



Resource Kit on Sustainable Consumption and Production

ADVERTISING

ECO-DESIGN

ENERGIES

FOOD

HOUSING

LEISURE

LIFESTYLES

MOBILITY

NICT

TEXTILES

TOURISM

WATER

ADVERTISING AND COMMUNICATION

tools to encourage better consumption

Gigantic hoardings, TV commercials, flyers, magazines ... there is no way to escape advertising as it spreads to the four corners of the globe. Advertising creates an illusion of material abundance, starts trends, sows the seeds of new wants and propagates the idea that buying means happiness. This expanding sector generates global revenues equal to one and a half times France's national budget. Some countries invest almost as much in advertising as they do in education. Intermediary between manufacturer and consumer, advertising plays an essential role in keeping the public informed and shaping their decisions. Whereas at one time its sole function was to make people buy more, today advertising must respond to new demands. Those of consumers who are looking for greater significance, transparency and ethics. Those of NGOs and governments that pressure advertisers to inform, alert and encourage responsible behaviour in the face of the issues now threatening our planet. And, finally, the demands of the United Nations Commission on Sustainable Development which, in 1997, engaged the advertising industry to help promote new -and most importantly sustainable- consumption patterns.

IMPACTS

Encouraging excessive consumption

Whether in developed industrialized nations or developing countries, over a quarter of the world's population has adopted a lifestyle that revolves around consumption. With people constantly on the lookout for new products, influenced by advertising and distribution, private consumption expenditures have increased fourfold since 1960. At this rate the planet will soon be unable to go on providing the necessary raw materials to keep pace with such demand for goods and services, or absorb the waste they produce. www.worldwatch.org/press/news/2004/01/08

One culture fits all

In developing countries, the arrival en masse of advertising campaigns by multinational firms tends to heighten frustration among the very poor. It also incites local populations to aspire to western lifestyles and abandon local traditions in favour of new consumption patterns.

Visual pollution

From Barcelona to Tokyo or Dakar, the same sight greets people as they enter any city: hundreds of advertising hoardings, sometimes displaying shocking images, disfigure the landscape. Meanwhile, energy-hungry illuminated signs and mobile outdoor advertising are becoming increasingly commonplace. http://portal.unesco.org/en/ev.php-URL_ID=13067&URL_DO=DO_TOPIC&URL_SECTION=201.html

SOME COMPANIES HAVE ADOPTED GREENWASHING IN THEIR COMMUNICATION TO MAKE THEMSELVES APPEAR MORE ENVIRONMENTALLY FRIENDLY THAN THEY REALLY ARE. NGOs AND CONSUMER GROUPS HAVE SINGLED OUT THIS TECHNIQUE FOR CRITICISM, OBLIGING FIRMS TO RETHINK THEIR ADVERTISING STRATEGIES IF THEY HOPE TO REMAIN CREDIBLE.

Wasted paper

Brochures, catalogues and other mailshots are among the tools developed by the advertising industry to reach consumers. They are now so numerous as to pose problems of forest management, ink, paper recycling and waste processing.

www.worldwatch.org/pubs/goodstuff/paper
www.iied.org/smg/pubs/rethink7.html

→ 3/4

of the world's population owns at least one television set



↓ Young people are the most influenced by advertising. Heedonist and idealistic, they want it all brand-name clothes and a sustainable planet. They are however increasingly savvy to corporate advertising techniques and know how to decipher their messages.

IN HIS OR HER LIFETIME, A CHILD BORN IN A DEVELOPED COUNTRY WILL CONSUME AS MUCH AS 30 TO 50 CHILDREN FROM A DEVELOPING COUNTRY.

REPORTING ON THE ENVIRONMENT

Under pressure from environmental groups and consumer lobbies, companies must now consider their role as members of the wider community and become good citizens. They have developed new tools to inform the public of their social and environmental values. In some countries, led by the Netherlands, Norway, Denmark and France, this is even a legal obligation. When publishing their financial reports, several thousand companies now include information on sustainable development, compared with just a few dozen in 1997.

www.sustainreports.org
www.globalreporting.org

ANTI-ADVERTISERS AND ANTI-CONSUMERISTS ARE BECOMING MORE NUMEROUS AND WINNING MORE SUPPORT.

→ 23 H a week: the average amount of time young Americans spend watching TV. Almost the same amount of time they spend in school

SOME POLLUTING PRODUCTS ASSOCIATE THEIR NAME WITH IMAGES OF NATURE TO CONVEY A NOTION OF PURITY AND RESPECT FOR THE ENVIRONMENT THAT ONLY EXISTS ON PAPER OR ON THE SCREEN.



↓ World advertising expenditure reached \$446 billion in 2002, around 9 times more than in 1950.

ON THE RIGHT TRACK

→ Advertising and sustainable development: first steps towards rules

The French advertising standards bureau (BVP, Association française des publicitaires pour une publicité responsable) has published its recommendations on how the concept of sustainable development can be used in advertisements. From now on, this theme can no longer be used indiscriminately to promote products or brands. When it is used, advertising messages must respect the principles of truthful, objective and fair communication. This is the first ever example of the advertising industry taking steps to self-regulate how sustainable development is used in communication. www.uneptie.org/outreach/compact/docs/GC-Dialogue2004-presentations/Jean_Pierre_Teyssier.pdf
www.corpwatch.org/index.php



→ In 2004, the Palais des Festivals in Cannes hosted ACT Responsible, an exhibition on "how advertising can help change the world" by encouraging responsible behaviour. Proof of growing awareness within the advertising industry of the role it can play in promoting non-consumerist values. www.adforum.com/speialevents/act4/responsible.asp

→ SER and responsible communication



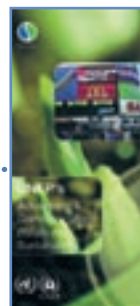
Since the nineteen-nineties, a company's performance is no longer judged in purely economic terms but in view of its social and environmental impact too. The corporate world has grasped this change in attitude and increasingly focuses communication on social and environmental responsibility (SER). The Body Shop, Patagonia and Ben & Jerry's were among the trailblazers, directly informing their customers of the ecological value of their products or on labour conditions, and supporting environmental and development projects. Today, more and more companies are putting sustainable development at the heart of their campaigns.

http://europa.eu.int/comm/employment_social/soc-dial/csr/csr2002_en.pdf

→ Events organizers go green

Events planners are also beginning to incorporate sustainable development into their activities. The international sports world recently joined this movement: in 1999 the International Olympic Committee (IOC) adopted the Olympic movement's Agenda 21, which was drafted by the IOC's Sport and Environment Commission. By approving this declaration, the Olympic Games agree not only to minimize their impact on the environment, but to help improve it and leave behind a positive green legacy. Other organizations have followed suit.

www.olympic.org/uk/organisation/commissions/environment/index_uk.asp



DOES SUSTAINABILITY SELL?

While activities in favour of sustainable development are now acknowledged as being part of a company's overall performance, the corporate world still has doubts as to its repercussions on sales. Some companies have shown there are profits to be made by positioning themselves in this register. Others meanwhile still have cold feet and are slow to promote their exploits in favour of sustainable development or ethical trade. This way they avoid laying themselves open to criticism from NGOs and the media if the rest of their activity doesn't quite reflect these values.

PUTTING IDEAS INTO PRACTICE

Individuals

→ LEARN TO DECIPHER ADVERTISING MESSAGES AND GAUGE THEIR CONTENT
→ REFUSE UNSOLICITED ADVERTISING IN THE LETTERBOX → LIMIT THE AMOUNT OF TELEVISION WATCHED → LOBBY FOR THE REMOVAL OF ILLEGAL ADVERTISING HOARDINGS → ASK COMPANIES FOR THEIR SUSTAINABLE DEVELOPMENT REPORTS
→ REPORT MISLEADING ADVERTISEMENTS TO SELF-REGULATION AUTHORITIES

Companies

→ PROVIDE TRANSPARENT INFORMATION ON CONCRETE ACTIVITIES BY THE COMPANY IN FAVOUR OF RESPONSIBLE AND SUSTAINABLE DEVELOPMENT → ENSURE ADVERTISEMENTS RESPECT THE INDUSTRY'S OWN RECOMMENDATIONS → BAN DELIBERATELY MISLEADING ADVERTISING MESSAGES ("GREENWASHING") AND OTHERS THAT ENCOURAGE UNNECESSARY CONSUMPTION
→ AVOID CREATING ENDLESS SELF-PROCLAIMED LABELS THAT ONLY CONFUSE CONSUMERS → LIMIT USE OF PRINTED ADVERTISING AND KEEP MAILING LISTS UP-TO-DATE → SET UP FOUNDATIONS IN SUPPORT OF ENVIRONMENTAL AND HUMANITARIAN PROJECTS AND DEVELOP SOCIAL MARKETING

Local authorities

→ IMPLEMENT AND PROMOTE ENVIRONMENTALLY AND SOCIALLY RESPONSIBLE PROJECTS → RAISE PUBLIC AWARENESS BY DIFFUSING MESSAGES AND MOBILIZING MUNICIPAL INFORMATION CHANNELS (RECYCLING, FAIR TRADE MARKETS, WORK BY LOCAL VOLUNTEER GROUPS, ETC.) → ENSURE ADVERTISEMENTS IN TOWNS AND CITIES STAY WITHIN THE LIMITS OF DECENCY AND THAT THEIR CONTENT RESPECTS RECOMMENDATIONS BY SELF-REGULATION BODIES
→ PREVENT ADVERTISING SPRAWL (BILLBOARDS AND ILLUMINATED SIGNS)

HOW TO IMPLEMENT A RESPONSIBLE COMMUNICATION STRATEGY

→ BE CREDIBLE, TRANSPARENT AND HONEST → GIVE SIMPLE, FACTUAL INFORMATION
→ BE REALISTIC AND DESCRIBE PROBLEMS → ENSURE ENHANCED COLLABORATION BETWEEN MARKETING, COMMUNICATION AND ENVIRONMENT DEPARTMENTS → BRING SUCCESS STORIES TO PEOPLES' ATTENTION WITHOUT BEING AFRAID TO MENTION FAILURES
→ ENCOURAGE EVERYONE IN THE COMPANY TO GET INVOLVED IN ITS SUSTAINABLE DEVELOPMENT STRATEGY

FIND OUT MORE

The media in the information society, European Commission:

http://europa.eu.int/comm/internal_market/media/index_en.htm

Young people and the media, awareness network:

www.media-awareness.ca

Canadian advertising standards:

www.adstandards.com

International Chamber of Commerce code of environmental advertising:

www.iccwbo.org/home/statements_rules/rules/2001/code_of_environmental_advertising.asp

European Advertising Standards Alliance:

www.easa-alliance.org

Centre for a new American dream:

www.newdream.org

Responsible advertising and children: www.responsible-advertising.org

The global voice for consumers: www.consumersinternational.org

AT UNEP

→ THE ADVERTISING AND COMMUNICATION FORUM ON SUSTAINABILITY

In response to the obstacles and challenges the advertising sector, UNEP set up in 1999 the Advertising and Communication Forum. Its purpose is to raise awareness among advertisers, advertising agencies and the media of sustainable development issues, and to get them thinking about alternative forms of communication that better reflect consumers' changing expectations.

www.uneptie.org/pc/sustain/advertising/advertising.htm

ECO-DESIGN

production without destruction

For several decades, consumer society has made profitability its credo, producing and consuming more and always at the lowest price. This tendency translates into overexploited natural resources, the intensification of air and water pollution, disappearing plant and animal species, and the proliferation of waste. Breaking this chain means taking urgent action to "produce more with less." In other words, to satisfy global demand for goods and services while limiting waste and avoiding excess and pollution. Companies have now adopted this approach and have taken sustainable development onboard in their strategies. It has become a political issue too. In 2000 in Malmö (Sweden), world governments launched an appeal in favour of sustainable production and consumption, "to improve finished products and services while diminishing impacts on the environment and health." In a word, to herald the era of eco-design.

IMPACTS

All consumer goods, even "green" ones, have negative repercussions on the environment. They are manufactured using raw materials, energy and water. Then they must be packaged and transported to their place of use, before finishing up as waste. Eco-design is a means of minimizing these impacts throughout a product's lifecycle for the same degree of efficiency and utility.
www.howproductsimpact.net

SOME OF THE WAYS ECO-DESIGN CAN MINIMIZE IMPACTS

1st stage: raw materials. Manufacturing a product means first exploiting raw materials. Extracting and processing these constituent parts consumes natural resources, uses energy and is a source of pollution.

Solutions: reduce quantities, choose the most appropriate materials, transform waste into raw materials, prefer renewable materials and products that use only one type.

2nd stage: production. Manufacturing tends to consume large amounts of energy because of the complex processes it involves.

Solutions: optimize production processes, assemble products so they are easy to separate into their different components for repair or recycling.

3rd stage: packaging. Bottles, boxes, cans and other packaging currently account for over half the volume of household

waste in developed countries.

Solutions: concentrate products, reduce the amount and volume of packaging to make savings along the chain, from manufacturing to waste disposal.

4th stage: transportation. Delocated production, cost-cutting and liberalized markets all add up to one thing: products travel thousands of kilometres before being used.

Solutions: choose manufacturing sites according to the products' final destination, use combined transport and alternative fuels, optimize loads.

5th stage: use. Using products, operating appliances and maintaining them in working order requires more or less energy, water, etc. Usually designed to be frequently replaced, goods today are increasingly fragile and hard to repair, which encourages wastefulness and generates waste.

Solutions: design functional, energy-saving or autonomous products that are lasting, safe and easy to maintain or repair.

6th stage: disposal and recycling. Worn-out or damaged products are more or less easy to recycle. The multiple components, alloys and other combinations of materials from which they are made render disassembling and processing a complex and costly procedure.

Solutions: develop reusable or recyclable products and components.

→ **560 kg**

of solid waste
are produced
per capita
each year in
the industrialized
countries: 3 times
more than in 1984

ECO-DESIGN

An international concept, developed by the World Business Council for Sustainable Development (WBCSD) at the Rio summit, eco-design is the culmination of a holistic, conscious and proactive approach. It consists in designing a product -or service- so as to minimize its impacts on the environment. Eco-design applies at every stage in a product's life: raw material extraction, production, packaging, distribution, use, recovery, recycling, incineration, etc.

www.wbcd.ch

www.ecodesign.at/information/einfuehrung/index.en.html

http://europa.eu.int/comm/enterprise/eco_design

www.uneptie.org/pc/sustain/design/design.htm

A PRODUCT'S LIFECYCLE

Life Cycle Assessment (LCA) is an analytical tool that serves to evaluate eco-design concepts. It examines inputs (e.g. materials, resources, energy) and outputs (e.g. emissions to air and water, waste) at every stage in a product's lifecycle to then quantify its environmental impacts. This framework has been standardized within the series ISO 14040.

www.iso-14001.org.uk

www.eiolca.net

www.uneptie.org/pc/pc/tools/lca.htm

www.iso.org/iso/en/CatalogueDetailPage.CatalogueDetail?CSNUMBER=33020



IN THE SPACE OF A FEW YEARS, GOVERNMENT AND INDUSTRY HAVE REVIEWED THEIR POSITION ON ENVIRONMENTAL ISSUES. FROM AFTER-THE-EVENT DAMAGE REPAIR, RISKS ARE NOW CONSIDERED AT THE EARLIEST STAGE. SUSTAINABLE DEVELOPMENT IS BECOMING AN INTEGRAL PART OF THE COMPANIES' DEVELOPMENT STRATEGY.



↓ Over the years, deposit bottles have fallen out of favour to be replaced by disposable packaging. This must then be collected and recycled, which involves the transformation of raw materials. In some countries, led by Germany, deposit bottles are now making a comeback at the majority of points of sale.

ON THE RIGHT TRACK

→ Product service systems



A new marketable mix of products and services is emerging: instead of producing goods to then sell, a company that adheres to the principle of product service systems (PSS) adapts its offer to customers' needs. The result is more tailored solutions, based on the notion of product-sharing. Alongside its traditional activity of selling products, a company might decide to develop a rental business, or to sell services. By fulfilling customers' needs and by optimizing product use, product service systems globally reduce environmental impacts.
www.uneptie.org/pc/sustain/design/pss.htm

→ Zero emission

The ZERI Foundation (Zero Emission Research Initiative) is a network of academics, businesspeople and educators. Its purpose is to respond to human needs by reusing existing waste without creating any form of new waste -liquid, gaseous or solid. Projects include farming mushrooms on coffee waste or on spent grains from brewing to make animal feed, and converting a cement factory into Europe's largest composting plant.
www.zeri.org/systems.htm



→ Green materials



New materials are appearing that make use of natural renewable resources. Mainly of plant origin, their composition means they are biodegradable and they can be safely incinerated. For example, plastics made from potato, corn, wheat or rye starch - as an alternative to traditional oil by-products - help avoid the depletion of non-renewable resources and stimulate agriculture by offering new outlets. These materials must however undergo a full quantitative analysis (water, energy, component materials, end-of-life collection, etc.) depending on their usage to guarantee they are indeed more beneficial to the environment.



THE DIFFERENT ECO-DESIGN STRATEGIES

- The **product focused approach** aims to render existing goods and services more economical, more efficient and less harmful to the environment, as well as improving after-sales service, and end-of-life collection and processing.
- The **results focused approach** pursues the same objectives from a different angle, for example by selling not the product itself but its use (rental).
- The **needs focused approach** studies the needs and expectations that a product or service must fulfil, then looks for the best way to satisfy them using a product, or a service, or both.

AT UNEP

→ LIFECYCLE AND INTERNATIONAL PARTNERSHIP

UNEP has set up the Life Cycle Initiative to develop and disseminate practical tools for evaluating the opportunities, risks, and trade-offs associated with products and services over their entire lifecycle. The objective is to found a network of companies that will become a platform for sharing experiences and best practices in this area.

www.uneptie.org/sustain/lcinitiative

BEWARE THE REBOUND EFFECT!

Environmental progress can sometimes trigger a "rebound effect" that defeats the initial objectives. For example, the development of greener industrial processes might result in increased consumption of goods or services. Indeed, the lower cost price, made possible by these improved processes, generates additional disposable income that can be spent on more products and services.

PUTTING IDEAS INTO PRACTICE

Individuals

→ CHOOSE CONCENTRATED OR REFILLABLE PRODUCTS, AND PRODUCTS SOLD WITH ECO-REFILLS OR THAT USE THE LEAST AMOUNT OF PACKAGING, MADE FROM RECYCLABLE MATERIALS → AVOID BUYING SINGLE DOSES → PREFER DURABLE TO DISPOSABLE: THINK REUSE, REPAIR, RECYCLE! → ASK MANUFACTURERS HOW MUCH WATER, ENERGY AND PRODUCTS APPLIANCES NEED TO FUNCTION OR BE SERVICED. ASK TOO ABOUT THE ORIGINS, PROPERTIES AND TYPE OF RAW MATERIALS USED. → BEFORE BUYING A PRODUCT OR AN APPLIANCE, CHECK OUT THE POSSIBILITIES FOR SERVICES OR RENTAL

Companies

→ WHEN DEVELOPING PRODUCTS, USE ECO-DESIGN TOOLS AS FAR UPSTREAM AS POSSIBLE BY FACILITATING CONTACT BETWEEN DESIGNERS AND ENGINEERS OR PRODUCTION MANAGERS → PROVIDE A MAXIMUM OF INFORMATION ABOUT THE PRODUCT AND APPLY FOR CERTIFICATION BY INDEPENDENT BODIES → APPLY FOR ISO 14001 CERTIFICATION → OPTIMIZE WATER AND ENERGY COSTS, BUILDING CONSTRUCTION AND WASTE MANAGEMENT → ASK SUPPLIERS ABOUT THEIR MANUFACTURING METHODS, WHERE THEY SOURCE RAW MATERIALS, ETC → PROPOSE A RANGE OF SERVICES IN ADDITION TO SELLING GOODS AND APPLIANCES → BE INSPIRED BY BEST PRACTICES IN THE SECTOR

Local authorities

→ DEVELOP BIOCLIMATIC ARCHITECTURE (SWIMMING POOLS, SCHOOLS, HOUSING, ETC.) → EVALUATE THE COST OF DIFFERENT PROJECTS OVER THEIR ENTIRE LIFECYCLE → PREFER RECYCLED MATERIALS FOR URBAN FURNITURE AND OPTIMIZE STREET LIGHTING → EXTEND WASTE RECYCLING FACILITIES AND ENCOURAGE PEOPLE TO USE THEM → PROVIDE A COLLECTION SERVICE FOR BULKY ITEMS; MAKE IT EASIER TO RECOVER AND RECYCLE OBJECTS → CHOOSE LESS POLLUTING VEHICLES FOR FLEETS

FIND OUT MORE

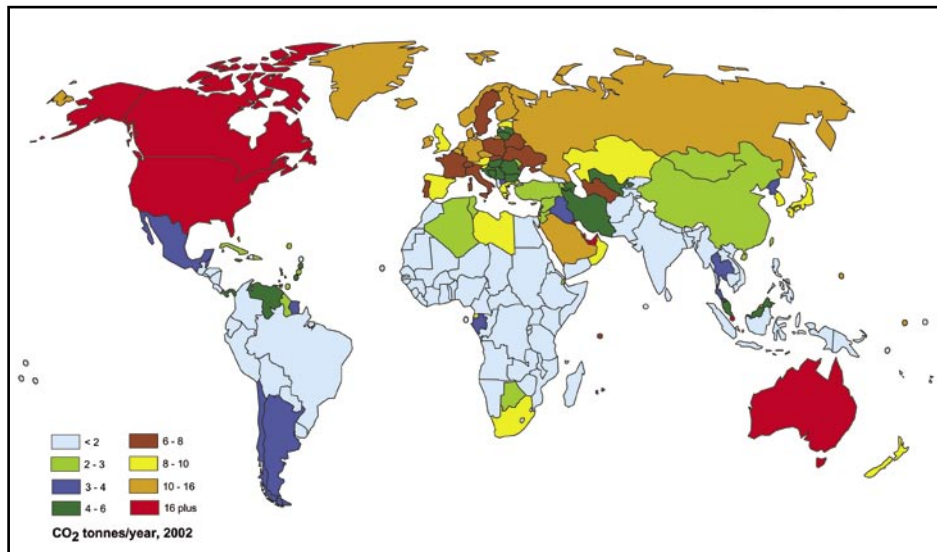
Canada Institute for Scientific and Technical Information, Design for Environment programme: http://dfe-sce.nrc-cnrc.gc.ca/home_e.html
Ecocycle Canada, environmental life-cycle management: www.ec.gc.ca/ecocycle
Information on products and companies: www.responsibleshopper.org
Society of Environmental Toxicology and Chemistry: www.setac.org
Centre for Sustainable Design: www.cfsd.org.uk
TNO, organization for applied scientific research: www.tno.nl/homepage.html
Guide to eco-labels: www.eco-labels.org
Cleaner production gateway: www.cleanerproduction.com
EcoDesign Resource Society: www.vcn.bc.ca/edrs
O2 Sustainable design network: <http://o2-usa.org/bayarea/links3.html>
Approach of Industrial ecology: www.chairemetal.com/cm06/erkman-complet.htm
Institute for Engineering Design-Practice: www.ecodesign.at/information/anwendung/index.en.html
The EcoDesign Foundation, Sydney, Australia: www.edf.edu.au
Container recycling Institute : www.container-recycling.org

ENERGIES

savings for the Earth

It's hard to feed oneself, keep warm, get around, build or produce without energy. A source of innovation and progress, energy is one of the keys to development. Energy consumption, which has increased thirteen-fold in a century, reflects the vitality of a country's economy and is one of the most reliable indicators of growth. In developing countries, where work stops at sunset, health, social and economic development are hard to imagine. This is the reality of life for one in three people around the world, because of the uneven distribution of resources. A quarter of the global population consumes three-quarters of the energy produced. Fossil fuels – coal, oil and gas – still account for almost 80% of the energy used worldwide. These finite resources are also responsible for the latest massive oil spills, problems of deforestation and soil erosion and, more importantly, air pollution. On a global scale, fossil fuels generate almost 60% of carbon dioxide emissions, the most widespread of the greenhouse gases. Scientists and ecologists alike have repeatedly sounded the alarm to alert political and economic decision-makers to the problem of global warming. Their voice was heard for the first time in 1992 at the Earth Summit in Rio, which was formally acknowledged in 1997 by the Kyoto Protocol to reduce greenhouse gas emissions. Since then, multiple initiatives have been taken to develop new and sustainable energies using the sun, wind, water, biomass or gas. The way ahead.

CO₂ EMISSIONS PER CAPITA FROM THE CONSUMPTION OF FOSSIL FUELS AND THE FLARING OF NATURAL GAS



Source: UN DESA/DSD, US Energy Information Administration

Over 40 years, carbon dioxide (CO₂) emissions from the burning of fossil fuels have more than doubled. Developed countries account for the majority of these emissions. Australia and North America are the world's two biggest consumers of fossil fuels. With almost a quarter of carbon dioxide emissions, the United States release the equivalent of total emissions by the 78 poorest countries (including India and China).

→ **1/4**

of energy in the world is used for transport

→ **442**

active nuclear reactors produce 17% of the world's electricity



→ Intensive crop and vegetable production using modern agricultural techniques requires

6 to 10 times more energy than with sustainable farming methods



ENERGY CONSUMPTION

Each individual consumes an average 1.5 oet (oil equivalent tonnes) per year. There are however substantial differences between world regions.

American	8 oet/year
European	4 oet/year
Japanese	3 oet/year
Indian	0.4 oet/year

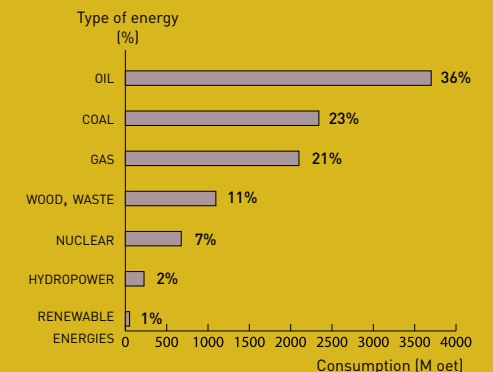


COAL

Coal was a driving force behind the industrial revolution in developed countries. Today it is the energy behind two-fifths of the world's electricity. While coal continues to provide almost a quarter of the planet's energy, in most countries in the North, its use is becoming less widespread. Especially polluting, coal alone is responsible for half the CO₂ emissions of the electricity sector. For an identical amount of energy produced, it generates 70% more carbon dioxide than natural gas.

www.fao.org/docrep/x5328e/x5328e00.htm
www.cordis.lu/ecsc-coal
www.wci-coal.com/web/bl_content.php?menu_id=0.0

WORLD ENERGY SOURCES





↓ Global warming is evident in the polar regions in the form of retreating glaciers and meltdown (reduction of the ice cap). In 2002 an iceberg covering 3,250 sq. km. –one and a half times the size of Luxembourg- detached itself from the Antarctic peninsula.



→ **50 %**
the increase in greenhouse gas emissions over a century



↓ Illegal degassing and deballasting operations at sea are the main causes of hydrocarbon marine pollution. The damage they provoke represents several dozen oil slicks per year. Shipwrecked oil tankers are, to a lesser extent, also to blame for the world's polluted waters. The Atlantic Empress set a sorry record when in 1979 she spilled some 280,000 tonnes of crude oil off the Brazilian coastline. More recently, the Erika and the Prestige respectively leaked 20,000 and 30,000 tonnes of oil off the French and Spanish coasts.

AIR-CONDITIONING, WHICH CONSUMES LARGE AMOUNTS OF ENERGY, COOLS INTERIORS BUT WARMS THE ATMOSPHERE AND CONTRIBUTES TO INCREASED LEVELS OF GREENHOUSE GASES.



DIMINISHING RESERVES

Since the two oil crises of 1973 and 1979, governments have woken up to the need to diversify sources of energy. Non-renewable sources (oil, gas, coal and uranium) currently account for virtually 90% of energy consumption. Based on current rates of use and known reserves, the International Energy Agency (IEA) forecasts that the world's oil supply will have completely run out in 40 years, natural gas in 60 years, and coal in 200 years.

www.iea.org

ACCORDING TO THE WORLD ENERGY COUNCIL, ENERGY CONSUMPTION MUST MORE THAN DOUBLE BY 2050 TO KEEP PACE WITH THE EXPANDING NEEDS OF THE WORLD'S POPULATION. OVER THE SAME PERIOD, OIL RESERVES WILL HAVE BEEN VIRTUALLY DEPLETED.



IMPACTS

Greenhouse gases and climate change

Human activities have largely contributed to the increase in greenhouse gases (GHG). At a stable concentration, these gases sustain life by regulating the temperature on Earth. Today though, we produce twice as much carbon as the biosphere can recycle. Road transport ranks as one of the most energy-hungry sectors. It burns fossil fuels that release 6 billion tonnes of carbon dioxide (CO₂) into the atmosphere each year. As a result, the temperature on Earth is rising. An unprecedented phenomenon, the temperature of the Earth's surface, which had not varied by more than 4°C in 400,000 years, climbed 0.6°C by 2100. According to the Intergovernmental Panel on Climate Change (IPCC), it could increase by a further 1.4 to 5.6°C by 2100. All over the world, the climate is disrupted, the seasons are out of synch, and natural balance is under threat. Deserts are advancing, glaciers are shrinking, and sea level is rising. The cycles and territories of plants and animals have been altered. Meanwhile the intensity and frequency of extreme weather phenomena –storms, flooding, drought– are increasing.

www.greenfacts.org/studies/climate_change/index.htm

www.eia.doe.gov/oiaf/1605/ggcebro/chapter1.html

www.icbe.com/emissions/calculate.asp

www.ec.gc.ca/climate/overview-e.html

CARBON DIOXIDE EMISSIONS FROM FOSSIL FUELS HAVE MORE THAN DOUBLED SINCE 1965.

Air pollution

Because they have no access to modern energy, developing regions often make use of local sources. Wood, coal and dung are used to warm houses and for cooking. Collecting these resources is time-consuming, fastidious and destructive, while burning them is especially dangerous and polluting. The toxic fumes released by combinations of biomass, coal

and plastic waste kill over 2 million people each year.

www.who.int/docstore/peh/Vegetation_fires/vegetation_fires.htm

Acid rain

Several tonnes of polluting substances are released into the atmosphere each day. Vehicle exhaust fumes and industry are among the two biggest sources. This chemical cocktail which contains harmful substances –nitrogen oxide (NO_x) and sulphur dioxide (SO₂)– is carried thousands of kilometres by clouds before returning to the four corners of the globe as acid rain. This caused severe damage to European forests in the nineteen-eighties. Despite current attempts to eradicate this phenomenon, in Poland 3 out of 5 trees are believed to have been damaged by the combined impact of acid rain and drought.

www.ec.gc.ca/acidrain

www.policyalmanac.org/environment/archive/acid_rain.shtml

Disrupted landscapes and ecosystems

Dams supply low-cost hydroelectric power. They account for 19% of total world electricity production, and provide vast expanses of water for farmland irrigation. However, such infrastructures can substantially modify the landscape, displacing thousands of people, damaging forests and natural habitats, and impacting the diversity of aquatic species. Insurmountable obstacles for aquatic animals, dams also interfere with fish migration during reproduction, and diminish fishing opportunities downstream. Over recent years, elevator-type devices have been installed at dams to enable fish to freely ascend and descend the waters and reproduce. The Three Gorges dam in China –the biggest in the world– is expected to swallow up 13 towns and 116 rural hamlets and displace 724,000 inhabitants, most of them to new towns.

www.dams.org



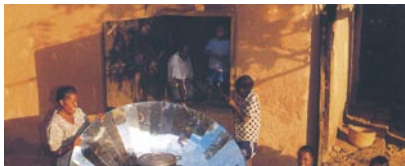
↓ Insignificant in size, batteries contain highly toxic heavy metals that infiltrate the food chain and pollute land and water for decades. Manufacturing and recycling batteries necessitates far more energy than they produce when being used.

ON THE RIGHT TRACK

→ Finance for renewable energy projects

Only renewable sources –solar power, water, wind, biomass and geothermal– can meet the energy needs of the world's population without jeopardizing its natural resources. With backing from the United Nations Development Programme (UNDP), UNEP, and the World Bank, the Global Environment Facility (GEF) supports and funds projects related to these non-polluting energies. In India, the GEF helped finance the production of 41 Mega Watts from wind turbines and 45 MW from small hydroelectric plants. In China, Peru and Ghana, it has contributed to the widespread deployment of solar energy. With each project, the GEF works alongside energy suppliers to help them, through a compensation scheme, make the transition from conventional to renewable energies.

www.gefweb.org
www.agores.org
http://europa.eu.int/comm/energy/res/index_en.htm
www.green-e.org



→ Active citizens

The vast majority of investment in renewable energies comes from commercial concerns. In Northern Europe, however, some projects are financed by groups of citizens, with Denmark and Germany leading the field for this type of initiative. In 2002 in Denmark, 15% of wind energy consumption was fulfilled by local schemes. Meanwhile, some 340,000 German citizens have put around €12 billion into alternative projects. These include a biomass energy investment fund. Entirely devoted to the production of biogas, this fund provides opportunities to make ecological investments.

www.cler.org/predac/wp1
www.renewables2004.de/pdf/tbp/TBP05-financing.pdf



→ Low energy lighting

Low energy light bulbs, also known as energy-saving bulbs, cost a little more



→ Discreetly blending in with roof tiles, solar panels offer numerous advantages. www.ata.org.au/basics/bassolar.htm

→ New fuels

An additional 11,000 cars take to China's roads each day. Worldwide, almost 41 million vehicles rolled off the production lines in 2003: five times more than in 1950. Diesel, petrol and super are still the most widely-used fuels and are largely responsible for atmospheric pollution. Alternatives to traditional energy sources are however being developed around the globe. Biofuels, made from esters, ethanol or plant oils (rapeseed, sunflower, copra, palm, soya, peanut) are finding their first real applications, primarily in the public sector. Furthermore, European automakers have pledged to reduce average CO₂ emissions for new cars to 140 g/km by 2007 (which is 30 g less than today).

www.nps.gov/renew/transportation.htm



CHANNEL LIGHT

Channelling light from its natural source to then diffuse it inside an old or new building is a simple way to save energy. The system, which comprises a dome on the roof of the building and an "optical funnel" made up of micro-prisms, concentrates light irrespective of the angle of the ray. This light is then channelled along an aluminium-lined pipe, up to 20 m in length. Up to 80% of this light is released via an optical diffuser into any room and at any time of day or night.

www.solarspot.it



PUTTING IDEAS INTO PRACTICE

Industry is not the only polluter. Transport, homes and offices create their share of greenhouse gases too. Air-conditioning, excessive heating and energy-hungry appliances are the main culprits.

Individuals

→ INSULATE BUILDINGS (SEE "HOUSING") → INSTALL EFFICIENT AND APPROPRIATE THERMOSTATS → AVOID SYSTEMATICALLY SWITCHING ON THE AIR-CONDITIONING → WHENEVER POSSIBLE, USE RENEWABLE ENERGIES → SWITCH OFF LIGHTS THAT AREN'T NEEDED → REPLACE FILAMENT AND HALOGEN BULBS WITH ENERGY-SAVING ONES IN THE MAIN ROOMS OF THE HOUSE → DON'T LEAVE APPLIANCES ON STANDBY → FIT CERTAIN APPLIANCES WITH A TIMER → ADAPT LAMPS' WATTAGE TO ACTUAL NEEDS → USE ALTERNATIVE TRANSPORT (SEE "MOBILITY") → CHOOSE ENERGY-SAVING APPLIANCES, KEEP THEM IN GOOD WORKING ORDER AND USE THEM WISELY

Companies

→ OPTIMIZE HEATING AND LIGHTING IN OFFICES → PREFER NATURAL LIGHT, ENERGY-SAVING BULBS AND AUTOMATIC LIGHT SWITCHES → ENCOURAGE STAFF TO FIND WAYS TO REDUCE ENERGY COSTS → SET UP A COMPANY TRANSPORT PLAN FOR STAFF (SEE "MOBILITY")

Local authorities

→ ENCOURAGE BIOCLIMATIC ARCHITECTURE: INSULATION, ENERGY MANAGEMENT (SEE "HOUSING") → OPTIMIZE STREET LIGHTING → OPTIMIZE VEHICLE FLEETS → PROPOSE COLLECTIVE HEATING USING RENEWABLE ENERGIES → GIVE GRANTS TO INDIVIDUAL AND GROUP PROJECTS THAT PROMOTE RENEWABLE ENERGIES → RECYCLE WASTE TO PRODUCE ENERGY

ESTABLISHED IN 1988 BY THE WORLD METEOROLOGICAL ORGANIZATION AND UNEP, THE INTERGOVERNMENTAL CLIMATE CHANGE (IPCC) IS ASSESSING SCIENTIFIC, AND SOCIO-ECONOMIC RELEVANT TO THE RISKS OF CLIMATE CHANGE CAUSED BY HUMAN ACTIVITIES.
WWW.IPCC.CH

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_11521

