlights the issues discussed by participants and experts at a sub-regional workshop on "Integrating Environmental Issues in Science Education". It discusses initiatives in environmental education, latest experiences, methods and techniques being used by science and environment educators and proposes a strategy for environmental education for the use of policy-makers in the South Asian region.

On-line version: <http://unesdoc.unesco.org/images/0012/001238/123827eo.pdf>

11 Mo

Ref. 333.110

Harmony through songs: education through music; the facilitator's guide

De Rebello, Daphne M.; Gezentsvey, Michelle A.

Paris, UNESCO, 2002

57 p., illus.

ED-2002/WS/11

On-line version: <http://unesdoc.unesco.org/images/0012/001202/120227eo.pdf>

2.32 Mo

Ref. 334.90

Is the Future Yours?

UNEP/UNESCO Research Project on Youth and Sustainable Consumption

Paris, UNESCO/UNEP, 2001

23 p.

This report describes and comments on a UNEP/UNESCO research project on Youth and Sustainable Consumption launched to provide an insight into the attitudes and interests of young adults in adopting more environmentally and ethically sound consumption practices. The project comprised a survey on Youth and Consumption entitled *Is the Future Yours*, six country case studies and the organisation of a UNEP/UNESCO Expert Workshop on Youth, Sustainable Consumption and Lifestyles held in Paris in November 2000.

On line version: http://www.unesco.org/education/youth_consumption/pdf/future.pdf

3.7 Mo

Ref. 333.105

The Oceans and Coastal Areas and their Resources

Environmental Education Module

Paris, UNESCO/UNEP, 1995

99 p.

EPD-95/WS/3

Discusses the topics of oceanic and coastal ecosystems, coastal development and sources of pollution, fisheries and marine education. A descriptive text with background information for teachers and an accompanying page for presentation to students is provided for each theme. There is a section on syllabus development, references and a glossary of technical terms.

On-line version: <http://unesdoc.unesco.org/images/0011/001113/111307eo.pdf>

8.3 Mo

Ref. 333.89

Pachamama. Our Earth, Our Future

London, Peace Child International/UNEP/UNESCO/UNICEF, 2000

95 p.

This illustrated book is a perfect introduction for young people to the environmental challenges that await us in the 21st century. It describes the state of the world's environment and what action governments and young people are taking to address the problems. Drawn from the contributions of thousands of young people around the world, the book includes personal accounts, poems, illustrations and an Ecomaze game to test the reader's new knowledge in an amusing and informative way.

Online version: <http://www.grida.no/geo2000/pacha/contents.htm>

Ref. 333.98

The Role of Communication and Education for Sustainable Coastal Development

Proceedings of a PACSICOM Technical Workshop

Paris, UNESCO, 1999

88 p.

Report of a technical workshop on 'Sustainable Coastal Development: The Role of Communication and Education' held in Maputo, Mozambique in July 1998. It contains a brief report of the workshop, keynote and discussion papers, a list of participants, and an index of acronyms used in the paper.

On-line version: <http://unesdoc.unesco.org/images/0011/001185/118569eo.pdf>

8.1 Mo

Ref. 333.95

Seven Complex Lessons in Education for the Future

Paris, UNESCO, 1999

63 p.

EPD-99/WS/3

The purpose of this text is to examine fundamental problems that are overlooked or neglected in education. These problems are presented as "seven complex lessons" that should be covered in an education of the future in all societies in every culture, according to means and rules appropriate to those societies and cultures.

On-line version: <http://unesdoc.unesco.org/images/0011/001177/117740eo.pdf>

5.2 Mo

Ref. 333.96

Teaching and Learning for a Sustainable Future: A Multimedia Teacher Education Programme

CD-ROM Version 3.0

Paris, UNESCO/Griffith University (Australia), 2002

This programme has been published by UNESCO as part of its function as task manager for Chapter 36 of Agenda 21 and as a contribution to the 2002 World Summit on Sustainable Development. It contains 100 hours (25 modules) of professional development for use in pre-service teacher courses as well as for the in-service education of teachers, curriculum developers, education policy makers, and authors of educational materials.

Online: www.unesco.org/education/tlsf/

Ref. 333.108

YouthXchange

Training Kit on Responsible Consumption – The Guide

Paris, UNEP/UNESCO, 2001

49 p., illus.

A training kit to assist youth groups, NGOs and teachers to raise awareness on sustainable consumption and empower young people to put theory into practice in making more sustainable purchasing decisions.

On-line version: <http://unesdoc.unesco.org/images/0012/001240/124085eo.pdf>

4.4 Mo

To know more about it: <http://youthxchange.e-meta.net/>

Ref. 333.106

Biotechnology Educational Modules (CD-ROM)

Punjab, Punjab State Council for Science and Technology/ UNESCO, 2001

These teaching/learning modules have been developed to enable students to extrapolate their basic knowledge in biology and understand the practical applications of biotechnology. To facilitate comprehension, the contents have been categorised into 'Essentials' and 'Applications'.

Ref. 325.112

Connect

Connexion

Contacto

UNESCO International Science, Technology and Environmental Education Newsletter

Paris, UNESCO, 1976 (First published)

First published in 1976, this international science, technology and environmental education newsletter contains articles, reports and news on a variety of science and technology education topics. It is also published in Arabic, Chinese, Russian and Hindi.

Archives on-line: http://www.unesco.org/education/ste/news_let/archives.shtml

Ref. 325.7

Technology Education Guide

Erfurt, Germany, UNESCO/WOCATE, 2003

168 p.

On-line version: <http://unesdoc.unesco.org/images/0013/001320/132001e.pdf>

Ref. 325.116

UNESCO Resource Kit. Science and Technology Education

Hatfield, Association for Science Education (UK)/UNESCO, 1999

1 v. in various pagings

A series of 26 illustrated modules on science and technology education containing information on the chosen subject, teacher's notes along with a list of questions and answers.

On-line version: http://www.unesco.org/education/ste/learn_mat/ressour_kit.shtml

Ref. 325.104

Youth and Recycling (CD-ROM)

Turin, UNESCO Centre, 1999

The user will discover the world of recycling through different activities undertaken by young people and UNESCO. The CD provides information on recycling, a data base of youth groups engaged in this field of activity, and several links to web sites to further investigate this subject.

Ref. 325.110

Best practices of non-violent conflict resolution in and out-of-school: some examples

Verdiani, Antonella

Paris, UNESCO, 2002

80 p., illus.

This publication aims to inform teachers, trainers, educators, parents, youth and students who, one way or another, are confronted with violence in the school or in non-formal community education, and are looking for practical solutions.

On-line version: <http://unesdoc.unesco.org/images/0012/001266/126679e.pdf>

440 Ko

Ref. 34.132

Educating for Citizenship. Pour une éducation à la citoyenneté. Educación para la ciudadanía (CD-ROM)

Paris, UNESCO/Education International/Presse en ligne, 2001

Multilingual

CD-ROM prepared to help pre-primary and primary school teachers in their approach to teaching education for citizenship. It contains a glossary, a bibliography, guideline texts, methodologies, learning activity sheets and a list of selected videos.

Ref. 34.125

Future Scientists: Women and Men. Highlights of an International Encounter

Paris, UNESCO, 1998

50 p., illus.

This booklet, prepared for secondary-school science teachers in the UNESCO Associated Schools Project Network, provides information, ideas and examples of activities and actions that these teachers can initiate as part of the "Future Scientists" campaign, an initiative to mobilise young people, especially girls, to pursue scientific studies and careers.

On-line version: <http://unesdoc.unesco.org/images/0011/001183/118361eo.pdf>

9.8 Mo

Mine-awareness Education: A Country Review and Curriculum Guidelines for Bosnia

Geneva, UNESCO-IBE, 1997

32 p., illus.

This booklet provides source materials on mine-awareness for teachers and practitioners who are involved with primary schoolchildren in high-risk areas, and to launch a process of information and research in the field of land-mine awareness.

Available only on-line: <http://unesdoc.unesco.org/images/0011/001161/116143eo.pdf>

3.7 Mo

Peace Package - "Peace is in our Hands"

Paris, UNESCO, 2000

33 p., illus. + annexes

Prepared as a contribution to the International Decade for the Culture of Peace and Non-Violence for the Children of the World (2001-2010), this Peace Package is designed for elementary school teachers to promote education for a culture of peace. It can easily be adapted to classroom teaching and to the age of pupils. It includes a teachers' handbook, a peace poster, seven activity cards and appeals written by children at seven regional UNESCO peace festivals.

On-line version: <http://www.unesco.org/education/asp/handbook.shtml>

442 Ko

Ref. 34.121

The Quiet Peacemakers. A Tribute to Teachers

Paris, UNESCO, 1998

20 p.

All over the world teachers are finding ways of showing children how to respect those who are different from themselves. The "quiet peacemakers" are those teachers who devote their energy to building or restoring peace through their work in the classroom.

On-line version: <http://unesdoc.unesco.org/images/0011/001133/113365eo.pdf>

1.6 Mo

Ref. 411.25

A Selected List of UNESCO Practical and Reference Materials Related to Education for Peace

Paris, UNESCO, 2001

22 p.

ED-2001/WS/12

This document contains details of basic sources, teaching materials, curriculum and textbook guidelines, documents, specialised studies, bibliographies, directories, documents in preparation, along with a list of abbreviations related to peace education.

On-line version: <http://unesdoc.unesco.org/images/0012/001230/123065eo.pdf>

1.5 Mo

Ref. 34.123

UNESCO & Human Rights Education

Paris, UNESCO, 2003

24 p.

ED-2003/WS/47

On-line version: <http://unesdoc.unesco.org/images/0013/001318/131836e.pdf>

Ref. 34.139

UNESCO's Transdisciplinary Project "Towards a Culture of Peace"

Paris, UNESCO, 1999

4 p.

What does "Culture of Peace" mean? How does the concept become reality? How can the ideas and ideals embraced by this term be transformed into public policies and private actions that will change lives everywhere?

On-line version: <http://unesdoc.unesco.org/images/0011/001177/117753eo.pdf>

468 Ko

Ref. 34.102

Handbook for Writers of Children's Books

Fox, Mem

Paris, UNESCO/DANIDA (Danish International Development Agency) Basic Learning Materials Initiative, 2001

52 p.

ED-2002/WS/06

The present Handbook is a direct outcome of the lessons learned in the Tanzania and Uganda workshops. The Handbook does not pretend to provide a detailed and comprehensive guide, but aims to present some basic principles that should be taken into account when writing for children.

On-line version: <http://unesdoc.unesco.org/images/0012/001254/125465eo.pdf>

3.60 Mo

Ref. 55.68

Education, Work and the Future (CD-ROM)

Education, travail et avenir (CD-ROM)

The 230 selected UNESCO documents and publications contained in this CD-ROM cover topics such as technical and vocational education, training and technology, policy reform, international congress proceedings.

Paris, UNESCO, 2001

Bilingual

Réf. 23.130

Education, Work and the Future. Selected UNESCO publications and documents in Technical and Vocational Education and Training (CD-ROM)

This is the second edition of the digital library of selected UNESCO publications and documents in technical and vocational education and training. The material may be installed in your computer, printed and distributed freely, provided due reference is made to UNESCO as its source.

Paris, UNESCO, 2003

Bilingual

Réf. 23.138

UNEVOC on the World Wide Web

Berlin, UNESCO-UNEVOC, 1999

Leaflet describing UNEVOC, how it works, contents of web pages, how to access on-line and off-line.

On-line version: <http://www.unevoc.de/publications/pdf/iug011e.pdf>

300 Ko

Ref. 23.116

UNESCO's International Centre for Technical and Vocational Education and Training: Off-line Version CD-ROM

<http://www.unevoc.de>

Bonn, UNESCO-UNEVOC, 2001

Ref. 23.133

Panos London - At the heart of change: the role of communication in sustainable development.

London, Panos London, 2007

This report, commissioned by the UK Department for International Development, sets out what Panos London believes should be the role of communication in long-term, sustainable development. Panos London works with journalists in developing countries to produce features on, and analysis of, major global issues.

Online version: <http://panos.org.uk/resources/reports.asp>

UNESCO/Encyclopedia of Life Support Systems (EOLSS)

Website: <http://www.eolss.net>

Additional links related to culture

LINKS - www.unesco.org/links

SIDS - http://portal.unesco.org/en/ev.php-URL_ID=11735&URL_DO=DO_TOPIC&URL_SECTION=201.html

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The Thomson Foundation is an international media development NGO which exists to improve communication around the world.

www.thomsonfoundation.org

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