

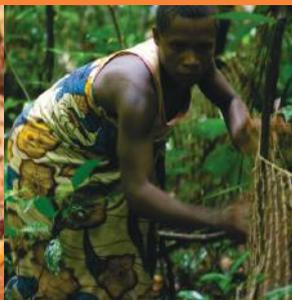


United Nations
Educational, Scientific and
Cultural Organization



youthXchange

Biodiversity and Lifestyles Guidebook



UNEP
United Nations
Environment Programme



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youthXchange

Guidebook Series

Biodiversity and Lifestyles



United Nations
Educational, Scientific and
Cultural Organization



Convention on
Biological Diversity



UNEP
United Nations
Environment Programme

Foreword

Every day, we are reminded of the importance of biodiversity for the health of our planet and for sustainable human development. Today, due to human activity, the loss of biodiversity is increasing at the fastest rate known in recent geological history. We do not know the total number of living species on the planet, but we know that current extinction rates are 100 to 1,000 higher than the natural rate and we know that the human impact is growing. To sustainably manage biodiversity, we must first understand it better.

The importance of preserving biodiversity lies at the heart of the Convention of Biological Diversity (CBD), which seeks to conserve biodiversity, to advance the sustainable use of its different components, and to share fairly and equitably the benefits arising from the use of genetic resources. It covers all domains related to biodiversity and its role in sustainable development, science, education, agriculture, business, culture and much more. In 2010, the Parties to the Convention adopted the Strategic Plan for Biodiversity 2011–2020, a 10-year framework for action to conserve biodiversity and the benefits it provides.

With nearly half of the world's population under the age of 25, young people are critical actors for these efforts. We must do more to support young women and men in understanding the scientific, economic, social and cultural dimensions of preserving biodiversity. Young people must grasp the connections between their everyday lifestyle choices and biodiversity. They must become empowered to propose solutions to stem the loss of biodiversity through their changes in their own behaviours.

Building green societies must begin with the way we think and behave. This idea underpins the United Nations Decade for Education for Sustainable

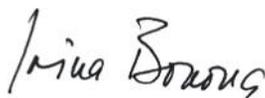
Development (2005-2014), which promotes critical and ethical reflection to foster attitudes and behaviours for a new culture of sustainability. This YouthXchange Biodiversity and Lifestyles Guidebook seeks to strengthen the foundations for this new culture.

Developed by the United Nations Environment Programme (UNEP) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), in close collaboration with the Secretariat of the Convention of Biological Diversity, this guidebook helps young people, aged between 15 and 24, to learn about the different dimensions of biological and cultural diversity and to develop essential skills to take action for its conservation. The guidebook highlights the interactions between biodiversity and the lifestyle choices of young people, and it untangles the connections between food, consumption, culture and biodiversity conservation. Our goal is to promote learning to preserve biodiversity through responsible lifestyle choices, by providing also starting points for action by young people.

UNEP plays a leading role in developing and advancing the international agenda on biodiversity, by catalyzing awareness on global environmental problems, by building consensus on action to address challenges, and by promoting and supporting conservation programmes. For its part, UNESCO promotes cooperation in education, the sciences, culture, communication and information, to provide decision-makers and civil society with the tools and skills to preserve biodiversity and to empower young people as positive change agents. With this guidebook, we seek to help young women and men to understand the contributions of biodiversity to their development and the role they can play in preserving it, today and tomorrow.



Achim Steiner
Executive Director
UNEP



Irina Bokova
Director-General
UNESCO



Braulio Ferreira de Souza Dias
Executive Secretary
CBD

1 The YXC Guidebook Series (p.4)

Aims of the YXC Biodiversity and Lifestyles Guidebook. Towards preserving biodiversity.

2 Biodiversity: A key to learning and change (p.6)

Learning about biodiversity. Overcoming being disconnected from nature. Unlearning assumptions. Designing your own learning path.

3 Biodiversity is evolving: change is in the wind (p.9)

What is biodiversity? Evolving biodiversity. What is the state of biodiversity? How did this happen? Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets.

4 Benefits of biodiversity: more is better (p.14)

Ecosystems – the backbone for billions. Ecosystem services. The case of water. The case of wetlands. Ecosystem resources and models for Science and Development.

5 Celebrating biodiversity: join in (p.18)

Biodiversity – a value in traditions. Biocultural diversity – a value for society. International Day for Biological Diversity (22 May) - our turn to value nature. The UN Decade on Biodiversity, 2011-2020.

6 Leisure and tourism: come for biodiversity (p.21)

Tourism and biodiversity. Why youth tourism matters. Learning opportunities galore! Say “No” to plastic!

7 Lifestyle choices: biodiversity goes with everything (p.25)

Are our lifestyles sustainable? Lifestyles disconnected from nature and driven by consumption. Changing lifestyles. Understanding the environment discourse - Read beyond slogans!

8 A healthy life: biodiversity matters (p.28)

Benefits of contact with nature. Traditional health systems. Modern medicine and biodiversity. Conservation of medicinal plants. Healthy living for a healthy planet.

9 Eating and food: bio “diversity” on your plates (p.33)

Food supplies. Food loss and wastage. Food consumption behaviours. The Genetically Modified Organisms (GMO) case.

10 Shopping and consuming: support biodiversity (p.37)

What are we consuming? Our power as consumers. Eat Locally, Think Globally. Consumer culture.

11 Money and jobs: linking them with biodiversity (p.41)

Money and biodiversity. Regulating economic activity for biodiversity. Payment for Environmental Services. UN Reduce Emissions from Deforestation and Forest Degradation (REDD). Green Growth initiatives. Jobs and self employment.

12 Connecting with others: birds were tweeting long before Twitter (p.45)

Making the connection. Connecting with alternative ways of living. Connecting with others. Connecting with policymakers.

13 Mobilizing the international community: your action is vital! (p.48)

Taking action. International conventions on biodiversity. International action, organizations and platforms. Your action is vital!

14 A. Online Resources (p.51)

B. Useful Terms (p.57)

C. About YXC

1. The YXC Guidebook Series

The *YouthXchange Biodiversity and Lifestyles Guidebook* is the third in a series of thematic guidebooks supporting the UNEP/UNESCO YouthXchange (YXC) Initiative. The initiative was created in 2001 to promote sustainable lifestyles among young people (15-24 years) through education, dialogue, awareness raising and capacity building. The series is produced for young people and the people working with them, such as educators, teachers, trainers and youth leaders around the world.

“Young people are not only aware of the trends of our consumer societies but they also contribute to shaping our markets and lifestyles. They have a great role in making our consumption and production patterns more respectful of biodiversity. Youth’s creativity, awareness and resourcefulness are powerful vehicles that can transform our everyday habits and reduce their negative impacts on biodiversity.”

Braulio Ferreira de Souza Dias, Executive Secretary,
[Secretariat of the Convention on Biological Diversity](#)

The YouthXchange guidebooks provide young people with ideas, actions and starting points towards a sustainable world. With nearly half the world’s population under the age of 25, most living in developing countries, imagine the impact of young people as change agents in adopting more sustainable lifestyles. If we add together our small steps, we will move towards lifestyles that help sustain our planet, our global and our local communities.

Aims of the YXC Biodiversity and Lifestyles Guidebook

The YouthXchange Biodiversity and Lifestyles Guidebook is designed to help young people familiarize themselves with the dimensions of global biological and cultural diversity, as well as help them to develop essential skills while engaging with biodiversity.

The guidebook aims to:

- Explore the interactions between biodiversity and lifestyle choices by explaining the interrelatedness of food, consumption, culture and biodiversity conservation;
- Help young people familiarize themselves with the dimensions of global biological and

cultural diversity, as well as help them to develop essential skills while engaging with biodiversity; and

- Help young people consider how they can preserve biodiversity through responsible lifestyle choices, engagement and action.

Towards preserving biodiversity

Biological diversity – or biodiversity – is the variety of life on Earth and the natural systems it forms. Human activities, being magnified by population growth and climate change, are leading to significant loss of biodiversity around the world. This has potentially grave consequences, including impacts on food systems and food security and for human well-being. If current unsustainable consumption and production patterns continue, we risk irreversible decline in biodiversity, which is not only essential to the proper functioning of the earth systems, but also key to the provision of ecosystem services that are crucial to human life and well-being. It is up to every one of us, particularly young people, to take action to preserve biodiversity and reconcile it with human life.

The global annual economic cost of biodiversity loss has been estimated between 1.35 and 3.1 trillion U.S. dollars. This burdens young people in particular, as it affects their job opportunities and future well-being. The energy, motivation and creativity of youth are essential assets to stimulating change and preserving the Earth’s biodiversity.

“73.4 million (12.6%) young people are expected to be out of work in 2013.”

[ILO Global Employment Trends for Youth 2013](#)

“People under 25 make up 43% of the world’s population. When young people can claim their rights to health, education and decent working conditions, they become a powerful force for economic development and positive change.”

UNFPA State of World Population 2011



Case Study

Earth Overshoot Day is the day when we have consumed all the new resources the planet have produced for the current year (according to [Global Footprint Network](#) calculations). For the rest of the year, we are in the ecological equivalent of deficit spending, drawing down our resource stocks – in essence, borrowing from the future. Earth Overshoot Day comes earlier every year, since the first Earth Overshoot Day on December 31, 1986. So, what can be done? We, as citizens, can take action to get out of overshoot in our own lives: eat less meat, drive and fly less, and use less energy in our homes and offices. We can also encourage government and business leaders to build communities with smart infrastructure planning and best-practice green technology.

This guidebook is designed to educate and inspire young people to actively participate in protecting biodiversity, as well as to help them understand the relationship between the long-term co-evolution of people, animal and plant species, and biological and cultural diversity. While biodiversity conservation needs the support of governments and business, young people must be part of the dialogue to make this a reality. Young people can contribute to fostering biodiversity conservation and preservation and protecting biological resources, which are the pillars upon which we build civilizations.

“In Jakarta, young people are almost 30% of the population and if this number can work together as active agents for our environment we believe we can tackle the issues affecting us and our environment at large.”

Putri Ayusha,
[Responding to Climate Change \(RTCC\)](#) student



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The YouthXchange Biodiversity and Lifestyles Guidebook can be downloaded from the [YXC website](#) and is also available on the [UNEP](#) and [UNESCO](#) websites.

2. Biodiversity: a key to learning and change

How is biodiversity reflected in our education and learning? What can we do to address biodiversity through education?

Learning about biodiversity

Biodiversity is the interconnected web of life on earth and we humans belong to it. In many traditional cultures, this web is sacred and rooted in daily life.

“Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.”

Chief Seattle, Native American leader, 1854

In light of this, we need to be more educated on the matter; we need to understand that we are part of it. We cannot be disconnected and unconcerned about it. Biodiversity can no longer be a scientific concept only understood by intellectuals and protected by nature conservationists.

How are our daily lives related to the continuing loss of biodiversity? Reflecting on this question is a beginning for change. There can be no standardised curriculum. Revising our own values and convictions, and understanding our own assumptions will help design our own curriculum for change.

Reconnecting with nature

“We need to overcome the wider and deeper apartheid, an eco-apartheid based on the illusion of separateness of humans from nature in our minds and lives.”

Vandana Shiva, [Indian environmentalist](#)

How can we reconnect with nature in our daily lives? Do we have to participate in cleaning beaches after oil spills or do we need to become conservationists? Not necessarily, unless you wish to.

To begin with we need to become mindful of the fact that we are one element of 'life' present in a great variety of forms on earth and that it is the whole of this web that operates to 'provide for' our needs and 'bears the consequences of' our actions.

Do you know the [Four Laws of Ecology](#) of Barry Commoner, a cellular biologist and environmentalist (1917-2012)? He explains:

- *Everything is connected to everything else.* There is one ecosphere for all living organisms and what affects one, affects all.



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- *Everything must go somewhere.* There is no “waste” in nature, and there is no “away” to which things can be thrown.
- *Nature knows best.* Humankind has fashioned technology to improve upon nature, but such change in a natural system is likely to be detrimental to that system.
- *There is no such thing as a free lunch.* Exploitation of nature will inevitably involve the conversion of resources from useful to useless forms.

And what happens when we reshape our daily lives and activities through these principles? This web of life operates as a whole to clean the air you breathe, to grow the food you eat, to purify the water you drink, to give you the greenery, to provide for your well-being... You are in fact connected with the web at every moment in the day but remain unaware of it. This guidebook intends to help you connect with it mindfully such that living your life and satisfying your daily needs become opportunities to reconnect with nature.



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Case Study

Roots of Change

The Roots of Change: Study Circle Program has three goals: to encourage a broad analysis of the origins of our global economy, to discuss the impacts of corporate globalization in local environments and to generate strategies for local action and global partnerships. The program provides a series of readings for discussion to groups of 6 to 12 members, formed in one's own community. Discussions lead to strategies for local action. Since its start in 1990, participants have gone on to initiate projects from farmers' markets and co-ops, to alternative currencies and local food councils.

"The readings challenge me to reconsider things I ignore or take for granted, and help to counteract the mesmerizing effect of everyday life in urban America."

Diana Young, California, USA

Unlearning assumptions

We commonly hear: *"Nobody really knows about what's going to happen, so why believe anyone?"* So-called *eco-friendly* proposals may often seem more expensive, not always convenient, not to our tastes or far from priorities; we do not have the time and small efforts in any case will not alter the state of the planet; it is for decision drivers and policy makers to legislate; changing climate is not in our hands!"

Do you assume that the preservation of the biodiversity of our planet is someone else's task? Learning from change and for change means challenging commonly held assumptions, overcoming mental obstacles and embarking on ways to regain power from decision makers and market forces - a process that liberates and an experience that releases new possibilities.

These possibilities include making use of physical or virtual innovative learning spaces where new knowledge and skills can be acquired. Throughout this guidebook, you will find illustrations of some of them, as well as suggested activities and tips that can help you further explore biodiversity conservation.

Biodiversity



Case Study

Education for Sustainable Development in German Biosphere Reserves

The German biosphere reserves under [UNESCO's Man and the Biosphere Programme](#) have initiated several projects for sustainable development. Breakfast: healthy - regional - sustainable, the Rhön biosphere initiative has been awarded the Project of the UN Decade of ESD title. According to Professor Kruse-Graumann, for a biosphere region to gear towards sustainable development means that educational processes have to be adapted for the people who live and work there, for children and youth who want to continue living and earning in the region and for visitors. Biosphere reserves offer outstanding possibilities for creating learning sites and learning landscapes. The village church, local Bread & Breakfast and the market place, craft enterprises, other businesses and administrative entities can become learning sites as much as the classic educational institutions.

([UNESCO Today](#), Journal of the German Commission, 2/2007).

Designing your own learning path

If you want to design your own learning path, you will need to:

- *Be with a conscious understanding of yourself;*
- *Know what matters most to you and acquire the relevant skills;*
- *Do something that brings meaning to your life;*
- *Live together with others and get a better understanding of interdependence; and*
- *Transform yourself and society by sharing stories and helping those who wish to change.*



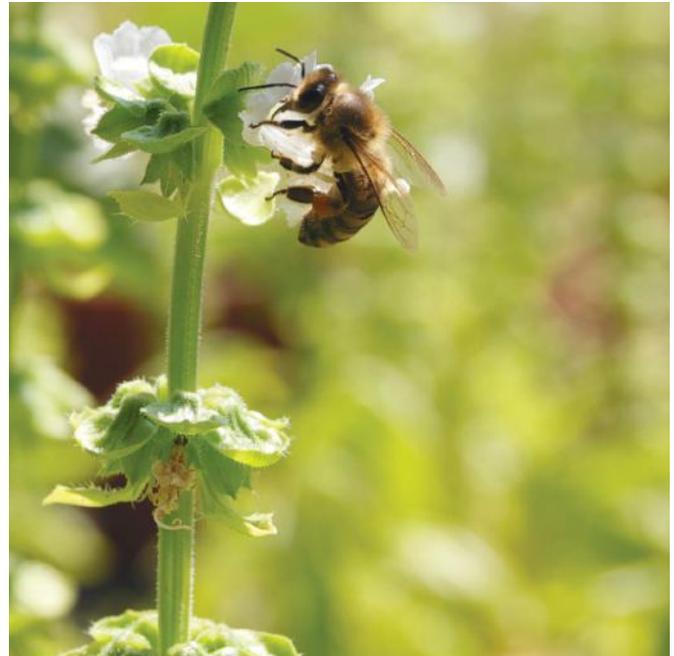
Tips

Ask your university to join the [Global Universities Partnership on Environment for Sustainability \(GUPES\) Network](#), which promotes the integration of environment and sustainability concerns into teaching, research, community engagement, the management of universities including greening of university infrastructure/facilities/operations, as well as enhances student engagement and participation in sustainability activities within and beyond universities.



Get Active!

- Learn to read beyond messages and design your own curriculum for change. Remember what matters most is how mindfully you lead your life. What are the five key actions you can take to encourage sustainable lifestyles locally?
- Use some of the following learning/educational resources to create new learning opportunities for school children, youth groups, families and clubs: (i) [Youth Guide to Biodiversity](#) (ii) [The Biodiversity Challenge Badge](#) (iii) IDB thematic resources for Youth on Poverty Alleviation: [Good-bye Poverty, Hello Biodiversity](#) (iv) [Discovering Biodiversity](#).
- Use these resources to work in groups, challenge assumptions and discover a world full of opportunities to learn for change.
- If your region has MAB Biosphere Reserves, make use of them as learning spaces to find out more about environmental protection



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3. Biodiversity is evolving: change is in the wind

What is biodiversity? What are some of the challenges facing biodiversity and what is being done to preserve biodiversity internationally?

What is biodiversity?

The United Nations Environment Programme (UNEP) describes biodiversity as the variety of life on Earth, it includes all organisms, species, and populations; the genetic variation among these; and their complex assemblages of communities and ecosystems.

Biodiversity has three components:

- **Species diversity:** This describes the wide variety of plants, animals and microorganisms that exist on the planet. So far, about 1.75 million species have been identified, mostly small creatures such as insects. Scientists reckon that there are actually about 13 million species, though estimates range from three to 100 million. A diversity of species (man, animals, plants, fungi, bacteria, algae, viruses etc.) coexists in any region and often contributes to the balance within an ecosystem. The loss of one species sometimes triggers the breakdown of the whole. For example, efforts to eliminate coyotes in the canyons of southern California triggered the loss of songbird populations. As coyote populations reduced, their prey, primarily raccoons, increased. Since raccoons eat bird eggs, the songbird population decreased.
- **Ecosystem diversity:** Ecosystems represent a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. For instance, wetlands, mountains, deserts, forests, oceans are specific environments or ecosystems which ensure the mix of life's essentials such as oxygen, freshwater, food, medicine, flood control etc.



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Biodiversity is evolving

- **Genetic diversity:** Genetic material represents any material of plant, animal, microbial or other origin containing functional units of heredity. This results in different varieties within a given species or in the variation prevailing between individuals of a given variety. Genetic diversity improves the ability of each species to adapt to disease, pests or habitat variation. The lower the level of genetic diversity, the more vulnerable a population is to changing environments or disease. For example, if all wheat produced in a country was of a specific genetic strain, it is potentially more vulnerable to disease than if multiple strains were cultivated.

Ecosystems come in different sizes, with the larger ones called 'biomes.' Those areas that are rich in biodiversity, unique and threatened are called "hotspots" - rainforests, coral reefs, mangroves and islands rich in endemic species. The number of species existing in any region defines the 'species richness' of that area.



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Evolving biodiversity

Biodiversity has evolved over the last 3.8 billion years, since the beginning of life on Earth, with the continued emergence of new species and the extinction of others. Moreover, during this period, five major events of mass extinction have been recorded. Experts believe that we are now in the midst of the "sixth great extinction of species" - this one driven by human activity. The large number and variety of genes, species and ecosystems in existence today are the ones with which human societies have developed, and on which they depend.

"A society is defined not only by what it creates, but by what it refuses to destroy."

John Sawhill, [The Nature Conservancy](#)



Case Study

Genetic Variation, the case of peppered moths and Tasmanian Devils

Originally, most peppered moths exhibited light colouration and therefore camouflaged well on lightly coloured trees and lichens. Soot from industry blackened the trees, increasing predation on them. Dark-coloured moths from the same species however benefitted and increased in numbers. Recently improved environmental standards helped replenish light-coloured moths. The species survived because of the diversity of genes contributing to colouration. By contrast, the Tasmanian Devil species lack genetic variation in a key immune gene region. Their ability to combat and develop an immune response to the virus inflicting lethal devil facial tumour is limited. This contributed to the spread of the disease that hit almost 90% of some Devil populations.

[The Age](#), February 25, 2008.



In Numbers

Scientists estimate that 5 - 30 million species exist on Earth today and 1.5 to 1.9 million of them have been named.

Costello, Wilson, Houlding, 2011; Mora et al, 2011

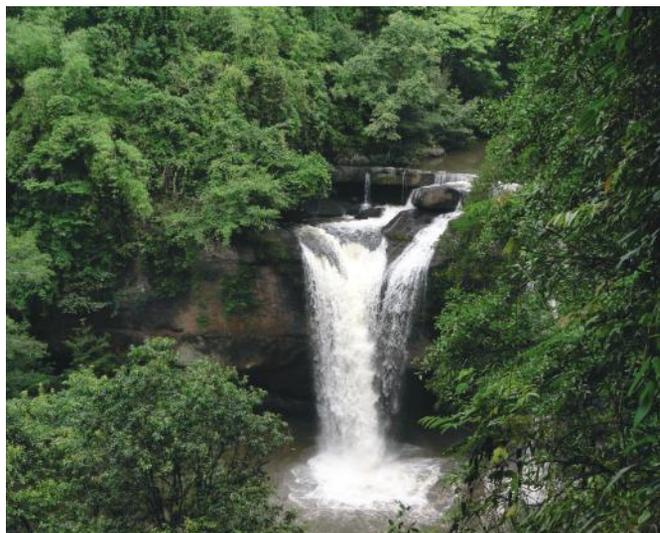
Biodiversity is evolving

What is the state of biodiversity?

Scientific analysis shows that earth systems are close to their biophysical limits, and these limits have in some cases been exceeded. Several hundred known species have become extinct as a result of human activities and thousands are under threat of extinction. Unique ecosystems are being destroyed. Based on a widely recognised evaluation of the conservation status of species, the International Union for Conservation of Nature (IUCN) maintains a [Red List of Threatened Species](http://www.facebook.com/iucn.red.list) (www.facebook.com/iucn.red.list). This list may qualify species as extinct, extinct in the wild (meaning those surviving only in human care), critically endangered, endangered or vulnerable.

In 2002, the world's governments agreed to a [biodiversity target](#), namely "to achieve a significant reduction of the current rate of biodiversity loss at the global, regional and national level by 2010." However, according to [Global Biodiversity Outlook 3](#), there are multiple indications of continuing decline in biodiversity.

- Species assessed for extinction risk are on the average moving closer to extinction with amphibians facing the greatest risk. Coral species are deteriorating most rapidly in status. It is estimated that nearly a quarter of plant species are threatened with extinction. The abundance of vertebrate species, based on assessed populations, fell by nearly a third on average between 1970 and 2006, and continues to fall globally, with severe declines especially in the tropics and among freshwater species.
- Although there has been significant progress in slowing the rate of loss for tropical forests and mangroves, natural habitats (e.g. freshwater wetlands, coral reefs) worldwide continue to decline in extent and integrity.
- Crop and livestock genetic diversity continues to decline in agricultural systems.
- The ecological footprint of humanity exceeds the biological capacity of the Earth by a wider margin than existed at the time the 2010 target was agreed upon.



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"At first I thought I was fighting to save rubber trees, then I thought I was fighting to save the Amazon rainforest. Now I realise I am fighting for humanity."

Chico Mendes, Rubber tappers' leader



In Numbers

- Out of the 59,507 species that are assessed so far, 19,265 species (25% of mammals and 41% of amphibians) are threatened with extinction.
- Of the world's 5,494 mammals, 78 are extinct or extinct in the wild, 191 critically endangered, 447 endangered and 496 vulnerable (IUCN).

Certain species like bees are called 'keystone species' because they have a disproportionately large effect on the communities in which they occur. Recent decades have seen a sharp decline in pollinators. Scientists indicate that more than a dozen factors, ranging from declines in flowering plants and use of memory-damaging insecticides to the worldwide spread of pests and air pollution, may be behind this loss of honeybee colonies.

Biodiversity is evolving

“The way humanity manages or mismanages its nature-based assets, including pollinators, will in part define our collective future in the 21st century. The fact is that out of the 100 crop species that provide 90 per cent of the world’s food, over 70 are pollinated by bees.”

Achim Steiner, UN Under-Secretary-General and
UNEP Executive Director

Loss of biodiversity has far more consequences on our long-term economic, intellectual, physical and emotional well-being than is obvious at first glance.

How did this happen?

There are five major drivers of biodiversity loss.

1. The destruction of natural habitats and alteration of ecosystem compositions results from fires, hunting, logging, clearing forests, impoundment of rivers, destruction of coral reefs, production of oil and natural gas, cattle ranching, building of roadways and ploughing of natural grasslands for expanding agriculture. Agriculture is a major land use. Around 50% of the world’s habitable land has already been converted to farming land. Overall, farmland covers 38% of the world’s land area. This area is still expanding. It is predicted that in developing countries, a further 120 million hectares of natural habitats will be converted to farmland to meet demand for food by 2050. This will include land with high biodiversity value (http://wwf.panda.org/what_we_do/footprint/agriculture/impacts/habitat_loss/).
2. Introduction of invasive non-native species in an ecosystem adversely affecting or even eliminating some native species - invaders can compete, infect, mate or eat native life forms. Such introductions can occur accidentally, but have sometimes been made deliberately. For example, introductions of Nile perch into Lake Victoria (East Africa) for fisheries wiped out many native fish species from the lake.
3. Excessive exploitation of species by over-hunting, over-fishing or over-collecting.



Targeted fishing of top predators (such as billfish, sharks and tuna) cause an abundance of smaller marine life at the bottom of the food chain, stimulating increased algae growth and threatening coral reef health. The fishing techniques used and the by-catch resulting from over-fishing causes needless loss of billions of fish, marine turtles and cetaceans. Today, the Marine Stewardship Council (MSC) certifies sustainable fishing practices.

4. Human generated pollution and contamination affecting all organisms in the soils and waters. Rivers are rendered inert by the dumping of industrial waste and agricultural runoffs.
5. With global climate change, some species can adapt to changing climatic conditions while others cannot. For example, the Bengal tiger in the World Heritage site of the Sunderbans delta, the only tiger species adapted for mangroves and numbering less than 400 today, is threatened by rising sea levels.

In the face of a growing population and the need to eliminate poverty, what alternatives do we have? We will see later how sustainable consumption and production practices can replace unsustainable ones.



In Numbers

- 35% of mangroves have been lost in just 20 years (UNEP, 2006).
- Primary forests account for 36% of forest area. Since 2000, they have decreased by more than 40 million hectares (FAO, 2010).

Biodiversity is evolving



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Get Active!

- Bring diversity into your own gardens and revive mini-ecosystems by letting plants grow naturally and ensure the presence of plants that attract bees.
- Identify an ecological restoration project in your area and get involved. Most areas already have groups active in restoring habitats, eliminating invasive species.
- What can you do to prevent illicit trade? Have a look at the UN Convention websites indicated at the end of this guidebook. Support the actions of the World Wildlife Fund, Greenpeace or Bird Life International related to major ecosystem conservation issues and raise awareness within your school and beyond.

Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets

In October 2010, in the city of Nagoya in Aichi Prefecture, Japan, the Conference of the Parties to the Convention on Biological Diversity, comprising its 193 member Governments, agreed on a new global Strategic Plan for Biodiversity 2011-2020, with five strategic goals and twenty "Aichi Biodiversity Targets."

The adoption of the Plan and Targets in 2010 was spurred by the continued loss of biodiversity and need for stronger action. The Strategic Plan for Biodiversity is a ten-year framework for action by all countries and all stakeholders to save biodiversity and enhance its benefits for all people. Countries are setting national targets, strategies and action plans within this framework, which also serves as the overarching framework on biodiversity for the United Nations system.

Some examples of the Aichi Biodiversity Targets are:

- At least halve and, where feasible, bring close to zero the rate of loss of natural habitats, including forests;
- Establish a conservation target of 17% of terrestrial and inland water areas and 10% of marine and coastal areas;
- Restore at least 15% of degraded areas through conservation and restoration activities; and
- Make special efforts to reduce the pressures faced by coral reefs.

For more information visit <http://www.cbd.int/sp/>



Tips

- Encourage local authorities to garden ecologically.
- Organize neighbourhood walks with the help of experts to discover the local biodiversity. Share your findings with your school, work place or through the media.
- Get yourself a guidebook on the wild plants growing in your region. You will discover the plants available freely in your own gardens or around your houses. Some add aesthetic and nutritional value to your meals and others are of medicinal value for common ailments.
- Observe life around you – plant, insect and bird life in gardens or balconies – to see the diversity of nature.
- Dedicate your name to a recently discovered species in exchange for a donation to BIOPAT (Patrons for Biodiversity) in Germany for taxonomic research.
- Want to learn more about biodiversity? Visit the websites of the IUCN, the World Wildlife Fund (WWF), Greenpeace and the Natura 2000 Network of the European Commission.

4. Benefits of biodiversity: more is better

Why are ecosystems important? What services do ecosystems provide?

We try to get the better of nature for our own benefits. But it is now clear that the long-term costs of transforming ecosystems far exceed the short-term economic and social benefits.

“Modern man talks of a battle with nature, forgetting that, if he won the battle, he would find himself on the losing side.”

E. F. Schumacher, Economist 1973

Ecosystems – the backbone for billions

The world’s well-being is dependent on biodiversity. Almost half of the world’s population depends directly on biodiversity for varied diet, health care, livelihoods, economic benefits and survival. Biological resources support industries such as agriculture, cosmetics, pharmaceuticals, pulp and paper, horticulture, energy, construction and waste treatment.

What is an ecosystem? More and more, scientists and communities at large are realizing that the key to preserving biological diversity is preserving the ecosystems in which different species live. The South American rain forest is an ecosystem, but so is a park in the centre of a city, the forests in which you go camping or the sand dunes near the beach. Wetlands like swamps and coastal estuaries are ecosystems that, when healthy, are home to a great number of species ranging from plants to insects to birds to higher animals.

Each of these species plays a role in the survival of the entire ecosystem, and, in fact, in the earth’s global ecosystem. So inter-linked are the world’s ecosystems that what you do to one can have effects far away. For example, a bird sanctuary that is polluted with pesticides from farms can threaten the survival of insects and fish on which migrating birds feed, thereby forcing birds to look elsewhere for food. This can lead to a change in seasonal migration patterns

and the survival of birds and other species all the way from South Africa to Europe. Those birds, in turn, perform a function in the habitats they visit. Birds, along with bees, butterflies, moths, and bats, pollinate a great many plants. Without being pollinated, these plants would die off and disappear. So it is clear that when you lose one link in the web of life the whole web starts to fall apart. That’s where we are now. The biodiversity web is starting to fall apart.

The transfer of ownership of ecosystem resources like minerals, timber or land, has often excluded local communities and deprived them of the benefits. This together with the depletion of nature’s resources and the damage caused to ecosystems has been disastrous for many of the world’s poorest people. They are less able to adjust to these ecosystem changes and have limited access to substitutes or alternatives. For example, when water is polluted, the rich can afford to pay for its treatment but the underprivileged have to continue to rely on nature’s services for purification.



In Numbers

While 70% of coral reefs are threatened or destroyed, 30 million people are totally dependent and more than 500 million people indirectly dependent on them for food, shelter and protection.

(Global Coral Reef Monitoring Network, Status of the Coral Reefs of the World, 2008)

Ecosystem services

Did you know that birds, insects and thousands of microorganisms contribute to producing the cereals in your bowl? That the root system of a forest contributes to purifying the water you drink? That the trees around your houses make the oxygen you need and trap the dust and harmful gases from the air you breathe?

Benefits of biodiversity

Nature provides four key services, which are often taken for granted:

- *Provisioning services* such as food, fibre, fresh water, raw materials and medicinal resources.
- *Regulation services* such as carbon sequestration, regulation of climate, floods, disease, water quality and pollination.
- *Support services* such as photosynthesis, soil creation, water and nutrition cycling.
- *Cultural services* such as recreation, aesthetic comfort and spiritual well-being.

While these 'services' are impossible to duplicate, they are grossly undervalued and neglected by development plans. What would humans have to do, or make, if nature stopped providing even one of these services? The Economics of Ecosystems and Biodiversity (TEEB), an international initiative that highlights the global economic benefits of biodiversity, has evaluated the worth of these 'free' ecosystem services in trillions of dollars.

Of those ecosystem services that have been assessed, about 60% are degraded or used unsustainably, including fisheries, water purification, natural hazard protection, regulation of air quality, regulation of regional and local climate and erosion control.



In Numbers

The value of:

- Annual world fish catch: USD 58 billion
- Anti-cancer agents from marine organisms: up to USD 1 billion/year
- Global herbal medicine market: USD 43 billion (2001)
- Honeybees as pollinators for agricultural crops: USD 2-8 billion/year
- Coral reefs for fisheries and tourism: USD 30 billion/year

The costs of:

- Mangrove degradation in Pakistan: USD 20 million in fishing losses, USD 500 000 in timber losses, USD 1.5 million in feed and pasture losses
- Newfoundland cod fishery collapse: USD 2 billion and tens of thousands of jobs

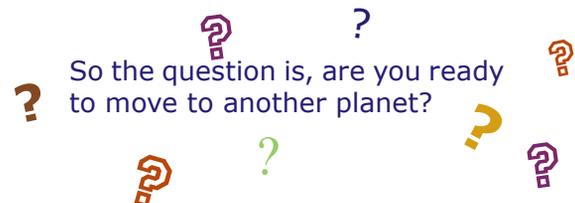
Source: [Convention on Biological Diversity](#) (2010) & [Ecosystems under Pressure](#) (2008)



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The case of water

All life depends on water, so biodiversity is about water, too. Since we have a limited amount of water on the planet – it is not like we are going to get a shipment from elsewhere any time soon – it is up to biodiversity, and specifically biodiverse ecosystems, to purify the water we use. Forests and soils and bacteria and streams and clouds, all working together, actually filter water so that we can use it again. Without biodiversity, the world would be toxic and barren - more like Mars - and we could not live here.



Benefits of biodiversity



Case Study

New York City water

The watershed of the Catskill Mountains provided New York City with water ranked among the best in the United States by Consumer Reports. Overwhelmed by agricultural and sewage runoff, the water fell below quality standards. The cost of installing an artificial filtration plant was estimated at six to eight billion dollars — a high price to pay for what was once free! However, the city opted instead for a substantially less expensive alternative by deciding to restore the natural capital it had in the Catskills watershed.

(Ecological Society of America)

- retention of sediments and nutrients, preventing siltation and eutrophication downstream and protecting coral reefs, or deep sea beds;
- vegetation that stabilises soil and controls erosion;
- an abundance of reeds, the material used for producing utensils, mats, trays, baskets and paper and the common reed for construction purposes;
- spaces with the capacity to store and release carbon, such as soil, peat lands and forested wetlands accounting for over 25% of the soil carbon pool;
- fertile lands for rice, which is the staple diet of half of the world's population;
- habitats for fish populations, the source of food and livelihoods for millions of people;
- conditions for water fowl breeding and feeding – source of food for some, recreation for others; and
- conditions for tourism.

Additional agricultural gains are sometimes sought, from draining wetlands for short periods and re-flooding them. However, a permanent draining in favour of agriculture will break down the entire ecosystem and put an end to all its other functions.

The case of wetlands

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil, all year round or for varying periods of time during the year. They provide:

- storm buffering, flood water storage and stream flow regulation, all of which are valuable protection for local communities;
- water retention, regulation of water flow, refurbishment of underground aquifers;



© UNESCO / Patrick Werquin



Case Study

Economic values of harvested wetland goods in Nigeria

The wild resources used for food, raw materials and firewood in the Hadejia-Nguru Wetlands of Nigeria were evaluated in the mid-1990s. These wetlands harvest doum palm fronds and selling dried bundles yields US\$ 2.50 per day. Making mats from the fronds fetches US\$ 0.13 per day. Labour for harvesting firewood and taking it to a local town for sale fetched US\$ 0.50–0.75 per day. Labour for women who collect and sell potash was evaluated at US\$ 0.33–0.39 per day. Agricultural wages fetch US\$ 0.60–0.90 per day.

(Eaton and Sarch, 1997)

Benefits of biodiversity

Ecosystem resources and models for Science and Development

Biomimicry or biomimetics is the science of adapting nature's models, systems and processes for technological advances. Basically, it is about imitating nature in man-made systems. Studying a leaf to invent a better solar cell is an example.



Case Study

Mimicking nature

- The Bombardier beetle's powerful repellent spray inspired a Swedish company to develop a "micro mist" spray technology, claimed to have a low carbon impact (compared to aerosol sprays). The beetle mixes chemicals and releases its spray via a steerable nozzle at the end of its abdomen.

([3000 Swedish Biometrics](#))

- In Harare, Zimbabwe, engineers have designed the air conditioning system of the Eastgate Building on the model of termite mounds! This building uses 90% less energy for ventilation and costs US\$ 3.5 million less than a comparable building with normal air conditioning.

([Good bye poverty, hello biodiversity, CBD 2010](#))



© UNESCO / Arya Harsono



Get Active!

Explore ways to support networks and projects that combat over-fishing and overexploitation of species, deforestation projects and industrial and agricultural dumping into waterways. Spread your message of combating biological degradation with others!

Organize an activity where everyone takes the [Pledge to Protect the Planet that Provides](#). Spread the word about this campaign by Conservation International by involving other schools, groups, politicians and the media.



Tips

- Do not disturb animals when walking outside. Never touch or harass animals.
- Always follow designated trails. Support conservation by paying entrance fees to parks and protected sites.
- House local fauna in your roof space and gardens.
- Let spontaneous vegetation, grass and wild flowers grow.
- Adopt a patch of land, enquire about setting up a pond in your neighbourhood, preserve a dead tree, and leave log piles for small mammals, amphibians or invertebrates.



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5. Celebrating biodiversity: join in

What is the role of biodiversity in traditional practices? How is biodiversity celebrated worldwide?

“For centuries, we indigenous peoples have lived maintaining those balances and others which keep us in touch with the whole universe, and which make us answerable for what happens in the world below us and the world above us, as in the tree of life we inherited from our forefathers, where the foliage cannot be understood without knowledge of the roots, the trunk and the branches.”

Ms. Rigoberta Menchú Tum, Nobel Peace Prize winner, Johannesburg Summit, 1992

Biodiversity – a value in traditions

Biodiversity is central to lifestyles, customs, rituals, knowledge systems, languages, livelihoods, productive and artistic activities, spiritual beliefs and practices in traditional cultures. The interconnections within this web of life have been explored in depth, esteemed and celebrated on festive occasions but also through daily life activities. Thanksgiving (or similar harvest celebrations) is a tradition related to food security and diversity in several regions of the world. You will also find local festivals that promote species' diversity of products such as such as garlic, peaches, potatoes, apples, etc. in different communities.



© UNESCO / Daniela Niehammer



Case Study

The Mibu no Hana Taue - a ritual to celebrate rice transplanting in Mibu, Hiroshima

Carried out by the Mibu and Kawahigashi communities in Japan, the Mibu no Hana Taue ritual celebrates the rice deity and urges an abundant rice harvest. Cattle are elaborately decorated and led by an elder to plough the field. The *eburi*, a tool said to contain the rice field deity, is then used to level the field. Drums, flutes and small gongs accompany ritual songs of young girls who transplant rice seedlings in the field. After completion, the *eburi* is placed upside down in water with three bunches of rice seedlings.

(UNESCO's World Intangible Heritage list)



Case Study

The Michoacán paradigm - traditional Mexican cuisine celebrates nature every day

Traditional Mexican cuisine comes from a web connecting farming, rituals, skills, culinary techniques, community customs and manners. Unique farming methods - *milpas* (rotating corn with other crops) and *chinampas* (man-made farm islets in lakes); cooking processes like nixtamalization (lime-hulling maize for increased nutritional value); singular utensils including grinding stones and native varieties of tomatoes, squashes, avocados, cocoa and vanilla to complement the basic staples such as corn, beans and chilli, all unite to produce a cuisine that is today listed as World Intangible Heritage. Collectives of female cooks and practitioners for raising crops and producing utensils are found in Michoacán and across Mexico. Check <http://www.youtube.com/watch?v=VhZ-EKPPQKU> for a short film on this.

Artists, poets, writers, singers and performers in theatre and cinema also widely celebrate nature and biodiversity. Their expressions and contributions are excellent learning tools to root nature as a value.

Celebrating biodiversity

Biocultural diversity – a value for society

Ecological knowledge and belief systems belonging to indigenous peoples evolve and adapt dynamically to environmental and socio-cultural changes and are handed down through generations by cultural transmission. Through partnerships with indigenous peoples, UNESCO acknowledges the vital role they play in sustaining the diversity of the world's cultural and biological landscape.



Case Study

Mayangna communities, Nicaragua

Detailed information about the 30 fish and six turtles, known to the Mayangna communities of Bosawas in Nicaragua, are being documented by UNESCO's LINKS project. They describe river habitats far inland for *angh angh*, the burro grunt (*Pomadasys crocro*), a species that scientists generally associate with coastal environments. They describe massive upstream migrations in winter of *susum* and the Guatemalan chulín (*Rhamdia guatemalensis*). The *kikilwi* (migration) of *susum* happens only in a few specific places and only in winter. When it is on migration, it is easy to capture in large quantities but only at certain places. No record of such a phenomenon appears in scientific literature. When musuwa, a snook fish (*Centropomus spp*), is seen jumping out of the water, this is a sure sign of winter. The Mayangna also know that *Ahsa*, the black turtle is not strong enough to resist a strong current. So, when they see black turtles adrift, one after another, this forewarns them of a coming flood.



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International Day for Biological Diversity (22 May) - Our turn to value nature

The United Nations (UN) General Assembly proclaimed 22 May as the International Day for Biological Diversity (IDB). The IDB is celebrated around a specific theme each year and inspires resourceful and imaginative activities by a range of actors, such as identification of insects, feathers etc. by scientists at museums, animal celebrations with educational games and competitions in zoos, guided walks in urban settings, creation of giant mosaics using natural materials, neighbourhood cleaning, animal-masked processions, tree planting and so on. School and community groups can participate in the CBD-led Green Wave, which invites participating groups to plant or care for local tree species, or learn about biodiversity, in or around their schoolyard or neighbourhood on May 22 each year.



In Numbers

Indigenous peoples worldwide number between 370-500 million, embody and nurture 80% of the world's cultural and biological diversity, and occupy 22% of the world's land surface.

(UNESCO, 2011)

Celebrating biodiversity

The UN Decade on Biodiversity, 2011-2020

The UN General Assembly declared 2011-2020 as the United Nations Decade on Biodiversity with a view to raising global awareness about biodiversity, its value to human well-being and the ways that individuals and societies can change their behaviour to become more sustainable. The United Nations Secretary-General, Mr. Ban Ki-moon, said: *"We have all heard of the web of life. We risk trapping ourselves in a web of death. The United Nations Decade on Biodiversity is an opportunity to reverse this trend."* He concluded that: *"The coming decade can be a turning point in how humanity values and manages biodiversity. Together, we can build the foundations for a sustainable future."*



© UNESCO / Arya Harsono



Get Active!

- Turn festivals and celebrations into opportunities for learning by exploring the origins and traditional ways of celebrating. Discover materials and objects used, rituals, songs or meanings to celebrate man's union with nature. Depending on your audience, further explore why and how all these have disappeared from our horizons over time and how you can help bring them back.
- Organize a music festival that celebrates biodiversity. Check the Rock and Ecology blog for a list of songs that celebrate nature.
- Organize a celebration for organic farmers with a discussion around the knowledge they possess – one way to acknowledge their services for biodiversity.
- Explore ways to convey the UN Declaration on the Rights of Indigenous Peoples related to Sustainable Development and Environmental Change.
- Develop engaging awareness-raising campaigns to celebrate international days related to biodiversity and the environment, such as the International Day of Forests (21 March), World Environmental Day (5 June), World Desertification Day (17 June), Wangari Maathai Day (3 March) or World Wetlands Day (2 February).



Tips

- Create small events using art, poetry, music, dance or photos that evoke love for nature. Try a neighbourhood tree photo competition with parameters like 'only native trees' or 'with ecosystems benefits highlighted.' You can then organize exhibitions to showcase your art. Check <http://www.nature.org/newsfeatures/specialfeatures/nature-and-art.xml?intc=topstories> for celebration of nature in art, photography, cinema, design, books etc.
- Avoid the use of chemical and plastic products that replace traditional decorations, colours, candles and food items in festivals.
- Involve your local authorities in all the events you organize.
- Share short films of your celebrations on social networks.
- Composting toilets are a cheap and biodiversity-friendly alternative for big gatherings and parties.
- Follow the United Nations Decade on Biodiversity on Facebook.
- Check UNESCO's World Heritage or Intangible Heritage website for information on why a local site or resource has become part of World Heritage.
- Participate in the IDB celebrations taking place in your country by visiting www.cbd.int/idb/

6. Leisure and tourism: come for biodiversity

How can tourism help to preserve biodiversity? What can young travellers do to preserve biodiversity?

Tourism and biodiversity

Large-scale tourism has been a major source of economic development but has also contributed to biodiversity damage in coastal wetlands, rainforests, mountainous regions and coral reefs. Tourism has led to use of coral for hotel construction, over-fishing near reefs to feed tourists, sewage dumping, mangrove destruction for beach resorts, golf courses and water-intensive activities lowering water tables and affecting local flora and fauna. According to [UNEP's Green Economy Report](#), the tourism industry continues to expand today but is taking a new turn and the way it grows and develops will greatly affect biodiversity.

"The biodiversity hotspots are Earth's richest and most endangered terrestrial systems. They once covered more than 12% of the Earth's land surface but have cumulatively lost nearly 90% of their original natural vegetation. What remains of them now accounts for only 1.4% of our planet's terrestrial environment, but they harbor more than 44% of all plants and 35% of mammals, birds, reptiles and amphibians as endemics found nowhere else."

([Mapping Tourism's Global Footprint](#), UNEP, 2003).

The UN General Assembly adopted a landmark resolution on 21 December 2012 recognizing the role played by the ecotourism industry in eradicating poverty and protecting the environment. Ecotourism is defined as "responsible travel to natural areas that conserves the environment and improves the well-being of local people." ([TIES](#), 1990). The UN resolution highlights its "positive impact on income generation, job creation and education, and thus on the fight against poverty and hunger." It further recognizes that "ecotourism creates significant opportunities for the conservation, protection and sustainable

use of biodiversity and of natural areas by encouraging local and indigenous communities in host countries and tourists alike to preserve and respect the natural and cultural heritage."

Why youth tourism matters

According to the [World Tourism Organization](#) (WTO), the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism, youth make up one of the fastest growing segments of the tourism industry. Most of the 16 to 29 year olds look out for new destinations and untried paths and seek meaningful experiences, such as studying, learning a language, volunteering work, meeting and understanding another culture, overcoming personal challenges, being in nature and so on. WTO studies have shown that travelling is a lifestyle changing experience for many youngsters, who are more conscious of social justice, poverty, more tolerant and trusting of other people, more connected to the global community.



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Leisure and tourism



In Numbers

- Youth account for 20% of the 700 million international travellers per year.
- 70% of these youth trips are motivated by a desire to explore, work or study abroad.
- Over 80% report that their trip changed their overall lifestyle.
- A growing number want to help people and make a contribution to the places they visit - 42% of respondents in 2007, compared with 27% in 2002.

(Youth Travel Matters, Understanding the Global Phenomenon of Youth travel, UNWTO 2008)



Case Study

Chumbe Island, Zanzibar

Chumbe Island is one of the ecotourism success stories of the Zanzibar archipelago in Tanzania. This half mile-long coral rag island to the south of Zanzibar's Stone Town is like no other. Sybille Reidmiller, a German conservationist, spent years of complex negotiations among several actors to protect the coral reef and make Chumbe Island Coral Park (CHICOP) into Tanzania's first marine protected area, recognized by the Zanzibar Government. CHICOP has been a marine protected area since 1994. For more information: www.chumbeisland.com

Learning opportunities galore!

Travelling is your learning space and opportunity. Open your eyes to the diversity in thoughts, beliefs and practices worldwide. Slowing down, spending more time in a place, plunging into local food, customs and exchanges will all help in acquiring new knowledge and in reconnecting with nature better than through books or university courses.

With 140 million young travellers a year, you have just as many learning opportunities, if not more! Travel provides learning for personal growth but also for those you meet because your encounters leave an impression. With longer stays and easier interactions with local people, youth are the tastemakers and trendsetters. Check the [online resources](#) for networks that propose ways to make your travel experience meaningful.

You may decide on a cycling trip through the rice paddies of Cambodia, a river dolphin conservation project or to simply experience city life. Whatever you chose to do, remember that careful choices for and during travel will push hospitality services to evolve, and will have an impact on the local communities, children and youth in particular.

If you belong to a region that receives tourists, your local action to direct the hospitality industry for biodiversity is significant.



Case Study

Greenleaf Ratings for hotels in Udaipur, India

Shikshantar, the People's Institute for Rethinking Education and Development, initiated [Greenleaf Ratings](#) to support eco-friendly and responsible tourism in Udaipur. Hotels are rated according to budgets and a special mention is awarded to hotels doing well with water conservation, local and organic food, energy conservation and cultural diversity – a way to engage tourists to make choices that have indirect but far-reaching impacts on biodiversity.



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Leisure and tourism



Case Study

Eco-friendly guidebook for tourists in Leh, India

The International Society for Ecology and Culture, working for the revitalization of cultural and biological diversity, has published an eco-friendly Guidebook for Leh city, calling tourists to be mindful, lend support to environmentally friendly establishments and demand more of such products and services. As more tourists use the guide and communicate their support for 'local' instead of 'western' bread for example (or demand for it when not available), this will pave the way to establishing more sustainable hospitality practices. See also <http://www.localfutures.org>

Say "No" to plastic!

Travellers in many countries around the world notice the inconsiderate use of plastic bags by consumers and vendors. You buy bottled water, make abundant use of batteries, mosquito repellants, sun creams, medicines and other items packaged in plastic.



© UNESCO / Patrick Werquin

In many cases, the garbage that you leave behind in dustbins ends up on the streets, in the forests, rivers, streams, seas or just about anywhere. Have you heard of the Great Pacific Garbage Patch stretching hundreds of miles across the North Pacific Ocean, and forming a nebulous, floating junkyard on the high seas? About 80% of the debris in the Great Pacific Garbage Patch comes from land, much of which is plastic, which is not biodegradable. In the rivers and seas, it often becomes trapped in the stomachs of birds, fish and wildlife that mistake it for food. When burned, plastics release toxic chemicals into the air.



Case Study

Gum farmers in Mexico

After years of commercialization of non-biodegradable chewing gum made of synthetic rubber, plastics and waxes, a consortium of chicleros (gum farmers in Mexico) are launching an organic, biodegradable chewing gum made from chicle, a natural rubber from tree sap, which was in fact what chewing gum was originally made of! If you cannot get rid of chewing gum, your voice as a consumer will matter for the future of this industry! See also <http://www.new-ag.info/en/focus/focusItem.php?a=791>



© UNESCO / Patrick Werquin

Leisure and tourism



Get Active!

- Create a campaign highlighting the need to say “No” to gifts and souvenirs that use protected species, particularly those made of seashells, starfish etc.
- On World Tourism Day (27 September), tackle the following question: How can we promote responsible tourism? Indicate the role of government, civil society, corporations and individuals.
- Read about the UNEP Green Passport – Holiday for a Living Planet campaign. Now adapt it for your local area, country or region. What responsible tips do you have for tourists’ visiting your area?



Tips

- Before travelling, consult the International Ecotourism Society’s Travel Green Guide 2010-2011 *Your Travel Choice Makes a Difference*.
- Check whether your destination is a natural World Heritage Site or a Biosphere reserve. Give your feedback on Trip Advisor, or any travel websites.
- Make use of your travel by spending time in eco-villages, organic farms, slow food partners etc. It helps in changing your ideas about food and learning and sharing sustainable living practices through volunteering.
- As much as possible, choose locally owned lodges and B&Bs and use local buses, car rental agencies, and airlines. Eat in local restaurants, shop in local markets, and attend local festivals/events. Walk, bike or get around by public transportation like the locals do.
- At the hotel, ask about environmental policies and practices. Talk with staff about working conditions and community projects. Let your hotels and tour companies know if you like what they are doing to operate responsibly. Make specific suggestions on what you would like to see changed.
- If on a nature trip, admire from a distance. Learn about wildlife viewing guidelines and photographing behaviours before you go. Avoid light pollution outdoors at night. Artificial light disturbs many species.
- Never buy crafts or products made from protected or endangered animals.
- Do not carry invasive plants or animals when travelling from one country to another.
- Take a travel water filter, which is more economical in the long run. Buy sodas in glass bottles that can be recycled.
- Raise awareness among tourism actors in your cities on the need to reduce their eco-footprint



7. Lifestyle choices: biodiversity goes with everything

How is biodiversity connected to our lifestyle choices? How can we make sustainable lifestyle choices that help preserve biodiversity?

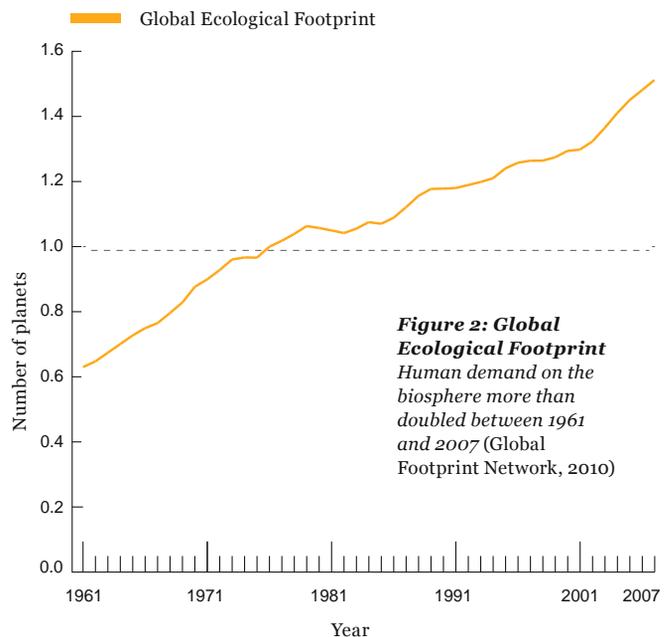
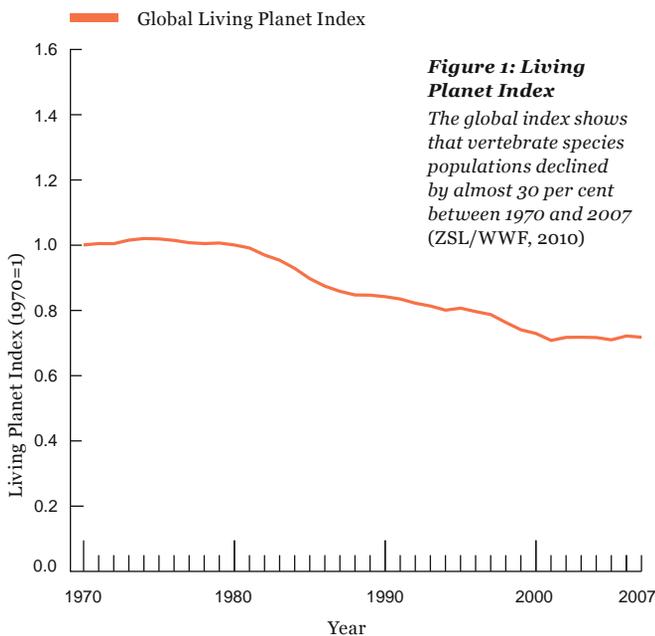
Are our lifestyles sustainable?

More than half of us live in cities today, making a lifestyle choice that has distanced us from nature. In simple words, a 'sustainable lifestyle' is a way of living that is enabled both by efficient infrastructures, services and products and by individual choices and actions to minimize the use of natural resources, emissions, waste and pollution while supporting equitable socio-economic development. Sustainable lifestyles are also about conserving Earth's life support systems within the planet's ecological carrying capacity; it involves transforming our societies and living in balance with our natural environment.

Biodiversity conservation is not just about protecting listed hotspots. Each of our daily

life decisions affects this web of life. What we do, wear, eat and consume, our rituals, habits, customs and addictions, all of this invariably binds us to the web of life. Collectively, our choices end up in an overuse of, an imbalance within or damage to nature's resources. We cannot escape the consequences of our actions because we are all in this web of life.

Already today, we are facing shortages in the supply of resources. One of the longest-running measures of the trends is the state of global biodiversity, the Living Planet Index (LPI). It shows a consistent overall trend since the first Living Planet Report was published in 1998, such as a global decline of almost 30% between 1970 and 2007 (see figures below).



Source: Living Planet Report 2010 - [Biodiversity, biocapacity and development](#), page 7.

Lifestyle choices

According to the [WWF Living Planet Report 2010](#), the ecological footprint compared to the earth's biocapacity is 1:1.5. In 2030, an estimated population of 8.3 billion will take the said ratio to 1:2. Sustainable lifestyles are therefore essential for safeguarding natural resources and conserving biodiversity for the future generations.

Lifestyles disconnected from nature and driven by consumption

The urban culture has disconnected us from nature and biodiversity and is often characterised by convenience. Generally, urban set-ups, services, technology, material inventions or advances in biochemistry have made life convenient. We study, work, relax, socialise or pursue leisure activities and shop indoors and when needed, drive to get around. We buy food in a store and turn on a tap to get water. We find ourselves not thinking about soil, water sources, insects or flora and fauna going extinct. In fact, such intimate knowledge of nature is incompatible with our lives. Cities have provided for a range of activities and occupations leaving little time to understand how lifestyles are connected to the loss of biodiversity.

Irrespective of your activities and interests, knowing how your options and choices of convenience for daily life impact biodiversity, will make a difference in your life. Tossing medicines, oil or chemical paints down the sinks is convenient but water pollution has reached dangerous limits and is damaging aquatic life. Using your car or scooter every time you step out, picking up readymade packaged food preferably in large quantities to be stacked into fridges, and leaving your computer on day and night are examples of choices and attitudes of consumption that contribute to climate change and loss of biodiversity.

Changing lifestyles

We often hear: *"No time for such details in life; too many complicated eco-labels to read and understand; natural products do not give the quick fix solutions that chemical stuff can; we have no time to cook food and fast food items*

are tasty; this environment discourse sounds too pessimistic and if we agree with all that is said, life can get dull..."

While making changes to our lifestyles does take some time and effort, it is not all that daunting. Thousands of young people have already thought about lifestyles and generated ideas to help others adopt more sustainable lifestyles. Meeting such people, either through travel or virtually through social networks and websites some of which are cited in the [online resources](#), will unfold numerous inspirations in diverse cultures, moving stories of encounters and experiences, pragmatic ideas and practical solutions that are not only relevant but also ensure excitement and convenience in life. You may end up finding out much more than you bargained for and may adopt sustainable lifestyles along the way! Living sustainably also means consuming responsibly.



Case Study

Permaculture – a wholesome lifestyle

Working around an ecological design system, permaculture shows practical ways for wholesome and sustainable living in whichever space you occupy. Founded by the Australian Bill Mollison, the movement focuses on working with nature with protracted and thoughtful observation. Any space can be converted into a mini-ecosystem. Permaculture sites worldwide are open learning spaces to acquire knowledge, attitudes and skills for lifestyle transformation and designing a decent urban, semi-urban or rural life without exploiting or polluting Life on earth.



Case Study

The Path to Freedom - Urban homestead

The [Path to Freedom](#) proposes pathways to a self-sufficient lifestyle in an urban setting – how to deal with agriculture, food, cooking, personal care, healthy homes, animals, water & waste, skills & crafts, alternative building and energy. With pictures, diagrams and stories, possibilities to conserve biodiversity become not only clear, but also practical and practice-able.

Lifestyle choices

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Understanding the environment discourse - Read beyond slogans!

We are often surrounded by campaigns, messages, information and slogans about the environment that can seem absurd, provocative and incomprehensible. Learning for change is not about agreeing or disagreeing with them but rather reading beyond words to understand the message. For example, joining the Buy Nothing Day (**BND**) campaign on a proposed date and hopping into your cars to hit the shops the next day does not have the same value as deciding to buy a bicycle to replace your car on BND.

If you choose to travel by air once a year but mindfully, you are not as big a burden on nature as a businessman who might travel long distances for short meetings. So, the point is not to deprive oneself but to make mindful and responsible sustainable lifestyle choices for the sake of biodiversity. It is not about consuming less. It's about doing more and better with less.



Case Study

The Slow Thought movement

Take five minutes, a mere 300 seconds, each day to watch your thoughts and the spaces in between your thoughts. In the face of our own limitations to the way we currently perceive things, the Slow Thought Movement proposes a peaceful revolution to step away from the borrowed, second-hand thinking of our times. The problems we face in our personal lives and those that affect us as a species can all be traced to the way we think.



Get Active!

- Every day we are exposed to messages that attempt to influence our lifestyle choices. Take a moment to think about your lifestyle. Becoming mindful means giving thought to what your lifestyle is comprised of today. What would you like to see as change for tomorrow? Communicate this with family and friends through the choices you make.
- Initiate a locally organized recycling workshop, where people can learn to creatively produce musical instruments, clothes or radios from recycled products.
- How can you encourage your friends, family and colleagues to buy and sell items in flea markets (jumble sale, bring and buy sale, second hand markets, car boot sales, trash and treasure markets, tiangge, nahuati tianquis, juna bazaar, marché aux puces, vide grenier)?
- Join the [Think. Eat. Save. Reduce your footprint](#) campaign by UNEP, FAO and other partners. Using some of their material, raise awareness among your family, friends and community about reducing their footprint.



Tips

- Be a forceful actor for change by reducing your plastic footprint, choosing accommodations that respect the environment, sharing constructive feedback on non-eco-friendly practices, adapting to local customs and practices, exchanging with others to change those non-local practices that have been made to suit 'western comfort and tastes' (without necessarily neglecting food suitability or hygiene standards).
- Cycle or walk whenever possible, switch off your computers when they are not in use, use rechargeable batteries, rethink the plastic in your lives and compost organic waste.
- Promote green campus initiatives within academic institutions such as proper waste disposal, tree planting, creating eco-sensitive associations and using renewable energy.

8. A healthy life: biodiversity matters

Does biodiversity affect our health? How does modern medicine depend on biodiversity?

Biodiversity is also about your health, and the health of the planet. In fact, your health is closely connected to the health of the planet. The health of life on earth is a function of its biodiversity. Nature has been making biologically active compounds for close to 3.8 billion years and in a way, keeping checks and balances for its own evolution. Man-made imbalances have often resulted in health hazards. The widespread anthropogenic changes to the environment have altered patterns of human disease, and increased pressures on human well-being. The loss of genetic diversity, overcrowding and habitat fragmentation all increase susceptibility to disease outbreaks. Some ecosystem changes create new habitat niches for disease vectors, for example, increasing the risk of malaria in Africa and in the Amazon basin. For instance, forest clearing in the Amazon has led to a proliferation of *Anopheles darlingi*, a mosquito species that is highly effective in transmitting malaria.

When we get sick, we rely on nature to help us get well. For ages, humans have looked to the natural world for cures for wounds and diseases. Plants provide the active ingredients for many modern medicines, including the ingredients for aspirin. Homeopathic medicines use plant ingredients extensively.

Time and again we have gone back to nature's medicinal cabinet to find cures. We need to take care of biodiversity so that Nature's cabinet remains well-stocked with the ingredients for existing medicines and new ones we might need to invent when new diseases strike.

Benefits of contact with nature

In a report entitled "*Beyond Blue to Green: the benefits of contact with nature for mental health and well-being*", Mardie Townsend and Rona

Weerasuriya present benefits from contact with nature for mental health, as well as its therapeutic use, concluding that there is a significant relationship between contact with nature and human health and well-being. The following list summarizes their findings and illustrates the potential health and social benefits outdoor activities can provide.

Benefits to physical health:

- Increased levels of physical activity and fitness
- Positive views towards undertaking physical activity
- Activation of higher cognitive processes and healthy brain development
- Promotion of mental health and emotional well-being
- Reassuring effect on children in need of hospital treatment
- Better mental health and well-being in later years (young adulthood)

Educational and societal benefits:

- Learning of social skills (e.g. interpersonal, negotiation and listening skills) and formation of peer groups
- Promotion of language development and socialisation
- Acquisition of problem-solving skills
- Improvement of internalisation of locus of control
- Improved self-esteem and ability for goal-setting
- Enhancement of self-control
- Enhancement of self-efficacy
- Encouragement of responsibility
- Revelation of child's developmental stage, interests and needs

A healthy life



Case Study

Get to know your body's invisible residents

We are inhabited by as many as 10,000 bacterial species; these cells outnumber those which we consider our own by ten to one, and weigh, all told, about three pounds—the same as our brain. Together, they are referred to as our microbiome and they play a crucial role in our lives. (Michael Specter, [The New Yorker](#), October 2012).

Medical ecology is a new approach to health that focuses on managing microbiome or microbial wildlife. Doctors believe that by nurturing the invisible ecosystems in and on our bodies they may be able to find ways to fight infectious diseases, and with less harmful side effects than by prescribing antibiotics. In fact, [studies](#) have shown that children who take high levels of antibiotics [may be at greater risk](#) of developing allergies and asthma later on in life, while other studies show that tending the microbiome may help in the treatment of disorders such as obesity and diabetes. Scientists have linked obesity, for example, to changes to the gut's ecosystem. When scientists transfer bacteria from obese mice to lean ones, the lean mice put on weight. Inversely, transplants from lean donors are changing how the obese subjects metabolize sugar.

Similarly, David A. Relman, in an article published in [Nature Biotechnology](#), demonstrates how an intestinal infectious disease that is difficult to treat is cured by a defined set of bacterial species. "As we think more broadly about habitat restoration within the human microbial ecosystem, our goals should be promotion of native species, targeted removal of invasive species, and ecosystem management based on frequent monitoring."

Traditional health systems

Traditionally, food and medicine have been interchangeable. Millions of rural communities continue to rely on nature for self-medication. Indigenous health systems such as the *vegetalista* tradition of the Peruvian Amazon, the *Ayurveda* in India, traditional Chinese Medicine or the knowledge of the Aka pygmies of Central Africa, focus on the balance within the individual and that between the individual, society and

- Importance for children's learning, including practical experience that informs scientific understanding of how the world works
- Ability to realistically appraise risks
- Development of flexibility and adaptability to changing surroundings
- Development of ecological consciousness
- Encouragement of constructive use of leisure
- Long-term appreciation of wilderness and its therapeutic potential

Research by Lucy Keniger, Kevin Gaston, Katherine Irvine and Richard Fuller, published in the [International Journal of Environmental Research and Public Health](#) explores the mechanisms that are important in triggering and delivering such benefits. The report shows that interactions with nature can deliver a range of psychological well-being, cognitive, physiological, social, tangible and spiritual benefits and that access to green space and natural areas is important for facilitating activities that are beneficial for human well-being. However, little is known about the mechanisms that are important for delivering these benefits and so key questions still remain: What characteristics of natural settings (e.g., biodiversity, level of disturbance, proximity, accessibility) are important for triggering a beneficial interaction? How do these characteristics vary in importance between different cultures, geographic regions and socio-economic groups?



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A healthy life

nature. Breaking the interconnectedness of life creates an imbalance and results in discomfort and disease. Traditional medical knowledge is being drawn upon to develop integrated modern and traditional health care services in many countries in the world.



In Numbers

- More than 60% of the world's people depend directly on plants for their medicines ([UNEP](#)).
- An estimated 50,000–70,000 plant species are used in traditional and modern medicine ([FAO](#)).
- Of the known 9,956 extant bird species, it is estimated that 14% of them are used for food and/or medicinal purposes ([Biodiversity Indicators Partnership](#)).
- 22% of all known mammal species used for food and medicine are more threatened on average than others ([Biodiversity Indicators Partnership](#)).

Traditional doctors or medicine men have long relied on plants and herbs to treat diseases. It is only now that modern medicine is appreciating the powers of traditional plant medicines and foods. For example, when cooking their traditional meals of meat, milk and blood, the Maasai of East Africa throw in an extra ingredient, a tree bark that has been shown by researchers to reduce cholesterol.

Modern medicine and biodiversity

Although the economic value of biodiversity may not be appreciated by many people, scientists in pharmaceutical companies are looking for new species of plants that may help cure serious diseases. Despite great advances in rational drug design and synthesized medicine, most modern medicines are still derived from natural compounds extracted from plants and animals. This is particularly true for drugs that treat pain, infections and cancers, such as morphine from the opium poppy, aspirin from the white willow tree and the anti-coagulant coumadin from spoiled sweet clover.

In 2002, 80% of new chemicals introduced globally as drugs could be traced to or were inspired by natural products. Profits from such developments can be enormous. For example, a compound derived from a sea sponge to treat herpes was estimated to be worth US\$ 50-100 million annually, and estimates of the value of anti-cancer agents from marine organisms are up to US\$ 1 billion a year ([UNEP](#), 2006).

Many medicinal plant species are depleting due to growth in human needs, numbers and commercial trade. Many species with potentially precious clues for treatment of human ailments are threatened or extinct. Loss of biodiversity may decrease our options for new treatments in the future. The World Health Organisation ([WHO](#)) has identified 20,000 species of medicinal plants for screening, and there are many more species whose medicinal values are only just being discovered, or which may prove important in the future. Currently, the value of the global herbal medicine market is estimated at over US \$60 billion (as estimated by the [Dabur Research Foundation](#)).



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A healthy life



Case Study

Extinction of a frog species and the loss to ongoing research on peptic ulcers

Females of two species of gastric brooding frogs (*Rheobatrachus vitellins* and *R. silus*), discovered in the 1980s in the rainforests of Australia, were found to swallow their fertilized eggs, which then developed into tadpoles in the stomachs. At a given point of maturity, they were vomited out and continued into adulthood. It was discovered that the eggs and the newly hatched tadpoles, secreted chemical compounds that inhibited their being digested and emptied into their mother's intestines. Scientists saw in this compound a potential cure for peptic ulcer disease. But both concerned species, the only ones ever discovered, became extinct and the studies came to a halt. The unique compounds that evolved in these frogs, perhaps over millions of years, are now gone forever (Chivian, Bernstein, 2010).

Conservation of medicinal plants

In 1988, the Chiang Mai Declaration recognizing the essential role of medicinal plants in primary health care, both for self-medication and in national health services, called for a collective commitment to *Saving Lives by Saving Plants*.



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Case Study

Conservation of medicinal plants

The Medicinal Plants Conservation Centre (MPCC) in India encourages conservation, supports local livelihoods and improves the health of rural communities in the Indian state of Maharashtra, focusing on the renewal of traditional health practices and use of medicinal plants. In cooperation with the State Forest Department, and with local communities in the lead, MPCC uses nurseries and commercial herbal production centres to sell sustainably cultivated medicinal plants.

Healthy living for a healthy planet

Healthy living means health for self, health for ecosystems and health for others. Avoiding fast food for instance, obviously addresses your own health but also that of the ecosystem and hence enhances its ability to support others. Your refusal to participate in soil and water polluting agricultural and industrial practices can also make a difference.

A healthy life

Millions of species depend on the water, air and soil that we pollute for their survival. The active ingredients in the medicines we take are discharged into our toilets. They are resistant to water treatment and turn up in rivers and seas. It has been observed that fish exposed to synthetic estrogen used in contraceptive pills become hermaphrodites, organisms that have reproductive organs normally associated with both male and female sexes. Furthermore, whatever is in the fish could be on your dinner plate!

Case Study

Chemicals provoke endocrine disruption

Man-made chemicals are found in pesticides, in food additives, personal care products, cosmetics, plastics, textiles and much more. After investigation of only a small fraction of these chemical pollutants, experts confirm that some of these are capable of endocrine disruption - interfering with hormone receptors, hormone synthesis or hormone conversion in humans and wildlife. There is sufficient evidence to conclude that some wildlife populations have already been negatively affected with regards to growth and reproduction.

Our Stolen Future by Theo Colburn, Dianne Dumanoski and John Peterson Myers (1996) brought worldwide attention to scientific findings about endocrine disruption. Check www.ourstolenfuture.org/ for recent developments in this area.

In the context of declining biodiversity and increasing population - expected to reach 9.6 billion in 2050 - there is a need to balance the Earth's carrying capacity with the growth of human activities. We need to find a way to satisfy every one's needs without jeopardizing the services provided to us by our planet's global ecosystem.

"It has been four years now since I left allopathic medicine. I have never felt healthier in my life... I realized when I would get sick, I would never deal with the root cause. The reasons I would fall ill were in my hands - not sleeping enough, not eating properly, not drinking enough water, or having intense mental pressures and/or emotional stresses."

Shilpa Jain, [Swapathgami Network](#)

Get Active!

- Learn about medicines made from plants, such as eucalyptus-based products for coughs and colds. How can you encourage your peers to be better informed about this?
- Evaluate some campaigns that are against industries, hospitals, canteens and clubs that pollute ecosystems. Would you support any of these campaigns? Why or why not? What would make them a better campaign, if anything? What makes a good campaign?

Tips

- Visit [Skin Deep](#), a web database that reports on toxic chemicals in personal care products. It ranks products in terms of safety by taking each one through a medical database. The lowest on the list could be one of the most expensive.
- Read books to learn about all that is edible in your own gardens; this will also help you learn about nature's healing secrets.
- Limit your use of medicines, including antibiotics. Choose natural healing when possible. Ensure you address the body, mind and soul!
- Choose eco-cosmetics and mineral sun creams whenever possible.
- Ensure that all outdoor sports activities respect the needs of plants and animals.
- Make your houses healthier places to live in by using non-polluting household products, green roofs or façades, which increase your supply of oxygen. You can create a wild flower meadow in your gardens to attract bees and butterflies, make a pond, and set up nesting places for birds.
- Familiarize yourself with the [WHO Global Strategy on Diet, Physical Activity and Health](#).
- Support local organizations that protect natural habitats and promote the preservation of medicinal plants.

9. Eating and food: bio “diversity” on your plate

How are food supplies affected by biodiversity? What are our food consumption behaviours?

Biodiversity is the world’s supermarket. It is as simple as that. Potatoes, rice, beef, bread, chicken, corn - almost all that we eat is a part of biodiversity. The dual forces of globalization and modernization have caused worldwide changes in food supplies, food consumption behavior and population health.

“The greed of gain has no time or limit to its capaciousness. Its one object is to produce and consume. It has pity neither for beautiful nature nor for living human beings. It is ruthlessly ready without a moment’s hesitation to crush beauty and life.”

Rabindranath Tagore,
1913 Nobel Prize winner in Literature

Food supplies

Despite high inequalities in distribution and availability, intensive industrial agriculture, livestock production, fisheries and aquaculture have helped increase food supplies. However, very few crop varieties are grown and a limited number of animal, fish and aquatic species bred. Thousands of wild crop relatives hold genetic secrets that enable them to resist heat, droughts, salinity, floods and pests. Nevertheless, many plants cultivated in the past and their “wild” relatives are lost or threatened. Improved or exotic species have replaced local varieties causing major genetic erosion. Small-scale diversified crop rotation systems, use of livestock for arable production and of ‘nurture’ fisheries for the promotion of aquatic biodiversity have been discarded. The resulting decline in diversity and intensification of competition has shifted farmers’ and consumers’ perceptions, preferences and living conditions. Industrial patenting and intellectual property systems extended to living organisms have reinforced this loss in diversity.

In Numbers

- More than 30% of the Earth’s land surface is used for agricultural production.
- Worldwide, one billion people rely on fish as their main source of protein. (UNEP-WCMC 2007)

The fisheries industry supplies over 3 billion people with at least 15% of their average animal protein intake. About 75% of the world’s major marine fish stocks are either depleted, overexploited or being fished to their biological limit. Aquaculture increases the pressure on wild stocks taken to feed the farmed species (FAO, 2011).



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Eating and food



In Numbers

- Since 1961, the green revolution has increased grain production by 269% and grain yield by 157%, whereas the grain harvest area has increased only by 25% ([World Watch Institute, 2012](#)).
- Global food production takes one quarter of all habitable land on earth, accounts for 70% of fresh water consumption, 80% of deforestation, more than 30% of global greenhouse gas emissions and is the largest single cause of species and biodiversity loss ([UNEP, 2012](#)).
- 83% of cropland expansion in the tropics between 1980 and 2000 happened in intact and disturbed forests (Gibbs et al, 2010). The majority of this new agricultural land is used to supply the growing market for animal protein.
- Out of the 250,000 to 300,000 known edible plant species - only 150 to 200 (4%) are used by humans. Rice, maize and wheat account for 60% of calories and proteins obtained by humans from plants ([FAO, 1999](#)).
- 75% of the world's food today comes from only 12 plants and five animal species ([FAO, 1999](#)).
- Since the 1900s, 75% of plant genetic diversity has been lost, as farmers have discarded multiple local varieties and landraces for genetically uniform, high-yielding varieties ([FAO, 1999](#)).
- 22% of the wild relatives of important food crops like peanut, potato and beans are on the verge of extinction due to climate change ([FAO, 2010](#)).

Food loss and wastage

The United Nations Food and Agriculture Organization (FAO) estimates that global food loss and wastage (between the amount of food produced at the farm level and the amount of food actually consumed) is approximately 1.3 billion tons annually – roughly one third of all food produced for human consumption. Food loss and wastage occurs in the entire food supply chain from the field to the household. In addition to the ethical concerns this raises, one must note that this leads to a reduction in resources available for food production, as well as increased greenhouse gas emissions generated by additional waste dumped in landfills.

Food consumption behaviors

Our eating habits have shifted from a simple source of energy to a sensory, cultural and social experience. Fast foods have become a dominant feature worldwide. The most popular items are made available all year round either by growing them in greenhouses or importing them from other parts of the world. We pay a steep price for this. The cost is tallied in food miles - how far a particular food has travelled to get to our plates, including energy consumption, use of pesticides and impacts on crop diversity and on one's own health.

Increased urbanization and growing incomes and purchasing powers have resulted in overconsumption of food. According to FAO, the number of individuals who are overweight worldwide exceeds that of individuals underweight ([FAO, 2012](#)). While addressing the environment for the purpose of healthy nutrition, there is a need to advocate for green spaces for safe physical activity. It is important to look at nutrition and physical activity jointly to address obesity, a key health concern in many parts of the world.

Rethinking our eating habits is another learning opportunity to reconnect with biodiversity. The Organic Farming movement is gaining ground, reviving traditional knowledge and techniques,



healing damaged soils and regenerating diversity. Other movements include Natural Farming and Biodynamic Farming. Several networks such as the [Slow Food Movement](#), the [Global Eco-Village Network](#), consumer-farmer partnerships, farmer cooperatives etc. already work creatively with the mentioned movements by providing learning spaces, online resources and free brochures with simple recipes to accompany one's efforts to change the menus for the planet. And you will see that a healthy meal is not all that expensive!

Our environment is a key determinant of our health: from the food we eat to the water we drink, the air we breathe and the spaces we play in. Environmental stewardship is necessary for a healthy planet and for our own well-being. Our planet provides physical space preserving our psychological, spiritual and physical health.

The Genetically Modified Organisms (GMO) case

In recent years, with the use of modern biotechnology techniques, scientists can insert, remove or modify genes in plants, animals and microorganisms to produce what are known as living modified organisms (LMOs) or commonly known as genetically modified organisms (GMOs). GMOs can be used for biological and medical research, including food, feed and vaccines. The technology can contribute to pharmaceutical drugs, gene therapy, new colours for flowers, and new varieties of crops. GMOs are used in different sectors, including agriculture, fisheries and permaculture. In the 1990s, the debate on GMOs went beyond the scientific community, becoming global and politicised with the steady growth of genetically modified crops.

There is concern about the potential adverse effects that GMOs resulting from modern biotechnology may have on biological diversity and human health. Some concerns include:

- Potential harm to beneficial organisms, for example, insect-resistant GM plants, could harm not only the targeted insect pests but also other non-targeted species.



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- Flow of genes from GMOs to non-modified organisms, for example, to wild relatives that are sexually compatible.
- Development of resistance in pests and weeds through the use of GM crops that produce pesticides or the use of chemical herbicides along with the GM crop.
- In response to such concerns, the UN's [Cartagena Protocol on Biosafety](#) to the Convention on Biological Diversity was established to ensure the safe handling, transport and use of LMOs resulting from modern biotechnology that may have adverse effects on biodiversity, also taking into account risks to human health.

Eating and food



Case Study

Monarch butterflies and alternatives analysis of Bt maize

Monarchs (*Danaus plexippus*) that feed on milkweeds are the best-known butterflies in North America. A well-publicized study of GMOs showed that Bt maize pollen was toxic to laboratory-fed Monarch butterfly larvae. A study later collected pollen-covered milkweed plants, which were found growing naturally next to Bt maize fields. A significantly larger proportion of Monarch butterfly larvae that fed on these field-collected plants, died compared with those fed on pollen-free plants.

(FAO, 2001)



Tips

- Diversify, buy seasonal and local food items, reduce your meat and fish consumption, buy in bulk and be on the lookout for special offers that will help make your food bill affordable.
- Buy or eat fish with the Marine Stewardship Council (MSC) logo, which guarantees sustainable fishing practices.
- Nutritious diet is the basis for good health. If possible, subscribe to an eco basket and bring diversity into your plates.
- Check out the WWF's sample [7 day Live Well Menu](#) for some inspiring ideas!
- Find out more about your country's policies and laws on agriculture and environment.
- Learn more about GMO crops and organize events in your community to discuss the benefits and concerns of GMOs.
- Support initiatives for organic farming. Promote the use of organic diets in offices, schools and clubs. The more the organic movement grows, the more organic food will become accessible for all.
- Support organic farmers' cooperatives or consumer-farmer partnerships if they exist (e.g. Association pour le maintien d'une agriculture paysanne (AMAP) in France, Community Supported Agriculture (CSA) in the United States, the Mumbai Organic Farmers Association (MOFCA) in India). If they do not exist, promote their establishment. They enable the maintenance of local and small farmer activity, restore fair pricing and responsible agriculture as well as directly connect consumers to farmers.



Get Active!

- Carry out a personal food audit by examining your food habits. Where does your food come from? What [food miles](#) are involved in your food? How can you better diversify your diet and make sure you eat nutritious foods? What kind of information would help you make better food choices?
- We all need to eat vegetables but must we buy them? Why not produce your own vegetables in pots or in a small vegetable patch at home or at school?
- Develop an engaging campaign that promotes responsible food behaviours. What images and words can you use to help people understand the importance of saying "No" to wastage and overconsumption and "Yes" to diversity in their plates? Raise this awareness at school or through the mainstream and social media.
- Sharing is caring! Learn and share simple tips on how to reduce food waste by joining the campaign [Think. Eat. Save. Reduce your footprint.](#)



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10. Shopping and consuming: support biodiversity

How are food supplies affected by biodiversity? What are our food consumption behaviours?

“Transforming our collective and individual consumption habits, from national infrastructure procurement to daily purchases, is a long-term commitment that we need to make in order to address the underlying causes of biodiversity loss. The YouthXchange Guidebook contains a mine of tips and solutions for communities and individuals to engage and make a difference for biodiversity: may these innovative ideas become sheer habits in the future!”

Mr. Bráulio Ferreira de Souza Dias, Executive Secretary,
Secretariat of the Convention on Biological Diversity

What are we consuming?

Unsustainable consumption patterns by people in developed and emerging economies are undoubtedly the biggest hurdle for biodiversity conservation. This includes consumption of energy, fuel, food, textiles, phones, computers, other electronic inventions, household equipment and gadgets. Irrespective of our efforts to learn and change for the sake of the environment, if we do not reduce and change our consumption levels, we cannot expect to see a change and improvement for biodiversity.

We often do not question our consumerist culture, which is relentlessly influenced by development and market frameworks but also

by our own perceptions, conditionings and pursuits. With the rise of digital media and social networks, the already successful advertising and marketing industry has unprecedented access to one's personal life.

Our power as consumers

Our material needs can and should be responsible and mindfully satisfied, but for us to do that, we need to:

- understand the power structures and influences that shape our consumer behaviours;
- examine the lifecycles of the items we purchase, use and discard; and
- regain our consumer power and confidence over the markets and industries that are destroying biodiversity.

We have been using our biggest power, that of consumers, against biodiversity. Changing that trend requires an understanding of the product from a 'lifecycle' point of view. The impacts of consumption stem from every single stage of a product's lifecycle, from the sourcing of raw materials and the energy required during use to the waste produced through disposal.

By using this lifecycle approach, you will realize that a product has a history that started long before its purchase and has a future that goes much beyond its use. The product lifecycle illustrates the potential of steering production processes and consumption patterns towards a green and resource efficient economy: reducing waste, pollution, emissions energy and raw materials, can revitalize and diversify economies.

Every buying decision we make has an impact on the whole web of life. It will even often challenge your assumptions on products that are tagged "green" or "local."



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Shopping and consuming

Eat Locally, Think Globally

How can we help biodiversity through what we eat? One way is to eat local species. For example, if you have a local potato or a local variety of rice, eat that instead of only eating imports. The reason is that if we all get hooked on a particular type of potato, which is perfect for French fries (chips), a locally grown potato might be neglected. Farmers may eventually plant only potatoes for French fries, which could result in the local potato – or rice, or wheat, or any other crop – becoming extinct over time. By championing a variety of local species and eating them in season, you support biodiversity and your local farmers.

Case Study

Mindful shopping - How 'green' or 'local' is this?

In a research on 'locally grown' tomatoes in Montreal, Canada, it was found that the seeds were developed in France, grown in China, and then flown to Ontario, Canada, where they were sprouted. The sprouts were trucked to Montreal and planted in a nursery with a tag qualifying it as 'local'!

Consumer culture

Consumer culture has generated unprecedented waste that has fortunately led to an increase of initiatives and innovations in the recycling industry.

Electronic products are made from valuable resources and materials - metals, plastics and glass - all of which require energy to mine and manufacture. Donating or recycling electronic items conserves natural resources and avoids air and water pollution as well as greenhouse gas emissions caused by manufacturing virgin materials. Many electronic retailers have take-back programmes, such as the Hewlett Packard Company ([HP](#)). Your voice as a consumer can make a difference by requesting companies to have such programmes.

Case Study

Coltan, cell phones and gorillas

Coltan is a vital component of the capacitors that control current flow in cell phone circuit boards. It is mainly mined in the eastern regions of the Democratic Republic of Congo, which houses the Kahuzi Biega National Park - home of the mountain gorilla. The damage caused by coltan mining to the natural habitat of the gorilla population and indiscriminate killing of the species as bush meat for miners, has reduced the said population from 258 to 130 in a period of 10 years.

Old clothes can have an afterlife too and can reduce the depletion of natural resources. Most recovered textiles are in a perfectly reusable state and therefore redistributed through charities. Overly worn or stained clothing is separated into a variety of categories to make wiping and polishing cloths, new high-quality paper, insulation material, seat stuffing or upholstery. Some grades of cotton can be composted.

Changing your wardrobe no longer requires buying new clothes; there are countless second-hand shops and clothing exchanges that you can be part of.



Shopping and consuming



Case Study

H&M exchange used garments initiative

Since February 2013, customers are able to exchange used garments in all 269 H&M stores in the United States, and in all 48 H&M markets worldwide. Sustainability is an important part of H&M's culture, and the Swedish retailer strives to reduce the environmental impact of clothes throughout their lifecycle.



Case Study

Recycled plastic for your jeans

Levi's waste-less denims are made from a minimum of 20% post-consumer recycled waste. Since January 2013, consumers can purchase these jeans, which are made of post-consumer recycled plastic bottles and food trays. On an average, each pair of jeans will include eight 12 to 20-ounce plastic bottles. The entire collection uses more than 3.5 million recycled plastic bottles, including brown beer bottles, green soda bottles, clear water bottles and black food trays.

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Lifecycle thinking is not as overwhelming as it sounds. Ethical shopping, zero waste, swapping, exchanging, freecycling, environmental labels, re-thinking, reducing, reusing, repairing and recycling are all concepts that exist today and are widely practiced by youth around the world. In fact, they have often been started by youth wanting to regain their power over markets and industry. As a "biodiversity value driven" consumer, your consumer behaviours are important to drive the changes needed to respect and revive biodiversity.



In Numbers

Quantity of E-waste

- The total e-waste generated worldwide rose from 6 million tonnes in 1998 to 20-50 million tonnes in 2005 ([Green Economy Report](#), UNEP).
- It is predicted that obsolete computers in developing regions will exceed those of developed regions by 2016-2018 and that by 2030 they could amount to 400-700 million units (compared with 200-300 million units in developed countries) ([Jinglei Yu et al](#), 2010).
- China generates 64% of the world's e-waste, followed by India (13%) and Brazil (11%) (UNEP and the United Nations University 2009).
- For every million cell phones that are recycled, 35,000 pounds of copper, 772 pounds of silver, 75 pounds of gold, and 33 pounds of palladium can be recovered ([US EPA](#)).



In Numbers

Quantity of textile waste

- In the USA, an estimated 13.1 million tons of textiles were generated in 2010 representing 5.3% of the total municipal solid waste generation.
- It takes 10,000 liters of water to make one pair of jeans.
- An estimated 14% of textiles in clothing and footwear and 17.1% of items such as sheets and pillowcases were recovered for export or reprocessing in 2010 (US EPA).

Shopping and consuming



Get Active!

- Evaluate environmentally-friendly products using information from consumer associations and online resources to help you 'read' the ecological merits and demerits of competing products.
- What recycling systems are in place in your cities for cell phones, batteries, bulbs, electronic items, leftover paint, plasters, synthetic resins using hazardous chemicals, paper, plastics, etc.? If these systems are not organized, create awareness and initiate the required processes.
- If your city lacks recycling initiatives or tools to guide consumers on the ecological merits and demerits of products, encourage initiatives that can help consumers in this direction.



Tips

- Say no to buying, transporting or releasing exotic species.
- Refuse glossy packaging and carry bags.
- Buy local, organic, fair trade items, membership to a car share network, carbon credits for the family's travel, furniture made from certified wood, low energy light bulbs.
- Refuse drinking straws and plastic bags; bring your own bag or your own bottle.
- Think about the afterlife of the products you use as throwing them into nature has an impact on our planet. Do not throw paints, oils, medicines, personal care products etc. down the sink or in the toilets. Used pharmaceuticals can be sent back to the pharmacy (if such possibilities do not exist in your cities, initiate them), used natural oils from the kitchens can be poured into the soil or the compost pits.
- Set computers to energy-saving settings and make sure to turn them off when you have finished. Standby settings draw power even when they're turned off.
- Buy in bulk when possible (packaging waste is reduced), skip frozen food, use cloth diapers, and re-use containers, bottles and cups.
- Use biodegradable soaps and cleaners, cloth towels in the bathroom and kitchens.
- Reduce your consumption and become a value driven consumer. Keep your computers and phones for as long as they work efficiently.
- Incandescent bulbs can be replaced with compact fluorescents and high-end LED desk lamps that use miniscule amounts of energy.
- Reduce waste by making smart purchases, reusing containers and products, recycling materials from paper to food scraps, garden trimmings and electronics. Purchase products made out of recycled materials whenever possible.
- [GoodGuide](#) is an iPhone and Android app, which aggregates 200 databases and compares 60,000-plus consumer items such as toys, foods, personal care products and so on.
- Greenpeace and WWF websites contain useful information for consumers on various companies and products.



11. Money and jobs: linking them with biodiversity

What economic mechanisms are in place to protect biodiversity? What are some of the global initiatives for greening financial mechanisms that can help biodiversity preservation?

“If a man walks in the woods for the love of them half of each day, he is in danger of being regarded as a loafer. But if he spends his days as a speculator, shearing off those woods and making the earth bald before her time, he is deemed an industrious and enterprising citizen.”

Henry David Thoreau,
American essayist, poet and philosopher

Money and biodiversity

Biodiversity has served traditional economies and continues to provide livelihoods to almost half of humanity. Recent years have seen the emergence of policies and tools that legislate or provide incentives for curbing biodiversity loss, such as government regulations or compensation programmes. Market forces are being harnessed to support conservation, ecosystem restoration and sustainable use of biological resources.



In Numbers

- There were more than one billion workers in the agriculture sector in 2009 (FAO, 2009).
- More than 1.6 billion people depend on forests for their livelihoods (FAO, 2011).
- 540 million people depend on fisheries for livelihoods (UNEP, 2012).

Regulating economic activity for biodiversity

The international community has invented tools meant to harness market forces to reduce environmental impacts of economic activity. These include liability laws such as ‘*polluter pays*,’ environmental legislation seeking to set standards and ensure their implementation and economic incentives such as taxes, subsidies, cap and trade schemes and environmental labeling. These mechanisms seek to internalize

environmental costs or benefits into production and/or consumption decisions and induce more efficient uses of natural resources. However, economic policies have not always been supportive of biodiversity and the continuing subsidies for unsustainable farming and fishing practices are an example.



Case Study

Saha Astitva in India

Saha Astitva, meaning harmonious co-existence of forests, fields and people, is an initiative started on a 3-acre barren land next to a forest in India. It is now restored back to fertility demonstrating efficient food production from organic farming, providing livelihoods and training through green development initiatives including conservation of an ancient degraded forest. They offer volunteering placements, organize fun workshops and training courses in farming, design and yoga.



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Money and jobs

Contemporary market economics fail to protect non-monetary environmental assets by attributing zero value to them. This results in inappropriate price signals to an expanding world population in pursuit of consumption. Economic perspectives on nature have gained new impetus from *The Economics of Ecosystems and Biodiversity (TEEB)*, which is a global initiative focused on drawing attention to the economic benefits of biodiversity, the costs of biodiversity loss and ecosystem degradation, and the potential economic responses with forceful evidence of when, where and how saving nature makes economic sense.

Payment for Environmental Services (PES)

Payment for Environmental Services (PES) is a market-based approach to conservation based on the twin principles that those who benefit from environmental services (such as users of clean water) should pay for them, and those who generate these services should be compensated for providing them. Hundreds of PES schemes are in operation around the world.



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Case Study

PES in South Africa

The Working for Water (WfW) Programme, launched in 1995 in South Africa, contracts rural women, youth and the disabled to remove invasive plant species spread over 10 million hectares. Invasive plants are estimated to use 7% of all water resources, intensify floods and fires, and threaten native biodiversity. Small-business entrepreneurs bid on WfW contracts for the management of land units. The government is the main beneficiary and so bears 80% of the budget. To date, WfW has cleared more than 1 million hectares of invasive plants (OIREC).

UN Reduce Emissions from Deforestation and Forest Degradation (REDD)

REDD is an effort to create a financial value for the carbon stored in forests. It is a UN mechanism that provides an incentive to developing countries for their contribution to the efforts of curbing climate change by protecting and better managing their forest resources. A financial value is created for the carbon stored in the trees. The quantified amount is given by the 'developed' countries to the 'developing' countries for the safeguard of their standing forests. Patches of forest are thus being conserved.

Green Growth initiatives

The Green Economy Coalition unites labour unions, environmental NGOs and business associations to develop a shared roadmap for a green economy. The Organisation for Economic Co-operation and Development (OECD) is pioneering the concept of Green Growth. It is felt, as Erik Solheim, Chair of the OECD Development Assistance Committee (DAC) [explains it](#), that "a green growth approach must ensure that every citizen, business and government perceives the value of natural assets in providing growth, well-being and a sustainable future."

The [Green Economy Initiative](#) launched by the United Nations Environment Programme (UNEP)

Money and jobs

offers guidance for governments to rethink their economic development strategies and encourages them to pave the way to green economies. Released in November 2011, the Green Economy Report entitled *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* highlights key sectors, which are agriculture, fisheries, water, forests, renewable energy, manufacturing, waste, buildings, transport, tourism and cities, for greening the economies and generating decent jobs.

Around the world, there is a growing number of public-private partnerships to address environmental concerns. Many companies have begun integrating ecosystem values into their business operations. Development projects are coming under greater environmental scrutiny from potential investors. The UK has announced its intention to set up the world's first green investment bank.

UNEP's Finance Initiative ([UNEP FI](#)) is a global partnership between UNEP and the financial sector. UNEP works with over 200 institutions, including banks, insurers and fund managers,

to understand the impacts of environmental and social considerations on financial performance. These financial institutions are signatories to the *UNEP FI Statement of Commitment by Financial Institutions on Sustainable Development*. UNEP FI identifies, promotes and ensures the adoption of environmental and sustainability practices at all levels of operations within these institutions.

The UN Global Compact ([UNGC](#)) launched in 2000, is a policy initiative for businesses committed to aligning their operations with ten universally accepted principles related to human rights, labour, environment and anti-corruption.

Case Study

Clearing of the Ayoreo forests

In 2010, a Brazilian company, member of the UN Global Compact, illegally cleared the Ayoreo's forests in Paraguay without contacting the tribes living inside. The company even concealed all evidence of their existence in the forests. The concerned tribes protested, drawing the international community's attention to the gap between the commitments and actions of the said company.

The UN-backed Principles for Responsible Investment ([PRI](#)) is an investor initiative in partnership with UNEP FI and the UN Global Compact. It brings together a network of international investors working on six principles to incorporate environmental, social and corporate governance issues into their decision-making and ownership practices.

The [Equator Principles](#), an initiative developed by some private sector banks, was launched in June 2003. It comprises of a set of voluntary standards that commit signatory banks to take social and environmental risks into account when providing project loans. The World Business Council for Sustainable Development ([WBCSD](#)) is another private sector initiative.

All these initiatives have been set up to help curb the pace of biodiversity loss.



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Money and jobs

Jobs and self-employment

A growing green economy will potentially provide green and greening jobs. According to the [International Labour Organization \(ILO\)](#), green jobs are decent jobs that reduce consumption of energy and raw materials, limit greenhouse gas emissions, minimize waste and pollution and protect and restore ecosystems. A green job is one that integrates new competences into other job sectors taking into account the 'environmental dimension' (construction, transport and logistics for instance). However, most of the greening sectors are experiencing a skills gap, as the training for new skills is not always in place yet.

In the face of persistent unemployment and market uncertainties, many young people are turning towards self-employment and entrepreneurship and exploring numerous opportunities in the environment sector. There is an increased interest in traditional trades and skills and a tendency to return to them. Through the learning spaces proposed in this guidebook, you will discover various such youth initiatives.



Case Study

Practical Primitive

Founded in 2007, [Practical Primitive](#) is dedicated to small-group and individual instruction of adults to provide them with practical means to master and integrate primitive, traditional and self-reliance skills into modern life.



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Get Active!

- Learn about the global initiatives for greening financial mechanisms. How can you ensure that signatories respect their commitments? Start with your own country and monitor its progress.
- What are the private sector commitments that aim to further biodiversity conservation? Can you encourage more private sector companies to get on board the biodiversity wagon?
- Are there any community bank initiatives in your country or region? Are you part of them? If there are none, initiate the movement!
- Explore what options are offered through environmental studies or how to green one's job. Then debate with others on why this is important.



Tips

- Beyond the returns proposed to you on your investments, ask your bank to inform you about its commitments and priorities with regards to the environment. Your voice as a client matters!
- Use stationery made of recycled material such as printer paper with a high percentage of post-consumer content and the minimum of chlorine bleaching, pens and pencils made of recycled materials and refillable pens and markers are preferable to disposable ones.
- Reuse shipping boxes and recycle printer cartridges, a service which is often free. Recycled replacements are cheaper than new ones.
- Try carpooling, public transport, biking, walking, or a creative combination thereof.
- Where and when possible negotiate for telecommuting - instant messaging, video conferencing, phone conferences, online classes, or otherwise work from home.
- Ask your boss to purchase carbon offsets for corporate travel by car and plane.
- Trade shifts and job duties so that you can work four long days instead of five short ones.

12. Connecting with others: birds were tweeting long before Twitter

How can you raise awareness about biodiversity by communicating with others? Can you reach out to policy-makers about biodiversity issues?

“We must counter the perception that people are disconnected from our natural environment. We must increase understanding of the implications of losing biodiversity ... We must generate a greater sense of urgency and establish clear and concrete targets. Biodiversity is life. Biodiversity is our life.”

Ban Ki-moon, Secretary-General,
United Nations

Making the connection

Curbing the loss of biodiversity first and foremost needs us to reconnect with life outside the walls of our homes, classrooms, offices, gyms and shops so that we can:

- See that what we do and consume inside our walls (like food, paper, air and water) is made possible by the services of life outside the walls.
- Connect with others who have already cut loose from business-as-usual to take life-changing initiatives, rediscover nature-honouring alternatives for daily life or thoughtfully create new ones.
- Connect with others in your networks in order to spread your insights and experiences and especially the well-being this brings; and
- Connect with decision drivers and policy-makers so that your initiatives can be supported through policy frameworks and measures.

Connecting with alternative ways of living

You have learnt about networks, learning spaces, tools and opportunities to help you rethink your assumptions and make positive changes in and for your life and nature. Connecting with them during your travels, taking a year off from work or study for a life learning experience, volunteering your time and lending a hand to their efforts, attending workshops and trainings they organize, are all ways to connect to alternative ways of

living. Your encounters will reveal your inner desires, opportunities and ideas for changes that are relevant to your life.

In a [BBC interview](#), Professor Manuel Castells, Spanish sociologist, spoke of his research on “people who have decided not to wait for the revolution - to start living differently - meaning the expansion of what I call in a technical term ‘non-capitalist practices’ - such as barter networks; social currencies; co-operatives; self-management; agricultural networks; helping each other simply in terms of wanting to be together; networks of providing services for free to others in the expectation that someone will also provide to you. All this exists and it’s expanding throughout the world.”



Case Study

EcoYoff in Senegal

EcoYoff, part of the Global Ecovillage Network and an urban eco living and learning programme, seeks to protect natural resources and village wisdoms. They provide training in preserving mangrove ecosystems, village social action, green technology, wastewater recycling, food security, solar cooking, water conservation, conflict resolution, micro-enterprise, employment, and eco-tourism.

Connecting with others

When you are convinced of biodiversity’s worth, you are the best ambassador for biodiversity in your networks or neighbourhoods. Your convictions and connections can change the ‘couldn’t care less about’ attitude of most people.

No one may fully understand the life of the other and may have little to advise on what to change. But sharing experiences with friends, taking the opportunity of the next party to introduce a

Connecting with others

new flavour or a vegetarian menu, using social networks to display your likes and opinions, joining the blogs of likeminded youth, posting short films or photos of your travel experiences are all efficient ways to raise awareness and create dialogue about biodiversity.

But how does one connect with the 'others', those you do not know that well? Organizing events that matter to a community – for instance, the school yard for the school community, the churchyard for the church goers, the river banks for the dog walkers, the typical hang outs for teenagers – these are some efficient ways of connecting with people.

When organizing events, think of a title or name that will attract people and mobilize them around biodiversity. Sometimes, you may want to use an alternative way of mentioning biodiversity, for instance the term '*bio-blitz*' is often used for children and youth activities. It is important to publicize biodiversity so that the term becomes a normal everyday term to use. For example as part of SUN, a city environment project in the UK, a biodiversity session on trees was called '*tree extravaganza*.' While visitors watched a professional tree climber at work or waited in line to climb a scaling wall, they were informed about the Ecology Centre and how they could contribute. Children's entomology courses were titled 'mini-beast hunting' courses.



Case Study

UK opinion poll on biodiversity

The results of a public attitude survey to biodiversity were published by DEFRA ([2011 Table 2b](#)). The survey reveals that the level of thought given to biodiversity loss in the UK in 2007, 2009 and 2011, seemed relatively low, with 6-7% answering 'a great deal,' 14-25% answering 'a fair amount,' 25-40% answering 'a little' and 32-49% answering 'none at all'.

Relating to non-published information from the same survey, it was reported "recently, members of the public were asked what biodiversity is. The most common answer was "some kind of washing powder" (BBC News, 2010b).

Connecting with policy-makers

Connecting with decision drivers and policy-makers is vital. Digital media and social networks are widely used by activists to educate us on specific issues and alert us on decisions and to reach out to policy-makers. Connecting with these networks will firstly answer many of your queries such as why organic food can be more expensive. With fish stocks depleting, why is fish not more expensive in the market? Why are unsustainable agricultural practices that are destroying ecosystems, still not curbed by governments?

Biodiversity has not been given its due importance in policy frameworks. Unreasonable subsidies to the fishing industry or the persistent use of pesticides, which have already proved fatal to bees, are examples of such disregard. Therefore, your voice as a citizen matters; your voices as young people matter too as future leaders of the world. Seize opportunities to learn of legislations or agreements that have genuinely protected biodiversity and measure them against those that do not consider it.

There are issues on which governments are deciding today but the impacts of which on biodiversity will be known only in several years from now, or only by future generations. The open field use of GMO seeds and nuclear



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Connecting with others

power plants are two such issues. The nuclear accidents in Fukushima (Japan) and Tchernobyl (Ukraine) have wreaked havoc on all forms of life. But even under normal circumstances, nuclear power plants are causing damage to aquatic life by releasing water used by them for cooling purposes, at very high temperatures into waterways. Despite the immediate short-term benefits of such impending decisions, they have far reaching and unknown effects in the long term. The precautionary principle is a MUST. The Amerindians believe in 'caring for the 7th generation', which implies overriding short-term personal and economic benefits in the interest of the future generations. This is your opportunity to understand and participate in the burning debates around these issues.



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Get Active!

- Look at the [IUCN's Opinion section](#) and join the debate by sharing your thoughts on global environmental issues. You can respond to the opinions of IUCN's thousands of experts, members and partners. Take part in the discussion - your opinion matters.
- Do you want to participate in UN meetings? Visit <http://unac.org/wp-content/uploads/2013/05/YouthNavigateIntIMtgs-Eng.pdf> to see how you can do so! What about setting up a Model United Nations at your school or university?
- Use some provocative slogans (such as "Eat less meat!" and "Leave your car at home") as a mean of generating group discussion. How can you help others go beyond the words in order to understand the messages?
- Use social networks such as Facebook and Twitter to raise awareness about green washing - misleading ads and campaigns that hide non-green practices of manufacturing companies. Inform your national consumer organization about your findings!
- Follow globally present and locally active environmental organizations on Facebook, Twitter or other social networks. They draw your attention on specific matters and invite your participation. Can you set up local chapters of these organizations in your area?



Tips

- Look for local farmers, horticulturists, tree lovers, scientists and biodiversity students and use their talent for neighbourhood events and gatherings.
- Download animal sounds as ring tones on your mobiles, available free of charge on www.rareearthtones.org by the American Centre for Biological Diversity. It attracts attention and is a nice trigger to discussion on biodiversity.
- Join the [Global Youth Biodiversity Network](#) and the [GYBN Facebook](#) group to get up-to-date information on biodiversity.
- Join the International Youth Forum [Go4BioDiv](#), which gives an opportunity to young people to participate in political discussions during the Conferences of the Parties to the Convention on Biological Diversity.
- Join the [youth discussions](#) on the Convention for Biological Diversity or establish youth clubs focused on biodiversity.
- Join the UNEP [TUNZA](#) Initiative and take part in its global and regional meetings! TUNZA is involved in capacity building, environmental awareness, and information exchange, with a vision to foster a generation of environmentally conscious citizens, capable of positive action.
- Join youth environmental networks such as the International Youth Climate Movement or the [African Youth Initiative on Climate change](#).
- Organize events on biodiversity issues in local schools, clubs and offices.

13. Mobilizing the international community: your action is vital!

How can you raise awareness about biodiversity by communicating with others? Can you reach out to policy-makers about biodiversity issues?

Taking action

If changing lifestyles from unsustainable ones to sustainable ones is a daunting affair, the threats to biodiversity are even more so. Many of us fail to see the need to act upon a matter that is not noticeably making a difference to our daily lives. We do not always feel responsible for the situation and do not see what we can do about it. Some will argue for the merits of scientific progress and prefer to continue to rely blindly on science to resolve problems in the future. Others think it is for the legislators to set the game right and that people will follow suit.

The fact is that it is the power structures and our consumer choices that have together put us in this spot. And it has become more important than ever for youth to change that balance of power and be the change the world needs.

International conventions on biodiversity

Global governance institutions, which work with national institutions, local organizations and the private sector, are taking action for biodiversity through numerous international conventions. They are actively involved in incorporating values of biodiversity into policy and management decisions and into land use planning, addressing inequities in access and benefit sharing and ensuring better governance of ecosystems.

Some of the international conventions and treaties for the protection of biodiversity include:

- The Convention on Biological Diversity (CBD) was inspired by the international community's growing commitment to sustainable development. It was opened for signature at the Rio Earth Summit in June 1992 and came into force on 29 December 1993 with three principle objectives: conservation of biological

diversity, sustainable use of the components of biological diversity and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

- The Cartagena Protocol on Biosafety is a supplementary agreement to the CBD, which aims to protect biological diversity from the potential risks posed by 'living modified organisms' (LMO) resulting from modern biotechnology.
- The Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety provides international rules and procedures on liability and redress for damage to biodiversity resulting from LMO.
- The Nagoya Protocol on Access and Benefit Sharing (ABS) is a second supplementary agreement to the CBD, which seeks to provide a transparent legal framework for the effective implementation of one of the core objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources.
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975) aims to ensure that international trade in wild animals and plant specimens does not threaten their survival. More than 30,000 species of animals and plants have been listed to date.
- The Convention on the Conservation of Migratory Species (CMS, 1979), also called the Bonn Convention, aims to conserve terrestrial, marine and avian migratory species throughout their range.
- The International Treaty on Plant Genetic Resources for Food and Agriculture (2001) focuses on the conservation and sustainable use of plant genetic resources for food and

Mobilizing the international community

agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the CBD.

- The Ramsar Convention on Wetlands (1971) seeks to foster national action and international cooperation for the conservation and wise use of wetlands and their resources.
- The World Heritage Convention (1972) aims to enhance the identification and conservation of the world's cultural and natural heritage, ranging from cultural monuments, to historic towns, to entire landscapes.

International action, organizations and platforms

Caring about and protecting biodiversity involves all stakeholders, from governments to local NGOs and youth association, but also intergovernmental

organizations and different agencies of the United Nations' system (e.g. UNEP, UNDP, FAO, UNESCO and others), as well as international institutions such as the World Bank and the Global Environmental Facility (GEF).

International organizations are also at the forefront in mobilizing action for biodiversity conservation, such as:

- The International Union for Conservation of Nature (IUCN, 1948) is the world's first and largest global environmental organization. It brings together 1,200 government and non-government organizations, 11,000 voluntary scientists and experts from 160 countries.
- The World Wide Fund for Nature (WWF, 1961) is a non-governmental organization with some 5 million supporters worldwide, working in more than 100 countries on conservation, research and restoration of the environment.
- IUCN and WWF created TRAFFIC in 1976, as a wild life trade monitoring network to ensure that trade in wild plants and animals does not threaten conservation of nature.
- Other NGOs that work to promote and raise-awareness on biodiversity include Earth Watch Institute, Bird life International, Greenpeace, Plant Life International, Wetlands International, World Association of Zoos and Aquariums (WAZA).
- The International Institute for Sustainable Development (IISD, 1990) is a resource and knowledge base on the UN and intergovernmental activities addressing international policies in fields related to sustainable development including biodiversity policy and practice.
- The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES, 2012) is an independent intergovernmental body open to all member countries of the United Nations. The members are committed to building IPBES as the leading intergovernmental body for assessing the state of the planet's biodiversity, its ecosystems and the essential services they provide to society.



Mobilizing the international community

Your action is vital!

Young people filled with great enthusiasm and talent are driving change, innovation and creativity around the world. Understanding the complexities of biodiversity and their connection to our daily lives is the first step in creating change for a more sustainable world, where biodiversity is conserved.

Understanding biodiversity means:

- Learning to appreciate and feeling biodiversity firsthand. It is recognizing that you are part of it! Invite birds, bees and insectivores to live in your gardens!
- More importantly, check whether your daily consumer choices are contributing to biodiversity loss and if yes, make some change by becoming an informed customer!

Take action in reviving biodiversity by:

- Being an inspiration to others, making everyday changes and helping your families and peers realize how important biodiversity is for everyone. Become an eco-volunteer on conservation projects. Support nature protection associations. Check their websites for detailed lists of threatened, protected and invasive species.
- Joining campaigns like the [Green Wave](#) and the [Billion Tree Campaign](#).
- Connecting with youth blogs and nature forums. Many youth have already delved into biodiversity issues and have brilliant stories and inspiring ideas to share.
- Making use of your networks to slip in an idea that you think may work. You know your friends and families better than anyone else!
- Finding ways to voice your opinions in the discussions of the meetings of your local government (city council).
- Educating yourself on international conventions, regional, national and local legislations and participate actively in the youth forums. Your efforts to shape laws to protect biodiversity are crucial!

- Being an urban change agent. You can encourage planting native flowers and vegetables in gardens, open spaces or outside public buildings; start a community garden, create awareness on organic fertilizers and natural insecticides, encourage urban composting, promote wilderness and diversity in gardens, (invertebrates love heaps of dried leaves, twigs and undergrowth and are excellent assistants in your gardening efforts), raise awareness on mindful water consumption particularly for gardening and cleaning streets, encourage local clubs and schools to build artificial habitats such as butterfly gardens, bee boards or boxes; organize litter cleaning campaigns; initiate car sharing or pooling, identify and protect the oldest trees; launch a farmers' market; start a seed lending library; start a really free or swap market.
- Acting on local, trans-boundary or international violations of agreements and commitments.
- Staying well-informed about the research and debates around the impact of major societal choices on biodiversity and therefore on you. Remember you are a member of this web!

“Never doubt that a small group of committed people can change the world. Indeed, it is the only thing that ever has.”

Margaret Mead, anthropologist



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14.A. Online resources

1. Biodiversity: a key to learning and change

- CBD – Resources for educators: <http://www.cbd.int/youth/resources/educators.shtml>
- Communities of the Future: <http://www.futurecommunities.net/>
- International Society for Ecology and Culture: <http://www.localfutures.org/>
- IUCN Commission on Education and Communication: <http://www.iucn.org/about/union/commissions/cec/>
- John Muir Trust: <http://www.jmt.org/home.asp>
- Natura 2000: <http://www.natura.org/greendays.html>
- Navdanya, Bija Vidyapeeth: <http://www.navdanya.org>
- Other Worlds are Possible: <http://www.otherworldsarepossible.org/>
- Pioneers of Change: <http://pioneersofchange.net/>
- Schooling the World, the White Man's Last Burden: <http://schoolingtheworld.org/film/>
- Shikshantar, The Peoples' Institute for Rethinking Education and Development: <http://www.swaraj.org/shikshantar/>
- Swaraj University: www.swarajuniversity.org
- The Berkana Institute: <http://www.berkana.org/>
- The Schumacher College: <http://www.schumachercollege.org.uk/>
- The World Café: <http://www.theworldcafe.com/>
- UNESCO Education for Sustainable Development: <http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/>
- UNESCO Man and Biosphere Programme: <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/capacity-building-and-partnerships/educational-materials/>
- University of Minnesota, Institute of the Environment: <http://blog.lib.umn.edu/ione/eyeonearth/biodiversity/>
- Young Masters' Program for Sustainable Development: <http://www.goypm.org/en/site/frontpage>
- Educational video to explain biodiversity: <http://conservationbytes.com/2010/08/26/what-is-biodiversity-video/>

2. Biodiversity is evolving: change is in the wind

- Arkive: <http://www.arkive.org/>
- Ecological Society of America: <http://www.esa.org/>
- Eco Pros environmental education on the web: <http://www.eco-pros.org/>
- Global Forest Resources Assessment, FAO: <http://www.fao.org/docrep/013/i1757e/i1757e.pdf>
- Global Biodiversity Outlook 3: <http://www.cbd.int/gbo3/?pub=6667§ion=6673>
- International Institute for Environment and Development: <http://www.iied.org/>
- IUCN: <https://www.iucn.org/what/biodiversity/>
- Marine Stewardship Council: <http://www.msc.org/about-us/standards/standards/msc-environmental-standard>
- Millennium Ecosystem Assessment Report: <http://www.maweb.org/en/index.aspx>

Online resources

- Natura 2000 Network of the European Commission: http://ec.europa.eu/environment/nature/natura2000/index_en.htm
- UNEP : <http://www.unep.org/wed/2010/english/biodiversity.asp>
- World Association of Zoos and Aquariums: www.waza.org

3. Benefits of biodiversity: more is better

- Bird Life International: <http://www.birdlife.org/>
- Good-bye poverty, hello biodiversity CBD 2010: http://greenwave.cbd.int/files/IDB_2010_booklet_for_youth.pdf
- Green Peace International: <http://www.greenpeace.org/international/en/>
- The Economics of Ecosystem Services TEEB: www.teebweb.org/
- The Economic, Social and Ecological Value of the Ecosystem Services: A Literature Review, January 2005. <http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/Ecosys.pdf>
- The Global Coral Reef Monitoring Report: <http://gcrmn.org/gcrmn-publication/status-of-coral-reefs-of-the-world-2008/>
- The Native Yew Conservation Council: http://www.yewconservation.org/YewCon/YewCon_YewsTaxol.html
- UNEP Ecosystem Management: <http://www.unep.org/ecosystemmanagement/>
- UNEP World Conservation Monitoring Centre: <http://www.unep-wcmc.org/>
- World Wildlife Fund: <http://worldwildlife.org/>
- WWF Global: <http://wwf.panda.org/>

4. Celebrating biodiversity: join in

- Amazon Rain Forest News: <http://www.amazonrainforestnews.com/>
- Cultural and Spiritual values of Biodiversity: <http://www.alastairmcintosh.com/articles/1999-UNEP-Celtic-Biodiversity-Poetics.pdf>
- Gaia Foundation: <http://www.gaiafoundation.org/biocultural-diversity>
- IIED's Biocultural Heritage: <http://biocultural.iied.org/>
- International Biodiversity Day: <http://www.biodiversity-day.info/>
- Native American Wisdom Quotes: <http://www.sapphyr.net/natam/quotes-nativeamerican.htm>
- Terralingua, Unity in Biocultural Diversity: <http://www.terralingua.org/>
- The International Ecotourism Society: <http://www.ecotourism.org/indigenous-knowledge>
- The Nature Conservancy: http://www.nature.org/newsfeatures/specialfeatures/nature-and-art.xml?s_intc=topstories
- UNESCO Intangible Cultural Heritage: <http://www.unesco.org/culture/ich/>
- UNESCO and Indigenous peoples: <http://www.unesco.org/new/en/indigenous-peoples/>
- UNESCO's Local and Indigenous Knowledge systems: <http://www.unesco.org/new/en/natural-sciences/priority-areas/links/>
- UNITIERRA: <http://unitierra.blogspot.fr/>
- Voices of the Earth: <http://www.mindfully.org/Heritage/Voices-Of-The-Earth.htm>

Online resources

- World Heritage Center, UNESCO: <http://whc.unesco.org/>
- Biomimicry examples: <http://biomimicry.net/about/biomimicry/case-examples/>

5. Leisure and tourism: come for biodiversity

- Business and Biodiversity: <http://www.businessandbiodiversity.org/>
- Couch Surfing: <http://www.couchsurfing.org/>
- Go Eco, Volunteers for Ecological and Humanitarian Projects: <http://www.goeco.org>
- WYSE Travel Confederation, Network of youth and student travel operators: <http://www.wysetc.org/>
- Global Eco-village Network: <http://gen.ecovillage.org/>
- Mother Nature Network: <http://www.mnn.com/lifestyle/eco-tourism>
- Mountain bike trails USA: <http://mountainbiketrailsusa.com/>
- Plastic Pollution Coalition: <http://plasticpollutioncoalition.org/learn/common-misconceptions/>
- Planet Green: <http://planetgreen.discovery.com/travel-outdoors/alternative-ways-to-travel.html>
- The International Ecotourism Society, Indigenous knowledge: <http://www.ecotourism.org/indigenous-knowledge>
- The World Travel and Tourism Council: <http://www.wttc.org/>

- UNEP Tourism: <http://www.unep.org/resourceefficiency/Home/Business/SectoralActivities/Tourism/tabid/78766/Default.aspx>
- UN World Tourism Organisation: <http://www2.unwto.org/>
- Voluntourism: <http://www.voluntourism.org/>
- World Tourism Day: <http://wtd.unwto.org/>
- Worldwide Opportunities on Organic Farms: <http://www.woof.org/>
- Your Travel Choice Blog: <http://www.yourtravelchoice.org/category/responsible-travel-tips/>

6. Lifestyle choices: biodiversity goes with everything

- Earth Easy – Solutions for Sustainable living: http://eartheasy.com/live_nontoxic_solutions.html
- Food not Lawns: <http://www.foodnotlawns.com/index.html>
- Grinning Planet, Saving the Planet, One Joke at a time: <http://www.grinningplanet.com/>
- Kufunda Learning Village, Zimbabwe: <http://kufunda.com>
- Mother Nature Network: <http://www.mnn.com/lifestyle/responsible-living/> <http://www.mnn.com/your-home/at-home/stories/cheap-and-natural-cleaning-alternatives> and <http://www.mnn.com/your-home/at-home/stories/green-cleaning-tips>
- Permaculture, Sustainable Living, Practical learning: <http://www.permaculture.org>

Online resources

- The Nature of Cities: <http://www.thenatureofcities.com/2012/10/17/neighborhoods-and-urban-fractals-the-building-blocks-of-sustainable-cities/>
- The 21st Century Learning Initiative: <http://www.21learn.org/>
- The Slow Food Movement: <http://www.slowfood.com/>
- Urban Homestead: <http://urbanhomestead.org/>
- Youth and Biodiversity: <http://biodiversityyouth.blogspot.fr/>

7. A healthy life: biodiversity matters

- 2011 Forum - Theo Colborn, PhD- Beyond Lists: Where did all those pesticides come from? <http://www.youtube.com/watch?v=M1uwn9ZgMLE>
- Biodiversity Indicators Partnership – Food and Medicine: <http://www.bipindicators.net/language/en-us/foodandmedicine>
- Healthy Green living, Gaiam Life: <http://life.gaiam.com/>
- How Our Health Depends on Biodiversity, Chivian, Bernstein, 2010: <http://sites.tufts.edu/teli/files/2011/04/How-our-health-depends-on-Biodiversity.pdf>
- Impact of Cultivation and Gathering of Medicinal Plants, FAO: <http://www.fao.org/docrep/005/Y4586E/y4586e08.htm>
- Medicinal Plants Conservation Centre: http://www.equatorinitiative.org/images/stories/winners/104/casestudy/case_1348162360.pdf
- Medicinal Plants, Conservation and livelihoods, Hamilton: <https://www.cbd.int/doc/articles/2004/A-00116.pdf>
- Nature England: <http://www.naturalengland.org.uk/>
- People and Plants International: <http://www.peopleandplants.org/>
- The Swapathgami Network: <http://www.swaraj.org/shikshantar/walkoutsnetwork.htm>

8. Eating and food: bio “diversity” on your plates

- American Museum of Natural History: <http://www.amnh.org/exhibitions/current-exhibitions/our-global-kitchen-food-nature-culture>
- Food not lawns: <http://www.foodnotlawns.com/>
- Food Production: Where do we go from here? European Food Information Council: <http://www.eufic.org/article/en/expid/review-food-production/>
- Gaiam Life: <http://life.gaiam.com/article/benefits-eating-what-s-season>
- GMOs, Consumers, Food Safety and the environment, FAO, 2001: <http://www.fao.org/docrep/003/X9602E/x9602e07.htm>
- Global land use change, economic globalisation and the looming land scarcity, Proceedings of the National Academy of Sciences: <http://www.pnas.org/content/108/9/3465.full?sid=49850c5c-fb4c-420b-abee-76cc1096203b>
- Greenpeace International: <http://www.greenpeace.org/international/en/campaigns/agriculture/problem/genetic-engineering/>
- International Federation of Organic Movements: <http://www.ifoam.org/>
- Navdanya: <http://www.navdanya.org/news/282-gmos-seed-wars-and-knowledge-wars>

Online resources

- State of the World's fisheries and Aquaculture
FAO 2011: <http://www.fao.org/fishery/sofia/en>
- The argument for local food, World Watch
Institute: <http://www.worldwatch.org/node/535>
- The Critical Role of Global Food Consumption
patterns, UNEP Discussion paper: http://www.thinkeatsave.org/docs/Role_of_Global_Food_Consumption_Patterns-A_UNEP_Discussion_Paper.pdf
- The Seven Deadly Myths of Industrial
Agriculture: http://www.alternet.org/story/13900/the_seven_deadly_myths_of_industrial_agriculture%3A_myth_one
- What is happening to Agrobiodiversity? FAO:
<http://www.fao.org/docrep/007/y5609e/y5609e02.htm>
- WWF Seven Day Menu: http://assets.wwf.org.uk/downloads/7_day_menu.pdf
- US Environment Protection Agency: <http://www.epa.gov/osw/conserva/materials/ recycling/index.htm> and <http://www.epa.gov/osw/conserva/materials/textiles.htm>
- Résistance à l'Agresion Publicitaire:
<http://antipub.org/>
- Responsible Shopper, Green America:
<http://www.greenamerica.org/programs/responsibleshopper/>
- Textile Recycling: <http://www.rag-bag.co.uk/>
- Top 10 Consumer trends in 2011:
<http://blog.euromonitor.com/2011/05/top-10-consumer-trends-for-2011.html>

9. Shopping and consuming: support biodiversity

- Adbusters: <https://www.adbusters.org>
- Conscious consuming: <http://blog.beliefnet.com/awakeintheworld/2011/11/conscious-consuming-beyond-shopping-this-holiday-season.html>
- Green Economy Report, UNEP:
<http://www.unep.org/greeneconomy/greeneconomyreport/tabid/29846/default.aspx>
- Green Living Ideas: <http://greenlivingideas.com/2011/11/25/buy-nothing-day/>
- How can we change consumerism?:
<http://www.enough.org.uk/enough08.htm>
- Overcoming Consumerism:
<http://www.verdant.net/#top>



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Online Resources

10. Money and Jobs: linking them with biodiversity

- Equator Principles: <http://www.equator-principles.com/>
- Payment for Ecosystem Services: <http://www.fao.org/es/esa/pesal/index.html>
- Regional Review of Payments for Watershed Services – Sub Saharan Africa: <http://www.oired.vt.edu/sanremcrsp/wp-content/uploads/2013/11/Sept.2007.PESAfrica.pdf>
- UNEP Finance Initiative: <http://www.unepfi.org/statements/index.html>
- UN Principles for Responsible Investment: <http://www.unpri.org/>
- UN REDD Program: <http://www.un-redd.org/>

11. Connecting with Others: birds were tweeting long before Twitter

- Communicating Biodiversity IUCN Brochure: http://cmsdata.iucn.org/downloads/cepa_brochure_web.pdf
- Communicating Biodiversity in 3 steps: http://www.snh.org.uk/biodiversitycommstoolkit/assets/pdfs/tools/media/3_steps.pdf
- Biodiversity matters: <http://www.scidev.net/en/editorials/biodiversity-loss-matters-and-communication-is-crucial.html>



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12. Mobilizing the International Community: your action is vital!

- Convention for Biological Diversity: <http://www.cbd.int/>
- Convention on International Trade in Endangered Species: <http://www.cites.org/>
- Convention on Migratory Species: <http://www.cms.int/>
- International Institute for Sustainable Development, Biodiversity Policy and Practice: <http://biodiversity-1.iisd.org/>
- International Treaty on Plant Genetic Resources for Food and Agriculture: <http://www.planttreaty.org/>
- TRAFFIC, The Wild Life Trade Monitoring Network: <http://www.traffic.org/>
- Convention on Wetlands: http://www.ramsar.org/cda/en/ramsar-tourism-homeindex/main/ramsar/1%5E25816_4000_0__
- World Heritage Convention: <http://whc.unesco.org/>
- The Youth Guide to Biodiversity: <http://www.fao.org/docrep/017/i3157e/i3157e00.htm>



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14.B. Useful terms

Biocapacity

Capacity of a given biologically productive area to generate an on-going supply of renewable resources and to absorb its spillover wastes. Unsustainability occurs if the area's ecological footprint exceeds its biocapacity.

Source: <http://www.greenfacts.org/glossary/abc/biocapacity.htm>

Biodiversity or Biological diversity

A term we use to describe the variety of life on Earth. It refers to the wide variety of ecosystems and living organisms: animals, plants, their habitats and their genes and the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

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



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Consumers

Everyday purchasers of goods or services in retail, or end users in the distribution chain of goods or services.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Consumption

Expenditure during a particular period on goods and services used in the satisfaction of needs and wants, or process in which the substance of a thing is completely destroyed, and/or incorporated or transformed into something else.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Cultural diversity

Culture takes diverse forms across time and space. This diversity is embodied in the uniqueness and plurality of the identities of the groups and societies making up humankind. As a source of exchange, innovation and creativity, cultural diversity is as necessary for humankind as biodiversity is for nature. In this sense, it is the common heritage of humanity and should be recognized and affirmed for the benefit of present and future generations.

Source: <http://unesdoc.unesco.org/images/0013/001345/134556e.pdf>

Useful terms

Ecological footprint

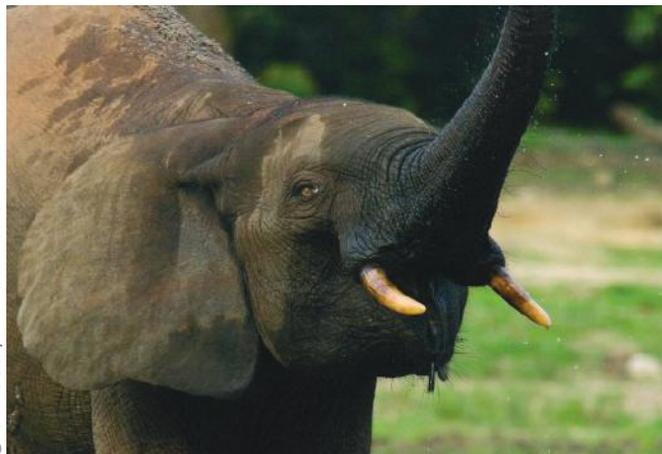
A measure of how much biologically productive land and water an individual, population or activity requires to produce all the resources it consumes and to absorb the waste it generates using prevailing technology and resource management practices. The ecological footprint is usually measured in global hectares (a common unit that encompasses the average productivity of all the biologically productive land and sea area in the world in a given year). Because trade is global, an individual or country's footprint includes land or sea from all over the world.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Ecosystem

Any functioning unit at any scale and should be determined by the problem being addressed. It could, for example, be a grain of soil, a pond, a forest, a biome or the entire biosphere. According to the CBD definition, ecosystem is "a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit."

Source: <http://www.cbd.int/doc/meetings/cop/cop-09/media/cop9-press-kit-ea-en.pdf>



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Ecosystem services

The contributions that ecosystems make to human well-being, and that arise from the interaction of biotic and abiotic processes. Following the Millennium Ecosystem Assessment, the term 'services' is generally taken to include both goods and services.

Source:

<http://www.cbd.int/development/meetings/egmbped/glossary-working-definitions-en.pdf>

Ecotourism

Travel undertaken to witness sites or regions of unique natural or ecological quality, or the provision of services to facilitate such travel that has the least impact on biological diversity and the natural environment.

Source: <https://www.cbd.int/cepa/toolkit/2008/doc/CBD-Toolkit-Glossaries.pdf>

Education for sustainable development (ESD)

ESD aims to help people to develop the attitudes, skills and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions. ESD supports five fundamental types of learning to provide quality education and foster sustainable human development: learning to know, learning to be, learning to live together, learning to do and learning to transform oneself and society. ESD concerns all levels of education and all social contexts (family, school, workplace, community). It allows learners to acquire the skills, capacities, values and knowledge required to ensure sustainable development, and fosters responsible citizens.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Useful terms

Hotspot

An area on earth with an unusual concentration of species, many of which are endemic to the area, and which is under serious threat by people.

Source: <https://www.cbd.int/cepa/toolkit/2008/doc/CBD-Toolkit-Glossaries.pdf>

Lifestyles

In this publication, the word lifestyle refers more broadly and more simply to ways of life, encapsulating representations, values and beliefs, behaviours and habits, institutions, economic and social systems.

Source: youthXchange Climate Change and Lifestyles Guidebook

Natural capital

Natural assets in their role of providing natural resource inputs and environmental services for economic production. Natural capital is generally considered to comprise three principal categories: natural resource stocks, land and ecosystems. All are considered essential to the long-term sustainability of development for their provision of “functions” to the economy, as well as to mankind outside the economy and other living beings.

Source: <http://stats.oecd.org/glossary/detail.asp?ID=1730>



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Permaculture

The development of agricultural ecosystems intended to be sustainable and self-sufficient.

Source: <http://oxforddictionaries.com/definition/english/permaculture>

Resources

Naturally occurring assets that provide benefits through the provision of raw materials and energy used in economic activity (or that may provide such benefits one day) and that are subject primarily to quantitative depletion through human use. They are subdivided into four resource categories: mineral and energy, soil, water and biological.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Species

A group of organisms capable of interbreeding freely with each other but not with members of other species.

Source: <https://www.cbd.int/cepa/toolkit/2008/doc/CBD-Toolkit-Glossaries.pdf>



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Useful terms

Sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development includes economic, environmental and social sustainability, which are independent and mutually reinforcing pillars, and can be achieved by rationally managing physical, natural and human capital. Poverty eradication, changing unsustainable patterns of production and consumption and protecting and managing the natural resource base of economic and social development are overarching objectives of, and essential requirements for, sustainable development.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Sustainable lifestyles

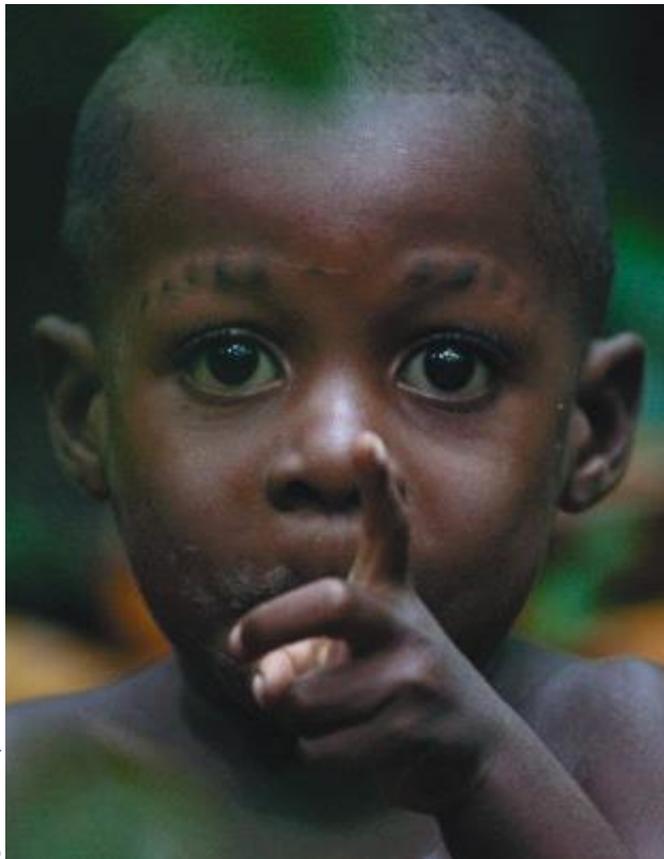
A way of living enabled both by efficient infrastructures, goods and services, and by individual choices and actions that minimize the use of natural resources, and generation of emissions, wastes and pollution, while supporting equitable socio-economic development and progress for all. Creating sustainable lifestyles means rethinking our ways of living, how we buy and how we organise our everyday life. It is also about altering how we socialise, exchange, share, educate and build identities. It is about transforming our societies and living in balance with our natural environment.

Source: http://www.unep.org/resourceefficiency/Portals/24147/scp/go/pdf/ABC_ENGLISH.pdf

Youth

The United Nations, for statistical purposes, defines 'youth', as those persons between the ages of 15 and 24 years. Children are those persons under the age of 14. It is, however, worth noting that Article 1 of the United Nations Convention on the Rights of the Child defines 'children' as persons up to the age of 18. This was intentional, as it was hoped that the Convention would provide protection and rights to as large an age-group as possible and because there was no similar United Nations Convention on the Rights of Youth. Within the category of "youth", it is also important to distinguish between teenagers (13-19) and young adults (20-24), since the sociological, psychological and health issues they face may differ.

Source: <http://social.un.org/index/Youth/FAQs.aspx>



14.C. About YXC

The YouthXchange Initiative

UNEP and UNESCO started the YouthXchange (YXC) Initiative in 2001 to promote sustainable lifestyles among young people (aged 15-24) through education, dialogue, awareness raising and capacity building. At the national and local levels, YXC training activities are secured through a diverse network of partners, with the support of a printed training kit and a website www.youthxchange.net.

The YXC training kit on responsible consumption

The YXC training kit provides information, ideas, tips and good practices on topics such as sustainable consumption, lifestyles, mobility, waste reduction, energy and resource efficiency, smart and responsible shopping and so forth. To date, the YXC guide has been translated into more than 20 languages, including: Arabic, Azeri, Basque, Catalan, Chinese, Filipino, Flemish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Portuguese, Slovenian, Spanish, and Turkish. From China to Italy and Dubai to Mexico City, UNEP and UNESCO estimate that the guide has been distributed to more than 400,000 people worldwide. It is downloadable from www.unep.org and www.unesco.org.

The YXC thematic guidebooks

In 2011, UNEP and UNESCO embarked on the development of thematic YXC guidebooks, which present global challenges such as climate change to young people so they can better understand how such challenges are connected to their everyday lifestyle choices. The *Climate Change and Lifestyles Guidebook* and the *Green Skills and Lifestyles Guidebook* are the first two YXC thematic guidebooks produced in this series. The *Biodiversity and Lifestyles Guidebook* is the third YXC thematic guidebook and connects the issues of biodiversity to young people's everyday lifestyle choices.

The YXC Network

YXC works with young people aged 15-24 as well as educators, non-governmental organizations (NGOs), trainers and youth leaders around the world. YXC reaches young people through a network of national partners in more than 45 countries. YXC has become a network of organizations that actively pursues education for sustainable consumption and lifestyles and work at the local level with similar materials and pedagogical approaches. Some YXC partners also have local versions of the YXC website.

The YXC partners

The YouthXchange partners all over the world have made the project a reality and are living proof of how complex sustainable lifestyle values can be transmitted to young people, while having fun and exchanging ideas and active experiences.



The United Nations Educational, Scientific, and Cultural Organization (UNESCO)

The United Nations Educational, Scientific and Cultural Organization (UNESCO) was founded on November 16, 1945. This specialized United Nations agency's mission is to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue through education, the sciences, culture, communication and information.

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www.unesco.org/education

United Nations Environment Programme (UNEP)

The United Nations Environment Programme was created in 1972 as the voice for the environment within the UN system. Its mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

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Convention on
Biological Diversity



Ministry of the Environment
Sweden



Global Action for Sustainable
Consumption and Production



United Nations
Educational, Scientific and
Cultural Organization



Japan
Funds-in-Trust



TUNZA



UNEP
United Nations
Environment Programme