GREENPEACE

HOW TO SAVE THE CLIMATE

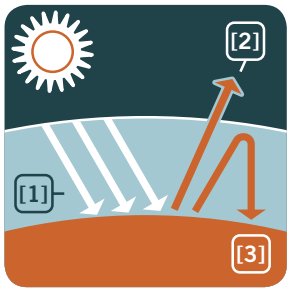
Join the Energy [R]evolution

WE CAN STOP GLOBAL WARMING

Average global temperature has risen by **0.8 degrees Celsius** since the start of the industrial revolution. That may not sound like much, but the consequences are enormous. The polar icecaps are shrinking year by year. Extreme weather situations and cyclones are on the increase. Climate change is already damaging ecosystems and endangering the livelihood of millions of people, and that's only the beginning.

This problem is unlike anything seen in the past. It affects the whole planet and **threatens every person living in every country on every continent.** However, we can do something about it. It's not a threat coming from outer space. It is people, us, who are causing climate change by polluting the atmosphere with too much carbon dioxide (CO_2) and other greenhouse gases.

This is where we are in luck. If we started it ourselves, we can stop it ourselves, too. The necessary technologies already exist.



Our greenhouse planet

[01] The sun's rays warm the Earth's surface.
[02] The Earth reflects this energy in the form of heat, some of which escapes into space.
[03] Greenhouse gases retain the rest in the atmosphere. But people are upsetting this natural balance.

01

Dear Reader, you and I – and all of us together have it in our power to stop climate change. How? Read this booklet and follow its advice.

We can – and must – cut CO_2 emissions by 50 percent by the year 2050. The industrial countries will have to cut theirs by as much as 80 percent. If we do this, we can keep the rise in global temperature **below the 2 degrees Celsius mark.** Scientists agree that this is essential if we are to prevent the climate from getting completely out of control.

Renewable forms of energy – solar power, wind, water, geo-heat and biomass – can supply half the world's energy requirements by the middle of this century. But only if we stop wasting energy and **take action to use it more efficiently.** The Greenpeace study **Energy [R]evolution** shows that this is possible without endangering the global economy and still giving poorer countries the opportunity to develop (see back cover).

The truth is that we need nothing less than an **Energy [R]evolution** to attain this objective. This means fundamental changes in the way we generate energy, in the way we live and travel and in our behaviour in general. We in the industrial countries must lead the way. Developing countries can avoid making the same mistakes we have made.

Climate change is a global threat requiring global action. This brochure is being published in many countries around the world. It explains what we can all do to protect the climate. We have no time to lose. **Let's start living our lives in a more climate-friendly way – now!**

Content

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CO_2 & CO.

The so-called greenhouse effect is an accumulation of warmth in the atmosphere. Without it, our planet would not be habitable. If some of the warmth reflected from the earth was not 'captured' by natural greenhouse gases, our planet's surface would be 33 degrees Celsius colder. The problem is that we are now releasing more and more greenhouse gases into the atmosphere and this is seriously upsetting the delicate natural balance. Where do these gases come from?

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[01] **Mineral oil** is the leading source of energy but also one of the main sources of CO_2. It accounts for 40 percent of emissions from fossil fuels. Oil products are the fuels used in nearly all motor vehicles and aircraft and in many heating systems and power stations.

[02] **Coal** is already as big a culprit as oil and could soon become the number one climate-killer. Coal combustion belches out very large amounts of CO_2. Lignite is even dirtier than coal. Although reserves of coal and lignite are expected to last several hundred years, their uncontrolled use would be a major catastrophe for the world's climate.

[03] **Natural gas** is regarded as the 'cleanest' form of fossil fuel and it can be used efficiently for combined heat and power generation. But it still emits half as much CO_2 as lignite for every kilowatt-hour generated.

01

The CO_2 content of the atmosphere has already risen by more than a third since the start of the industrial revolution. If we are to keep global warming below 2 degrees Celsius, we must start reducing CO_2 emissions without further delay.

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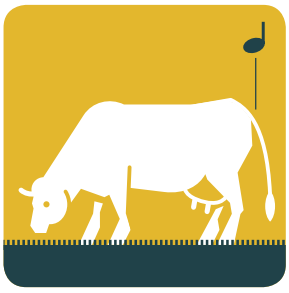

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[04] **Destruction of rainforests** is responsible for about one fifth of total CO_2 emissions. Forest clearance is terribly dangerous because it can cause the collapse of entire regional climatic systems as, for example, in the Amazon.

[05] **Methane, nitrous oxide and industrial gases** are also important greenhouse gases. The main sources of methane are animal husbandry, agriculture and forest destruction, but enormous quantities could also be released by the melting of permafrost. Agriculture is also the main source of nitrous oxide. Industrial gases used in refrigeration, air conditioning and some chemical processes also pollute the atmosphere.

A CLIMATE-FRIENDLY WORLD

The consequences of global warming are a threat to us all, but they will be even more serious in the poorest countries. They can't afford expensive programmes to adjust to the change. They themselves emit hardly any greenhouse gases. This is why it is up to the rich countries to take action – by using their technological lead and financial resources to curb their own emissions and help the poorer ones to achieve economic growth without destroying the climate. The objective is called 'climate equity'. If we are to attain that 2-degree goal, every living person on this planet will have to reduce his personal output of CO_2 to 1.3 tons per annum by the year 2050. **By way of comparison:**

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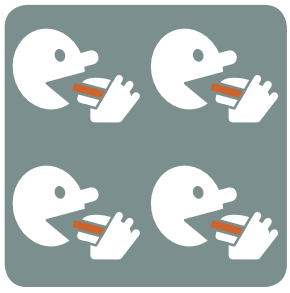

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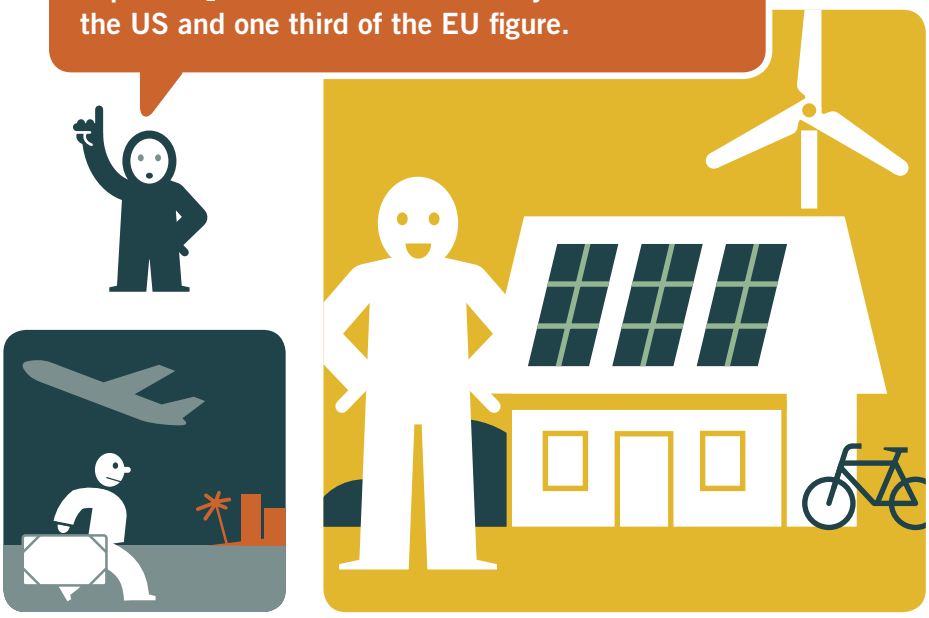
[01] **A heavy off-road vehicle or a large limousine** emits 1.3 tons of CO_2 to travel less than 3000 kilometers (or 2000 miles). A lean consumption vehicle will go over 18,000 kilometers.

[02] **A family in Bangladesh** emits the same amount of CO_2 over a whole year – but for everything it does. The present per capita emissions there are 0.3 tons per annum.

[03] **In contrast, four average consumers in the industrial countries** pollute the atmosphere to a similar extent merely as a result of their meat consumption. Every kilo of meat produced causes the release of greenhouse gases (inc. methane and nitrous oxide) with an effect equivalent to between three and four kilos of CO_2.

01

Emissions of greenhouse gases are very unevenly distributed. The USA emit 5.9 billion tons of CO_2 annually – that is 20 tons per person and ten times more than the whole of sub-Saharan Africa, where twice as many people live but emit only 0.9 tons per capita. China will soon overtake the USA as the biggest emitter. But the average per capita CO_2 emission in China is only one sixth of the US and one third of the EU figure.



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[04] **A flight to and from a holiday destination** 2500 kilometers (1500 miles) away causes the release of greenhouse gases with an effect equivalent to 1.3 tons of CO_2 for every passenger on board. So a journey like this uses up the whole of your annual personal carbon budget.

[05] **We still have some time** to get down to our 1.3-ton target. But it is essential to make a start on climate protection now. The calculation will only work if CO_2 emissions drop quickly and steadily – starting today!

WHAT WILL HAPPEN IF WE FAIL TO TAKE ACTION

First, the good news: We can do something about global warming. If we all act together – Governments, industry, people everywhere in the world – it will be possible to keep the temperature increase down to 2 degrees Celsius.
The bad news is that, if we keep on doing the same as in the past, the average global temperature will rise by as much as 5 degrees Celsius during the course of this century.

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[01] **Flooding** will increase dramatically as violent storms and heavy rainfall will become more frequent.

[02] **The world's glaciers are already melting** at a frightening rate, and this is set to increase. This means that the rivers will dry up in many parts of the world and this will seriously endanger water supplies.

[03] **The rise in sea levels** is a threat not only to island states and low-lying countries like Bangladesh. Sea levels could rise by several metres, endangering cities like London, Shanghai, New York, Tokyo and Hong Kong.

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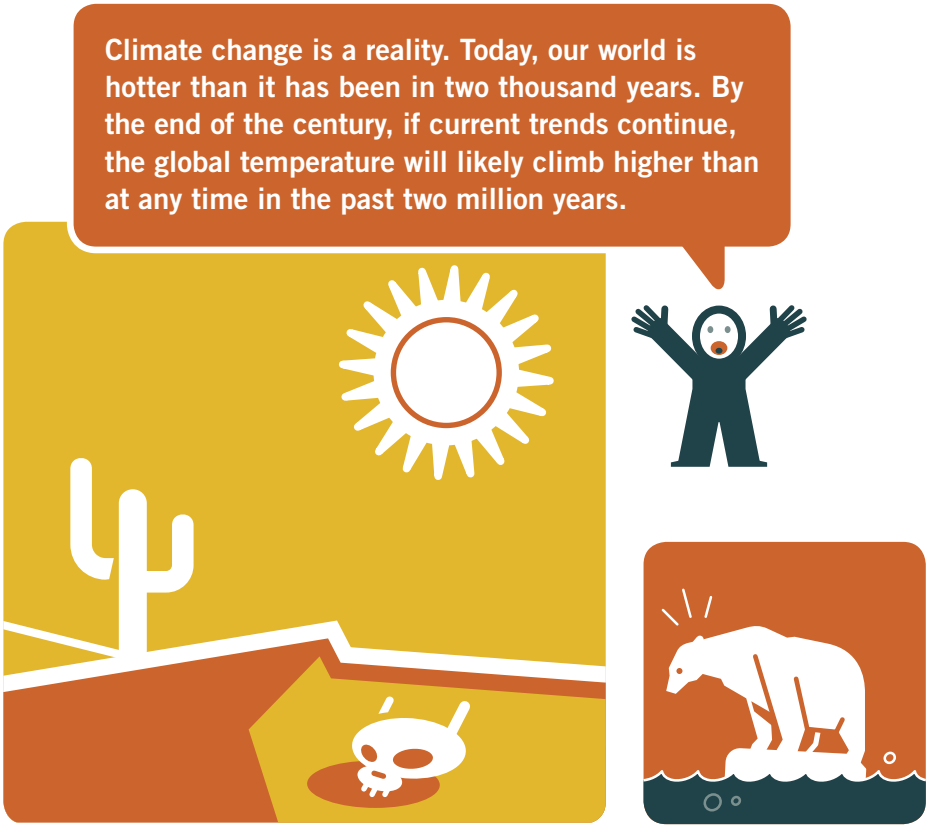

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[04] **Droughts** are already becoming more frequent, for example in Africa, Asia and the Mediterranean region. Millions of people are increasingly threatened by famine, especially in the poorer countries, and this is expected to get much worse in the coming decades. Rich countries like Australia will also pay a high price for their irresponsible climate policy – in fact, they are doing so already.

[05] **The extinction of species** will speed up, as animals, plants and ecosystems find themselves unable to adapt to rapid climatic changes. This danger is particularly serious for fauna and flora in coral reefs, forests, savannah, the polar regions and mountain ranges. Scientists fear that one third of all existing species could have died out by 2050.

GET ACTIVE

Scientists and engineers agree that we already have the technology to make industry compatible with the climate. It will only cost the equivalent of one percent of the world's total economic output, whereas doing nothing will be twenty times more expensive. Climate researchers also warn that time is running out. We will have to act quickly to change thinking in politics and industry – and in the public awareness of the problem. **The next ten years are crucial.**

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[01] **Get better informed!** Scientists have discovered that awareness of climate change and its consequences tends to increase peoples willingness to do something about it.

[02] **Start with yourself!** Check your own home and your own habits and make a start with a few simple corrections. Then gradually progress to the more difficult ones. This brochure will help to show you the way.

[03] **Try to persuade other people to do the same.** We can beat climate change together so start with family and friends, then move on to colleagues at work, your boss, fellow-pupils at school, landlords and so on ...

01

"In the case of climate change, individual preferences play a very important role. High-level international agreements alone are not going to stop dangerous climate change; it will need behavioural changes by individuals and communities, especially with regard to their housing, transport and food consumption preferences." *Stern-Report*

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[04] **Protest!** Get committed to protecting the climate by joining an initiative or a political party featuring this in its programme. Or organise a demonstration!!

[05] **This is how we can do it!** By saving energy and using it more efficiently and by giving preference to renewable forms of energy. Climate-friendly industry and a climate-friendly lifestyle are realistic goals. We can and must protect our planet against climate change. It's the only one we've got!

SAVE ENERGY – IN YOUR HOME

First, chase the **'power thieves'** out of your house! A lot of household appliances consume much more energy than necessary – even when they are switched off. You can change all that with a combination of wise purchase decisions and a few simple tricks – and both your household accounts and your climate account will look a lot healthier.

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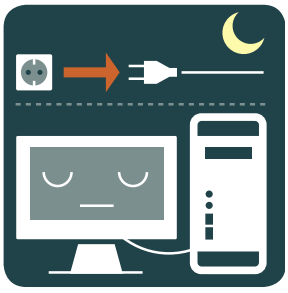

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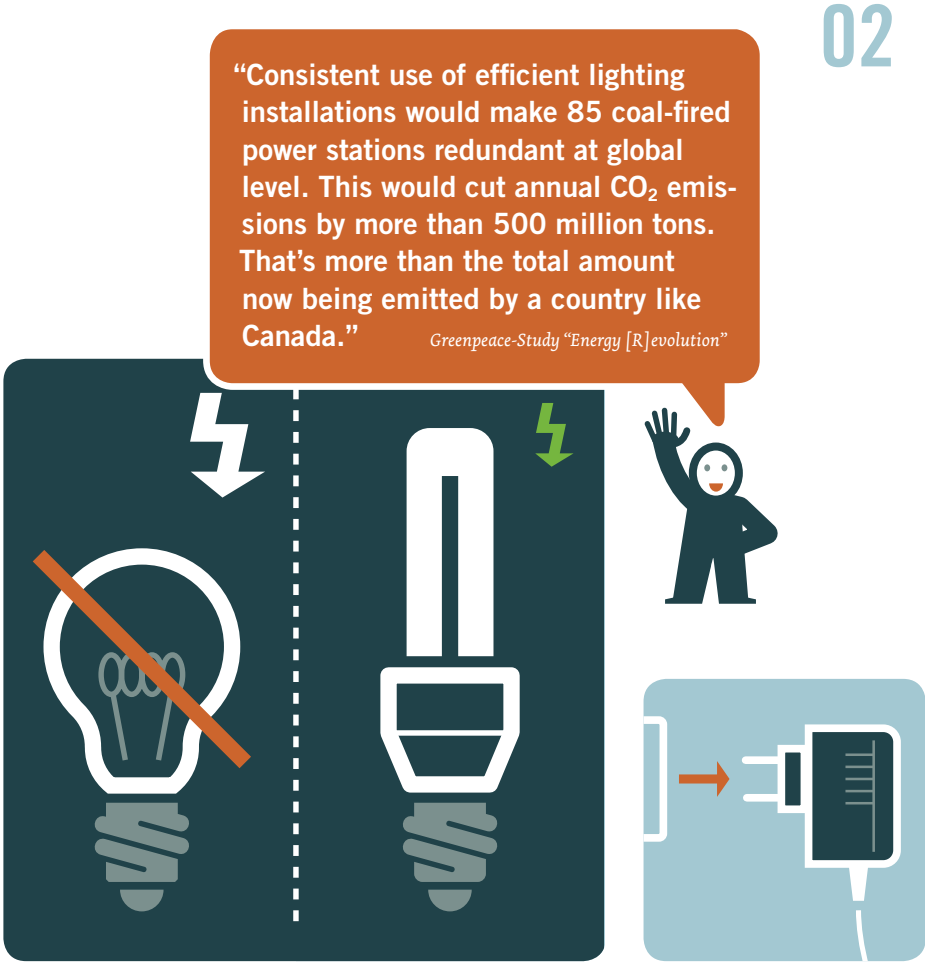
[01] **Buy the most energy-efficient products.** Look for the ones with the energy-saving labels – and check what they actually mean! New appliances should either have an 'Off' switch that cuts them off from the power source completely, or consume not more than 1 watt in standby mode.

[02] **Do your PC a favour and let it get some sleep.** Switch to 'Idle' as soon as you stop working with it. It has a very low power consumption in that state. Unplug it from the power source when you switch it off. By the way: flat screens and notebooks are very energy-efficient.

[03] **Put a stop to standby losses!** Hi-fis, TV sets, video recorders, PCs and all the accessories that come with them still keep on consuming electricity – even when in standby mode. The cost to an average household can be anything up to $100 per year. So: either pull out the plugs or use a multi-socket power strip with its own power cut-out.



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[04] **Use energy-saving CFLs.** They cut power consumption by as much as 80 percent. (Warning: CFLs contain mercury and should not be disposed of in normal domestic waste.) In all other cases: Lights out in rooms that are not being used!

[05] **Don't leave chargers and transformers plugged in.** They keep on consuming electricity even when they are not being used. In many cases, but not always, you can tell this by feeling how warm they are. So unplug the chargers for your mobile phones, MP3 players and digital cameras, and the transformers for your halogen lamps and household appliances.

Read more about the Greenpeace Energy Efficiency campaign and related cyberactions: www.greenpeace.org

SAVE ENERGY – IN YOUR KITCHEN

Home cooking is best – and that goes for the environment as well. It has a much better carbon account than fast food and deep-frozen, ready-to-eat meals. Even so, a lot of cooks could cut their energy consumption significantly, and save money at the same time.

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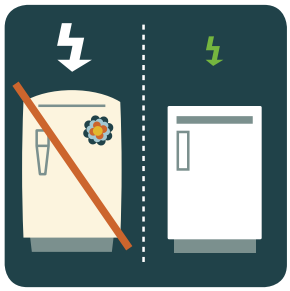

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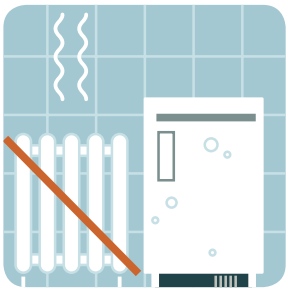
[01] **Be energy-aware!** Leave the lid on the pot. Use less water when cooking eggs and vegetables. Use a pressure cooker. No need to preheat the oven, just remember to ensure that your food is heated to 70º for at least two minutes. If you have an electric stove, switch off the hotplates and the oven sooner and let the food finish cooking free of charge. Do you have any other ideas?

[02] **Get rid of your energy-guzzlers** – Once your appliance has reached the end of its life, check power consumption of any new appliances before you buy them. Old fridges are very inefficient and they stay on around the clock. Buy only the most energy-efficient appliances (in Europe: Category A+ or A++).

02

A typical fridge manufactured in 1993 consumes twice as much electricity as a top-quality, modern one. This will bring big savings on your electricity bill – and reduce annual emissions of CO_2 by 100 kilos.



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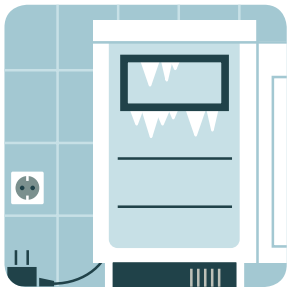

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[03] **Stand your fridge in a cool place** – never near the heating or the stove or in the sun. If possible, in an unheated pantry. Make sure its seals are intact, keep its louvres open and its ventilation grilles free of dust.

[04] **Defrost regularly.** Fridges and freezers consume more power when they ice up. So defrost them from time to time – for example, when you go on holiday. (But don't forget to clean them well, otherwise they can get mouldy.)

[05] **Never heat water on a hotplate.** Electric kettles are more efficient, but heating water on a gas ring is even more efficient. Don't forget: heating water consumes a lot of energy – so never heat more than you need.

SAVE ENERGY – IN YOUR BATHROOM

One calorie raises the temperature of one gram of water by one degree – that's what we were taught at school. Water heating accounts, after space heating, for the largest slice of the energy used in the home. The important thing is how to heat water and use it efficiently. The sun provides water-heating and laundry-drying service free!

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[01] **Take a quick shower** instead of a bath. Turn the water off whilst you are soaping yourself. Choose a short song to sing or whistle. When it's finished, so is the shower. Install a water-saving shower head. It halves water and energy consumption.

[02] **Install solar collectors.** In a temperate climate an area of just 1.5 to 2 square metres per person is enough to heat 60 percent of the water needed for showering and washing. That figure can rise to 100 percent in sunny regions. They have proved their worth a million times over – ask your heating specialist for details.

[03] **Save on the laundry.** Wash at low temperatures and forget the pre-wash. Normal laundry will come out perfectly clean and your power consumption will be cut by up to 80 percent. Always wash with a full drum. If you can – connect your machine to the hot water supply.

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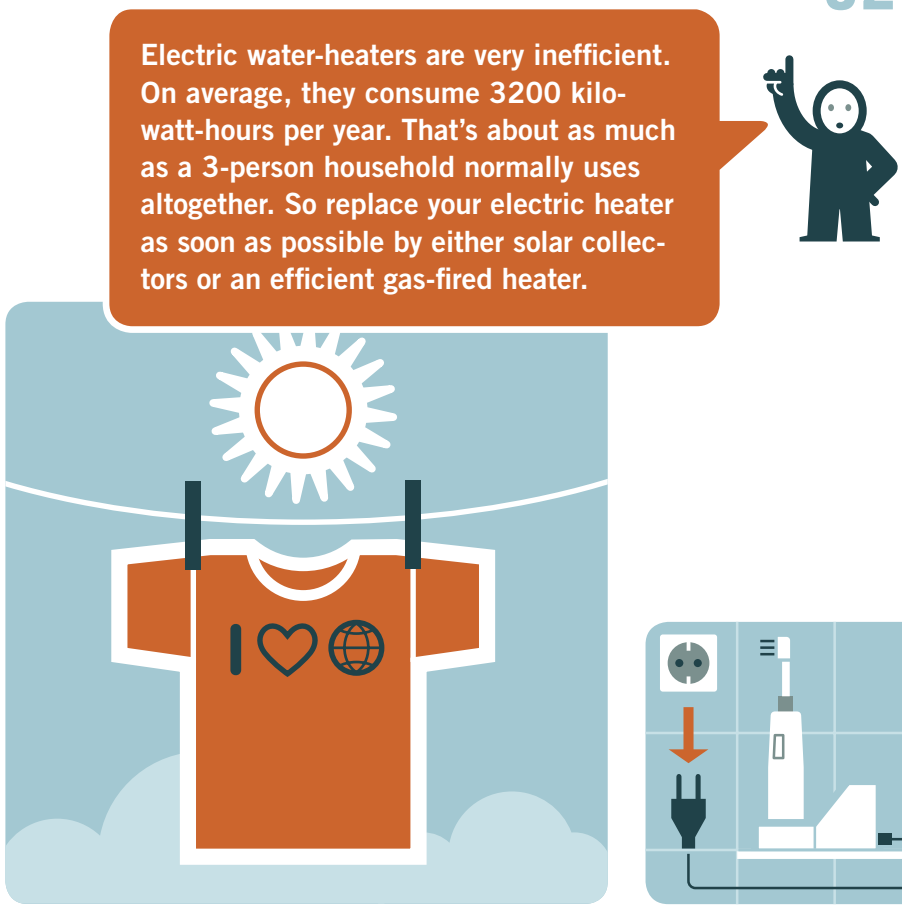

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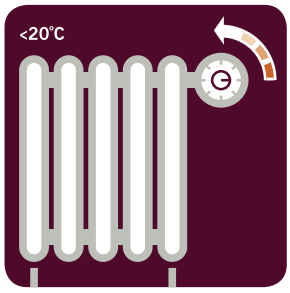
[04] **Hang up your washing to dry.** Tumbler driers are energy-guzzlers. A four-person household that throws out its tumbler drier will save 480 kilowatt-hours – and 300 kilos of CO_2 – annually.

[05] **Don't use battery-driven appliances,** (e.g. shavers, toothbrushes) because they consume more power than mains-powered appliances. If you can only get a battery-driven appliance, at least make sure that you charge it properly. Pull out the plug as soon as the battery is recharged, use it until empty from time to time, and dispose of it correctly when it is no longer usable.

GET SMART ABOUT HEATING

Everyone should have a warm home in the winter. But the important thing is to warm your home – not the surrounding atmosphere. Inefficient heating is still the biggest debit item on many people's climate account. The potential for energy-saving here is enormous. A few simple tricks and some prudent investments can produce drastic cuts in your heating bills.



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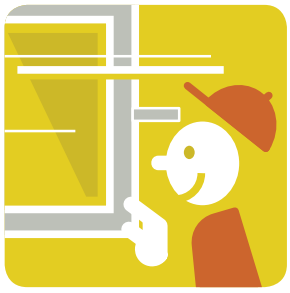

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[01] **Don't heat any more than necessary.** 18-20 degrees Celsius is normally enough for a healthy environment in living rooms – and temperature can be significantly lower in bedrooms, hallways and rooms not regularly used. So keep doors closed. Never leave the heating turned up when you are not at home. Install programmable thermostats that regulate room temperature automatically, for example, higher during the day and lower at night.

[02] **Install insulated glazing** – or persuade your landlord to do so. Old windows can be a major source of heat loss, not only through the glass, but also through frames and inefficient seals.

[03] **Air the rooms quickly!** The best way to get fresh air into a room is to turn off the heating, open the windows wide and let it flow in for a brief period. This is quick and lets the walls stay warm. Never keep the heating on when a window is open – even a crack.

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[04] **Make yourself really comfortable!** Good heat insulation on external walls, in attics and on cellar ceilings can slash heating bills by more than half. Ask about financial subsidies for this type of investment.

[05] **Have your heating system checked.** New systems are much more efficient. Investment in a new one can often give you a pay-back after only a few years. Remember that every heating system needs proper and regular maintenance.
Warning: Electrical heating systems (inc. night storage systems) are inefficient energy-guzzlers and must be replaced.

GOOD HEATING SYSTEMS

Modern houses can more or less heat themselves. The best are so well insulated that sunlight, plus body warmth of the occupants, can produce an agreeable room temperature. If it gets really cold, alternative heating systems can help out.
CO_2 emission: zero. Investment in efficient systems pays off – even in older houses.

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[01] **Sunlight and bodyheat** are all you need for most of your heating needs if you have a passive house. These are very well insulated and have most of their windows facing south.

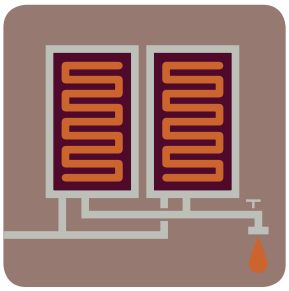
[02] **Wood- fired systems** are not the same as camp fires. Modern units burn wood pellets or chips. They are fully automatic and can heat the water for the whole house. The CO_2 account is neutral if the wood comes from sustainable forests.

[03] **Solar collectors** can provide more than water for washing. Solar heating installations in well-insulated houses can provide all the heat required in spring and autumn and support the conventional heating system in winter.

03

"Insulation and efficient ventilation can cut heating requirements by 90 per-cent. Several thousand of these energy-efficient houses have been built in Europe over the last ten years. They are here and now, and not just castles in the sky."

Greenpeace-Study "Energy [R]evolution"



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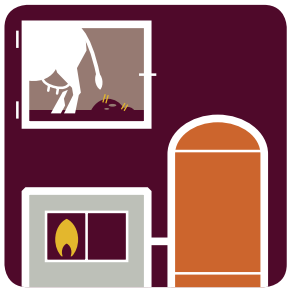

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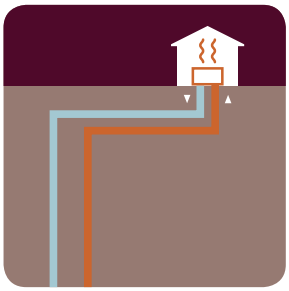

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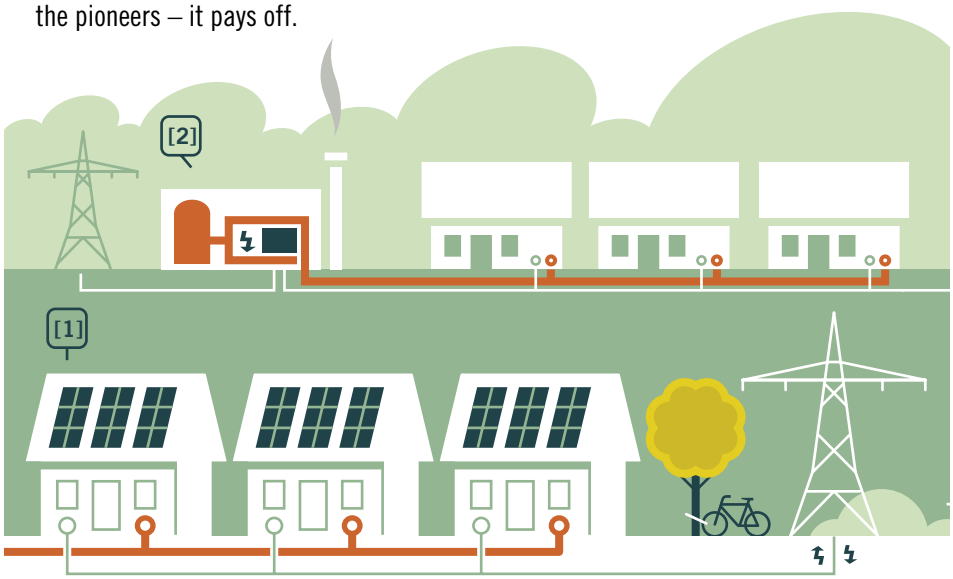
[04] **Biogas** is not just for use in special units. It can also be fed into the gas network. When burned in small combined heat and power (CHP) plants, it supplies both power and heat.

[05] **Geo-heat** can supply energy for heating in various ways. Several hundred thousand houses already have shallow underground geo-heat loops or collectors. The heat pumps used to process the geo-heat should be driven by eco-power only. Geothermal power stations produce both electricity and piped heat.

THE SUBURB OF THE FUTURE

Solar collectors, small CHP-plants (combined heat and power), wind turbines – decentralised energy generation are the magic words for a climate-friendly future. Because it is much more efficient to generate energy at the place where it is consumed. The big energy utilities are still fighting this competition to their environment-polluting mega-power stations, so it is up to the politicians and consumers to ensure the 'creative destruction' of these obsolete structures. House-owners can be the pioneers – it pays off.



[01] **Solar cells** will decorate the roofs of nearly all the houses. They will harness some of the energy available from solar radiation – between 1000 and 2500 kilowatt-hours per year on every square metre of surface. Each house will either feed power into or draw it from the network, according to the hours of sunshine and the house's individual needs. Photovoltaics, aided by subsidies and regulations requiring electricity networks to accept input of photovoltaic power, are already a booming business in Japan, Germany and California.

[02] **Small CHP plants** supply individual houses or whole estates with power and heat. They are fuelled by natural gas, biogas or vegetable oil produced by environmentally compatible methods.

04

Solar collectors producing hot water competitively already exist. Electricity from photovoltaic installations will probably be competitive without state subsidies in ten years' time. By the year 2050 the sun will be supplying one tenth of the global energy requirements.

[03] **Solar collectors** produce hot water and supply energy for heating.

[04] **Passive houses** are built facing the sun and make direct use of solar radiation.

[05] **Geothermal power stations** generate power and heat. Although the technology for tapping geo-heat from deeper sources is still in its early stages, there is enormous potential here. Experts expect it to play a key role as a renewable energy source because, unlike wind and sunlight, it will deliver a steady flow of energy.

CITIES OF THE FUTURE

The city centres of tomorrow's networked world will produce power and heat as well as consume it. The roofs and façades of public buildings are ideal for harvesting solar energy. 'Low energy' will become the standard for all buildings. Governments committed to tight climate-protection targets will have to impose strict conditions and offer incentives for renovating these buildings. This will help to create jobs.

[01] **Solar façades** will be a decorative element on office and apartment buildings. Photovoltaic systems will become more competitive and improved design will enable architects to use them more widely.

[02] **Renovation can cut energy consumption of old buildings** by half or even as much as 80 percent – with improved heat insulation, insulated windows and modern ventilation systems.

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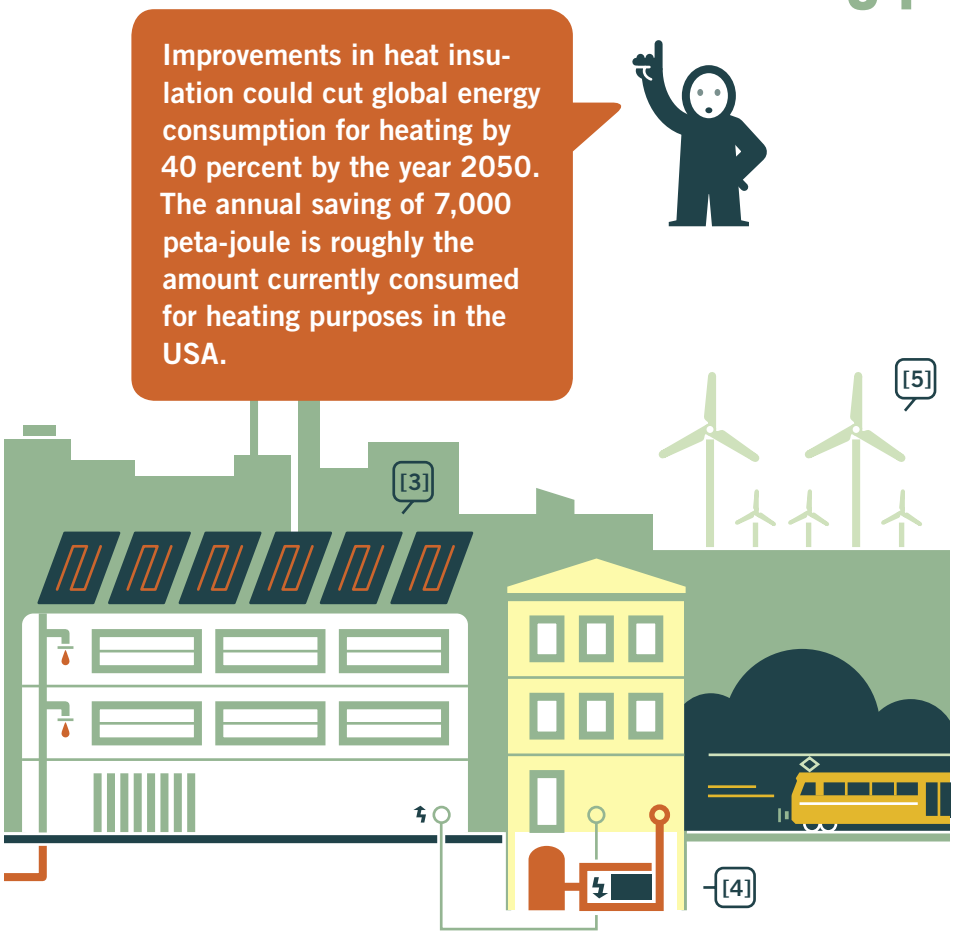


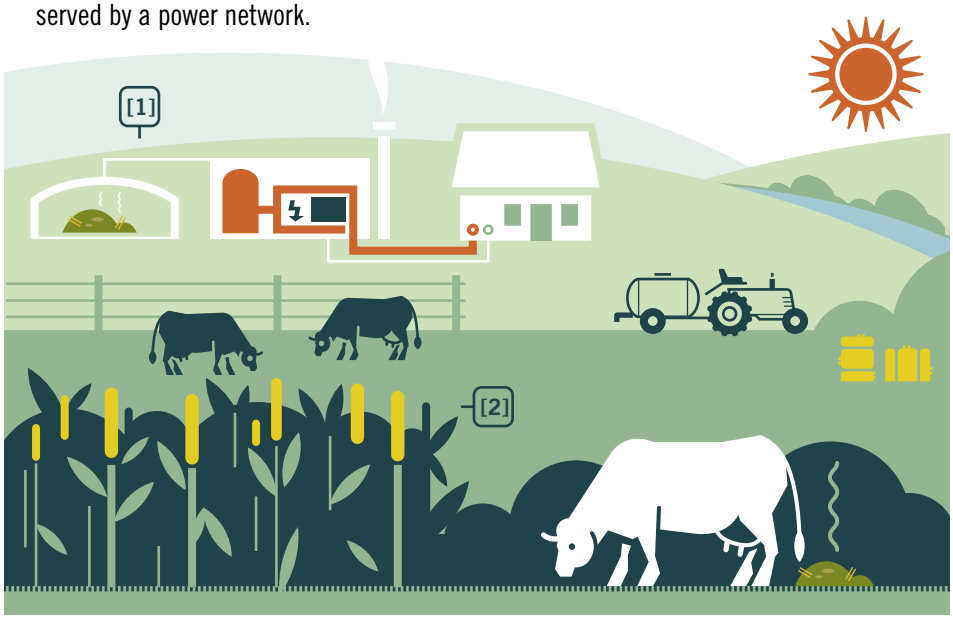
[03] **Solar collectors** produce hot water for both their own and neighbouring buildings.

[04] **Efficient CHP plants** will come in a variety of sizes – fitting the cellar of a detached house or supplying whole building complexes or apartment blocks with power and warmth without losses in transmission.

[05] **Clean electricity** for the cities will also come from farther afield. Offshore wind farms and solar power stations in deserts have enormous potential.

THE VILLAGE OF THE FUTURE

The Energy [R]evolution is changing rural life. Many farmers are already producing biogas and fuels in addition to foodstuffs. This trend will accelerate, because rural areas are a rich source of climate-friendly energy (and income), that is just waiting to be tapped. Decentralised solar installations and small power stations offer great opportunities for rural regions in developing countries that are not yet served by a power network.

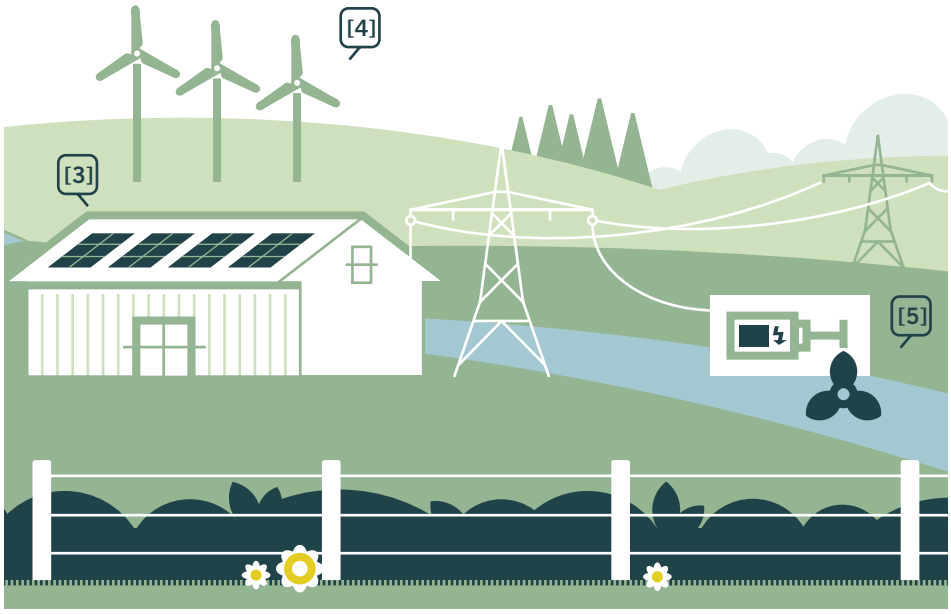


[01] **Biogas** can supply power and heat to individual farms or whole villages. It comes from fermentation of manure and other organic waste, of which large quantities arise as a by-product of agriculture and, to an increasing extent, from crops harvested for that purpose.

[02] **Bio-fuels** from rapeseed, maize and sugar cane, perhaps even straw and wood, drive cars just as well as petrol refined from mineral oil. The amount of CO_2 emitted by them is theoretically the same as that absorbed by the plants during growth. The important thing is to make sure that energy production from agriculture is ecologically compatible and does not lead to food shortages. *Plus:* power and heat generation from biomass is much more efficient.

04

In the years to come, modern technology will enable us to harness the solar energy stored in biomass. Organic waste, wood, straw and energy-rich crops will provide one fifth of global energy and heat requirements by the middle of this century.



[03] **Solar energy** comes from the roof of the barn, where there's plenty of space for solar cells.

[04] **Wind turbines** can best rotate where there is plenty of room, for example, in the country. Farmers can either lease areas of land for wind farms or invest in them themselves and sell the power. The wind power industry is already booming in countries like Germany, Spain, the USA, Denmark and India. The estimated generation potential by 2050 is seven billion kilowatt-hours annually – three times more than from all nuclear power stations at present in operation.

[05] **Hydroelectric power stations** at present supply the largest share of renewable energy, but their potential is limited. Construction of large dams often endangers both the environment and human rights. One alternative is smaller, riverside plants.

TRAVEL CLIMATE-CONSCIOUSLY

Mobility is the area where personal carbon accounts are widest apart. Whilst some people drive around in massive off-road vehicles, others take the bus. Some need to jet around the world in their leisure time, others prefer a walking vacation. These are big differences in behaviour patterns, and the energy-saving potential is just as big.

[01]

[02]

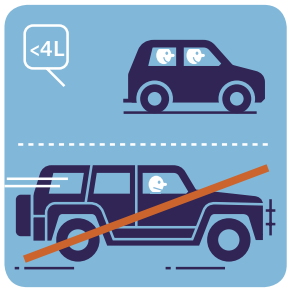
[01] **Use public transport!** Buses and rail systems are three times more fuel-efficient than private cars. Urban rail systems are the most efficient – and they will be even cleaner in future when they are running on eco-power.

[02] **Stretch your legs more often!** Walking keeps you fit and does not harm the climate. Reconquer the cities – on foot.

[03] **Fly only when you really have to!** Air traffic is top of the league of climate-killers. Look for alternatives like telephone and video conferences. Cut long distance flights. On the shorter routes, even to neighbouring countries, rail travel is quick and a whole lot more climate-friendly.

05

If you leave your car at home and take a bike to work, you will cut your annual emission of CO_2 into the atmosphere by half a ton.



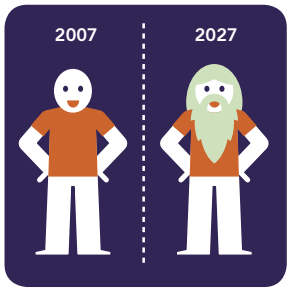
[03] [04] [05]

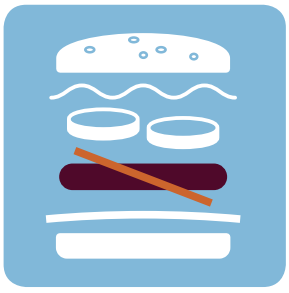
[04] **Shrink your car!** The most important question when you buy your next car is: "What's its fuel consumption?" Cars burning 4 litres per 100 km (60 miles to the gallon) are already on the market. It will be possible to cut that figure to 2 litres. Help us to make the owners of those giant limousines, SUVs and other fuel guzzlers too embarrassed to show them in public.

[05] **Ride a bike!** It takes up very little room and uses no fuel. It's quiet and clean and keeps you fit. So: take every available opportunity to use the good old bike when you go to work, go shopping or even when you go on vacation.

LESS IS MORE

As much, as soon, as cheaply as possible – that is the creed of the modern world. Turbo-consumption doesn't make the world any happier and the environment has to pick up the tab. An economy where quantity goes before quality is squandering raw materials and belching out massive amounts of greenhouse gases. More conscientious management of time and resources will leave behind a less destructive 'ecological footprint' – and improve quality of life.





[01] [02] [03]

[01] **Look for quality** for example, when buying clothing and electrical appliances. Good quality lasts longer. Buying it protects natural resources and reduces goods traffic.

[02] **Eat less meat!** According to the Food and Agricultural Organisation (FAO), livestock farming is responsible for about 18 percent of total greenhouse gas emissions – because of the very high amounts of energy consumed in fertiliser production, clearing of rain forests for pasture land and soybean crops and, finally, the large volumes of methane produced in cattle dung.

[03] **Opt for organic foods** – They are grown without artificial fertilisers or pesticides. They don't involve transport of fodder from overseas sources. The cyclical farming and livestock rearing methods cause less greenhouse gas emissions.

05

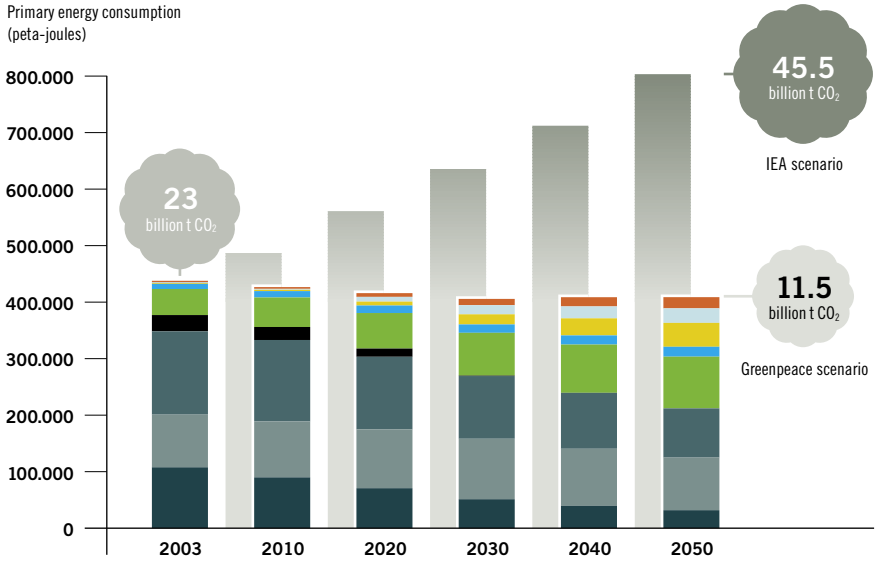
[04] [05]

[04] **Buy local products** when they are in season. That cuts down goods traffic and the need to heat greenhouses.

[05] **And finally – rediscover local beauty!** Flying away on weekend shopping trips and jetting to a tropical paradise play havoc with the balance on your personal CO_2 account. So, take more holidays closer to home and discover that it's just as beautiful there.

ENERGY [R]EVOLUTION

The Greenpeace scenario for climate-compatible energy generation in the year 2050.



The International Energy Agency (IEA) expects global energy demand to double by 2050. That means more and more fossil fuels, i.e. ■ coal, ■ oil and ■ natural gas, will be burned. If this happens, there would be a dramatic rise in CO_2 emissions.
We will have to cut our carbon emissions in half by the middle of this century to prevent the climate getting totally out of control.
The Greenpeace study Energy [R]evolution shows how this can be achieved. Saving and more efficient use of energy can cut back consumption – without endangering the global economy. ■ Nuclear power stations will be faced out in 2030 in this scenario. By the year 2050, half the world's primary energy requirements will be met by renewable energies, i.e. ■ biomass, ■ water power, ■ solar, ■ wind and ■ geo-heat.

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