



living witness
Quakers for Sustainability

Walk Cheerfully, Step Lightly

*We can all listen if we will to the sounds of the earth,
tuning into it with joy.*
(London Yearly Meeting 1988)

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Sources

- ❖ websites mentioned in the text and under contact details
- ❖ journals – *New Scientist*, *Clean Slate* (Centre for Alternative Technology), *Ethical Consumer* and their website www.ethiscore.org, *Earth Matters* (Friends of the Earth), *The Organic Way* (Garden Organic (HDRA)), *Living Earth* (Soil Association)
- ❖ *how to live a low-carbon life* by Chris Goodall.

Back issues of *Ethical Consumer* (EC) are available @ £3.75 each from ECRA Publishing Ltd, FREEPOST NWW978A, Manchester M15 9EP/0161 226 2929

Abbreviations: CAT for Centre for Alternative Technology, EC for *Ethical Consumer*, FoE for Friends of the Earth and LW for Living Witness.

® indicates an item or procedure recommended by a LW member.

1. INTRODUCTION

We are now experiencing climate destabilisation caused by excessive emission of greenhouse gases from human activities (www.metoffice.gov.uk/research/hadleycentre/index.html) Carbon dioxide (CO₂) emitted by burning fossil fuels is the main culprit. Other significant gases are Methane (CH₄), Nitrous Oxides (N₂O) and HFCs – all more potent than CO₂ but less abundantly emitted. To avoid irreversible and potentially catastrophic destabilisation it is widely accepted that at least an 80% reduction in emissions is essential by 2050. To achieve this will require a concerted effort by us all.

Taking action to reduce our emissions will also reduce the harm we do to our planet in other ways, particularly reducing chemical pollution, which is probably damaging the health of most living creatures including ourselves. It will also help us to reduce our excessive and unfair use of the earth's resources, which is causing poverty, conflict and loss of biodiversity.

How to use this booklet

This updated version of our 2008 booklet is intended as background to the *Sustainability Toolkit* published in November 2011 by Quaker Books. The Toolkit is designed to support Friends and Quaker Meetings in the journey to become low carbon sustainable communities. It includes guides for carrying out environmental audits and holding study sessions, as well as case studies of Quaker sustainability witness and lots more.

Our carbon footprint calculators at <http://www.quaker.org.uk/climate-impact-calculators> will show which of your activities contribute most to climate change and help you decide which lifestyle changes could have most benefit. Suggestions to help you make the changes are listed in this booklet. Items at the start of a section are the most important.

○ indicates actions that cost nothing or no more than the conventional alternative, but may require some effort!

□ Indicates actions that require financial outlay. Remember all new items have embedded energy –energy used in manufacture and transport. So ask yourself - is the new item essential? If an energy-saving gadget, will it save more energy than that embedded in it?

Walk Cheerfully! ☺ It may help to share.

Consider encouraging your Quaker Meeting to join **Living Witness**, supporting the Quaker witness to sustainable living. Our publications include a study course *Be the Change* and a quarterly newsletter, *earthQuaker*.

Other possibilities are:

- ❖ Form a **Global Action Plan EcoTeam** (www.globalactionplan.org.uk, 020 7420 4444) – 6-8 households who monitor waste, gas, electricity, water, transport and shopping habits and then encourage each other to improve.
- ❖ Support **Operation Noah** (www.operationnoah.org) a church-based campaign that encourages all age groups to take climate change seriously and act to limit the damage we are causing.
- ❖ join a **Carbon Rationing Action Group** – www.carbonrationing.org.uk
- ❖ join the **Community Carbon Reduction Project** – www.cred-uk.org
- ❖ join CAT's **zerocarbonbritain** initiative – *Clean Slate No 66* Winter 2007 or www.zerocarbonbritain.com
- ❖ set up or join a group to make your town a **Transition Town** – www.transitionnetwork.org and www.transitiontowns.org or contact benbrangwyn@transitionnetwork.org for 50 page Transition Town primer (and on line at <http://transitionnetwork.org/resources/transition-primer>)
- ❖ join **One Planet Future** campaign http://www.wwf.org.uk/what_we_do/about_us/building_a_one_planet_future.cfm
- ❖ read Renewable Energy's National Action Plan at <http://www.r-e-a.Net/document-library/policy/policy-briefings/Energy2020NationalActionPlan.pdf>

2. TRANSPORT

Energy and resources are used in transport fuels and to build and maintain roads and vehicles. The transport sector accounts for about 30% of UK CO₂ emissions, a growing share of land use, pollution, noise, accidents and an unpleasant urban environment.

○ Try to drive less

- ❖ **Cycle or walk** whenever possible - 40% of UK car trips are below 3 miles. Regular exercise is soon enjoyable and keeps you fit. ☺ Contact Sustrans (0845 113 00 65 or 0117 926 8893/0888, www.sustrans.org.uk) for safe cycle routes, and www.whycycle.co.uk, www.bikeforall.net and EC109 Nov 2007 for info on bikes. A trailer enables you to carry loads – see e.g. www.carryfreedom.com ® or www.bikesandtrailers.com.
- ❖ Moving house or changing your job? Aim to live within walking or cycling distance of your place of work.
- ❖ Use public transport. Traveline is helpful for bus, coach, underground, ferry and/or train – www.traveline.org.uk or 0871 200 22 33
- ❖ If you rarely need a car, hire rather than buy one, then you won't be tempted to use it unnecessarily! Or try out a car-free period.

○ **Avoid air travel if at all possible – it adds hugely to your carbon footprint.** Aircraft contrails and nitrous oxide emissions at high altitude mean the overall climate impact is triple that of the CO₂ emissions alone. For discussion of negative impacts of air travel see www.aef.org.uk (Aviation Environment Federation) or www.rcep.org.uk/aviation.htm (Royal Commission on Environmental Pollution). (rcep.org.uk/reports/sr-2002-aircraft/documents/aviation-report.pdf Also EC95 July 2005. To travel abroad without flying see www.seat61.com.

□ **Carbon offsetting** is offered to compensate for damage done by CO₂ emissions from air travel and other activities. EC106 May 2007 best buy was Atmosfair (www.atmosfair.de) but the article stressed cutting emissions is the vital thing and suggested donating to a climate change campaign to 'offset' essential emissions. Defra are developing a code of practice for offset schemes see <http://www.defra.gov.uk/environment/climatechange/uk/carbonoffset/index.htm>

○ **Holidays** – See www.greenchoices.org and www.tourismconcern.org.uk. Treesponsibility (www.treesponsibility.com) offer green holidays in the UK. www.ecofriendlytourist.com lists green places to stay in UK and encourages overland travel for places outside UK. www.atmosfair.de has links to holiday operators who don't include air travel. *Green Places to Stay* Alastair Sawday (www.sawdays.co.uk/about_us/ethical_collection/) may be useful.

If you have a car:

○ **Buying new?** Useful info from: www.vcacarfueldata.org.uk (consumption and emission data); annual *Car Buyer's Guide* from Environmental Transport Association; EC95 July 2005 and **Alternative fuels** below. Fuel consumption of similar size cars varies by up to 45%.

○ **Share a car** ☺. You can use www.liftshare.org, www.villagecarshare.com, www.freewheelers.co.uk and/or www.carplus.org.uk for help. Also travel for work:: tfw.org.uk and www.shareajourney.com.

○ **Minimise fuel consumption** Driving more efficiently can reduce emissions and fuel consumption by up to 25% (info from www.carplus.org.uk, www.est.org.uk, www.nef.org.uk and www.vcacarfueldata.org.uk)

- ❖ Keep car well serviced and tuned, with tyres at correct pressure - 25% too low tyre pressure increases rolling resistance by 10% and your fuel consumption by 2%.
- ❖ Plan ahead, avoid peak periods, choose uncongested routes.
- ❖ Avoid short journeys - a cold engine uses almost twice as much fuel and catalytic converters can take five miles to become effective.

- ❖ Remove unnecessary weight. Roof racks, bike carriers and roof boxes also affect cars' aerodynamics and further reduce fuel efficiency
 - ❖ Only start the engine when you're ready to drive off.
 - ❖ Drive smoothly – frequent and harsh acceleration and braking causes a significant increase in fuel consumption.
 - ❖ Keep speed down – most efficient speed varies with car - sources quote from 45 - 65mph. Generally it is the lowest speed at which the car runs comfortably in highest gear. Faster speeds increase fuel consumption and emissions.
 - ❖ Use higher gears as soon as traffic conditions allow.
 - ❖ Switch off when stationary. NB - there is debate about when extra energy needed to re-start negates energy saved by switching off. Probably depends on the car and how warm the engine is. If you think you will be stationary for over a minute it is probably worth switching off.
 - ❖ Be aware that use of onboard electrical devices increases fuel consumption – air-conditioning can add 20%.
 - ❖ Use a 'Park and Ride' scheme if available.
- **Alternative fuels** See *EC105* March 2007, CAT Factsheet *Alternative Fuels*, www.greenfuels.co.uk, www.lowcvp.org.uk (Low Carbon Vehicle Partnership, www.vcacarfueldata.org.uk, www.carplus.org.uk/resp-car-use/alt-fuels.html), and www.eta.co.uk/pages/Fuels/Fuel/default.htm.
- ❖ **Petrol or diesel?** Diesel engines often have lower CO₂ emissions and better fuel economy than petrol, but emit other pollutants such as Nitrogen Oxides (NO_x) and particulates. They are likely to have less negative impact than petrol if driven mainly on motorway or major roads and a more negative impact if driven mainly in congested, urban areas. A diesel car should have a diesel particulate filter (DPF) – it may be an optional extra. *EC105* March 2007 rated Murco as the Best Buy oil company but their filling stations are not very common. BP was next.
 - ❖ **LPG** (Liquefied Petroleum Gas) or **Autogas** is now widely available. LPG causes 10-15% less CO₂ ('well to wheel') than petrol and about the same as diesel but 80% less NO_x and no particulates. Approved conversion fitters and refuelling map from www.lpg-vehicles.co.uk.
 - ❖ **CNG** (Compressed Natural Gas) causes CO₂ emissions similar to diesel and much lower particulate emissions. Not suitable for domestic transport.
 - ❖ **Hybrid cars** use electric motors running off batteries alongside a petrol or diesel internal combustion engine that recharges the battery when its energy would otherwise be wasted. Hybrids are about 50% more fuel-efficient than the same type of conventional vehicle but are expensive. www.myhybridcar.net/prius-review.html reviews a hybrid Toyota Prius.
 - ❖ **Electric cars** Readily available in UK is G-Wiz (new 2010 model - top speed 50mph, range 48 miles) from GoingGreen 020 8574 3232, www.goinggreen.co.uk. See review at www.myhybridcar.net/electric-cars.html. Using grid electricity to recharge their battery their emissions are comparable with a diesel car of the same size.
 - ❖ **Hydrogen fuelled cars.** Fuel cells or a form of internal combustion engine may be used (www.science.org.au/nova/063/063key.htm). The hydrogen source is water and water is the only exhaust emission. However electricity is needed for the production process. The technology is already in use in Iceland, which has plenty of renewable electricity supply.
 - ❖ **Biofuels** The Renewable Transport Fuel Obligation (RTFO) requires 3.25% of all fuel sold on UK forecourts to come from a renewable source in 2009/10, rising to 5% by 2013 (www.dft.gov.uk/pgr/roads/environment/rtfo/). For problems see www.biofuelwatch.org.uk.
 - Some diesel cars can run on filtered **waste cooking oils** (very 'green'!) or **pure vegetable oils** but modification is recommended. www.lowimpact.org/factsheet_veg_oil_motoring.htm is useful. See also www.vegetableoildiesel.co.uk.

- Domestic and commercial **Biodiesel** is made from waste cooking oil or pure vegetable oil. Useful sources of info are:
 - Low Impact Living Initiative (www.lowimpact.org) fact sheet and courses on making biodiesel
 - CAT Tipsheet *Biodiesel – buy or DIY?*
 - www.greenfuels.co.uk for simple unit for home-production
 - www.ecotecresources.com for equipment and info
 - www.journeytoforever.org/biodiesel_make.html#start – how to make biodiesel
 - www.purefuels.co.uk
 - www.dieselbob.co.uk/vehicles.asp for advice re need for modification of engines for blends over 20% biodiesel. Also www.bioroute.co.uk/biodiesel.htm.

How much CO₂ does 100% biodiesel save? Biodiesel CO₂ exhaust emissions are 2% more than diesel but as the plant absorbed this CO₂ when growing, some claim the fuel is carbon neutral. This may be so for home-made biodiesel from waste cooking oils, but considerable amounts of CO₂ and other GHG, in particular N₂O, are generated during cultivation and processing of the plant source. There is debate about the savings, if any, for rapeseed methyl ester but anyway the area of land needed to grow enough rapeseed to satisfy Europe's fuel demands would be prohibitive. It would be better to grow trees on land not needed for food to supply wood for sustainable generation of electricity or CHP (see renewable energy association www.r-e-a.net for an overview of biofuels). **There are very serious problems** over land use, loss of biodiversity and even a negative CO₂ balance, if **palm oil from Indonesia or soy oil from Brazil are used.**

- **Bioethanol** is a petrol substitute. Most cars can use 10% ethanol with petrol without modification. Bioethanol from sugar cane provided 40% of Brazil's non-diesel fuel in 2005. In the USA bioethanol, mainly from corn, provides 2-3% of non-diesel fuel and large increases in production are planned. **Problems:** Using corn to make bioethanol has pushed up food prices and some experts fear imminent global food shortages. Overall savings in CO₂ may be insignificant – some studies find none for corn bioethanol but it depends very much on circumstances. The situation is worse if the fuel is exported, generating more CO₂ in the process. Research is underway to make '**cellulosic**' bioethanol from inedible plant material said to be ideal to grow on marginal lands. Ecologists suggest this will lead to massive soil erosion. Anyway it could be 6-10 years before this is viable.
- **Biogas** from rotting municipal waste, food waste or sewage (human and animal) is more relevant for farm/community power schemes. Raw biogas is 50% CO₂ and 50% methane so it would need separating for use as a transport fuel, which adds to cost & energy use, and anyway is not suitable for domestic vehicles. It is said to give an average of 95% CO₂ reduction (well to wheel) in comparison to diesel, as well as 80% lower NO_x emissions. Plus, it has zero particulate emissions. Some sources suggest Biogas could fuel half the UK HGV fleet. See www.ngva.co.uk/index/fuseaction/site.articleDetail/con_id/5213 and www.energysavingtrust.org.uk/fleet/technology/alternativefuels/biogas

- **Consider joining the Environmental Transport Association (ETA)** (equivalent to AA or RAC) that campaigns for environmentally sound transport. It offsets its CO₂ emissions and will offset yours, but see **carbon offsetting** on page 4.
- **Company cars and business travel** Encouraging a different approach to car use and more use of public transport, walking and cycling helps save money and space and helps the environment. Useful resources are:
 - ❖ City Car Club www.citycarclub.co.uk/business. set up bespoke car club services at work premises or offer cars they have in the locality.

- ❖ www.carplus.org.uk/carclubs/business-users.htm helps workplaces to use cars more efficiently by encouraging employees to car share and/or join a car club, which provides short-term vehicle hire.
- ❖ www.energysavingtrust.org.uk/fleet has useful info including pdf download – *Behind the wheel: Understanding the business case for greener company car fleets*.

3. ENERGY SAVING IN THE HOME

Household fuel and electricity use causes 25% of UK CO₂ emissions ☹. The following is in 5 sections: householders behaviour; construction of the house; insulation; sources of energy; household appliances.

Energy-Saving Behaviour

No cost and immediate pay-back in energy-saving and money so you can afford to tackle some of the costlier changes!

- Set **central heating thermostat** as low as possible. Setting 1°C lower reduces fuel consumption by about 10%. Wear warmer clothes – a hat is a great help! Fit people can acclimatise to background temperature as low as 12°C but 17°C is more likely to be acceptable for a start!
- **Energy-saving in the kitchen** Download Energy Efficiency Green paper on energy-saving in the kitchen from www.foster-uk.com.
 - ❖ Minimise use of tumble drier if you have one.
 - ❖ Choose the smallest freezer you can. Fridges without iceboxes use much less energy than those with. Keep fridge at 5°C, freezer at -18°C. Site in cool place with space for air to circulate round cooling coils at rear, kept clean for maximum efficiency. Cool food before putting in; open door for minimum time; keep 3/4 full for maximum efficiency – fill space with bottles of water.
 - ❖ Preserve garden produce without freezing - See *How to Store your Garden Produce* by Piers Warrens, from CAT.
 - ❖ Run washing machine with full load at lowest temperature practicable.
 - ❖ Use oven wisely – bake several things at once. Cook on the hob whenever you can (with practice bread, cakes and biscuits can be cooked in a pan – best if it has a solid aluminium base for even heat spreading). Use a pressure cooker for e.g. pulses.
 - ❖ Try using a haybox - a well-insulated container in which a hot cooking pot will continue cooking without any further energy input. See www.preparedhome.co.uk/articles/haybox.htm
 - ❖ Be sparing with hot water when washing-up. If you use a dish-washer use the lowest suitable temperature wash, and only use when full.
 - ❖ Only boil as much water in the kettle as needed.
 - ❖ Cook with lids on pans and use pan to fit size of hob ring.
- **Switch off unneeded lights**. Contrary to the urban myth, it doesn't waste energy to turn fluorescent lights off and on, although it may slightly shorten their life (nrc-cnrc.gc.ca/eng/ibp/irc/bsi/92-lighting-systems.html).
- **Do not leave computer or TV on standby** overnight or for long periods during the day. Unplug or switch off at the wall. 8% of energy supplied to UK households is wasted by equipment left on standby. CAT's standby buster may help. Note that even when your PC is turned off, a phone charger plugged into your USB port will continue to draw energy. Some modern PCs can be set to turn on automatically a few minutes before you plan to start work and be scheduled to shut down if you like your backup program to run after you finish. Check computer manual for info on this.
- **Energy-saving tips for computer users** from www.naturalchoices.co.uk/11-ways-to-turn-your-computer?id_mot=5.
- ❖ **Set sleep time for your PC for short periods of non-use**. Screen-savers don't save energy – they prevent burn-out patches on CRT screens. To save energy adjust your screen to switch off after a period of non-use, or set the PC to switch to stand-by mode (check your PC recovers reliably from this). Go to Settings, Control Panel, Power Options

(or Power Management) and select appropriate screen power-off schedule. If you enjoy your screen-saver set your PC to switch to it after say 10 minutes and to screen-off after 15 minutes. The computer will come back to life very quickly after you return to use the keyboard. Or you can use the hibernate mode for PCs as well as laptops, which saves the computer state to hard disk so you can turn it off at the mains and then come back to it without doing a complete restart. You may be able to set computer buttons to do this automatically. Hibernate mode uses the least amount of power but takes longer to suspend and resume than sleep/standby. See www.pcworld.com/article/id,137328-page,1-c,hardwaretips/article.html and [article/191107/how_not_to_shut_down_your_laptop_and_other_tips.html](http://www.pcworld.com/article/191107/how_not_to_shut_down_your_laptop_and_other_tips.html)

- ❖ Consider turning off your PC if it's going to be inactive for more than about 16 minutes. Beyond this time energy needed to run the average PC outweighs the extra energy required at startup.
- ❖ Turn on **the printer or scanner** only when needed as they consume energy even when idle.
- Minimise use of **batteries**. Energy to make a single-use battery is 50 times energy given out. Rechargeables reduce energy use and waste. NiCad batteries contain highly toxic, carcinogenic cadmium. Nickel-metal hydride (NiMH) rechargeables last longer, work better and are less polluting – *EC100* June 2006 best buy Uniross NiMH.
- Position lamps for most effective use, using lowest wattage needed.
- Unplug Digital camera, mobile phone and iPod power adaptors/chargers. They take about 2W even when device being charged has been removed.

The house

- The Energy Saving Trust offers info on home energy, surveys and grants – www.est.org.uk/.
- Buying new? – www.greenmoves.co.uk advertises homes built or refurbished to a high environmental specification. In April 2007 the Building Research Establishment (BRE) EcoHome assessment that rates environmental qualities of houses was replaced by the Code for Sustainable Homes – see <http://www.breeam.org/page.jsp?id=86>. The 2006 building regulations included a substantial increase in energy efficiency requirements, so the newest houses should be much more efficient anyway.
- **Renovating?** See www.ecovation.org.uk for inspiration and resources.
- The *Green Building Bible* (Green Building Press www.newbuilder.co.uk, 01559 370 798) has a directory of eco-aware builders, decorators, etc. See www.bioregional-reclaimed.com for recycled building materials – bricks etc.
- Building your own home? CAT offers advice on environmental building techniques. Bioregional Consulting (www.bioregional.com/consulting) offer sustainability consultancy services.

Insulation

CAT has useful Tipsheet. Grants – www.greenprojectuk.com or FREEPHONE 0800 093 4050. Details of the various forms of insulation are well covered on the **Energy Saving Trust** website under the section Home Improvements. A useful source of advice and products is www.naturalinsulations.co.uk

- An average uninsulated house loses 33% of its heat through the roof. Aim for 10.5" (27 cm) of **loft insulation** preferably using renewable or recycled materials. Warmcel 100, fire-retarded recycled newspaper, for loose filling lofts, is an effective, cheaper alternative to mineral fibre insulation but labour intensive to install! Thermafleece, from British sheep's wool, is also suitable for sloping ceilings and roofslope insulation, stud walls and dry lining, but is more expensive. (Both available from Green Building Store 01484 461705, www.greenbuildingstore.co.uk)

- Cavity wall insulation** saves about 33% of the energy lost from an uninsulated house. Mineral wool is preferable to foam. Some foam insulation is said to be environmentally benign because it no longer uses ozone-damaging CFC or HCFC but in fact it uses the potent greenhouse gas HFC instead.
- Solid wall insulation** – you could install external or internal wall insulation, the latter being cheaper and easier. See **Energy Saving Trust** website
- Draught strips on doors and windows** save about 15% of heat loss. For sash windows – www.ventrolla.co.uk (UK-wide) or www.sashwindow.com (London and the SE). But be careful - poor ventilation can cause high humidity, mould growth, condensation and ill health. Indoor plants freshen air and remove pollutants – see *How to grow Fresh Air* by Dr. Wolverton – the common spider plant is very good. **Heat Recovery Units** providing ventilation using heat from outgoing air to warm incoming air or **Passive Stack Ventilation** are possibilities - www.energysavingtrust.org.uk/housingbuildings/calculators/hardtoreat/ventilation.
- Double or secondary glazing** Consider timber framed rather than PVC – see Section 8. (01484 854898, www.greenbuildingstore.co.uk) supply and fit efficient double-glazed windows with frames of FSC timber ®. Lined curtains and shutters also help. An uninsulated house loses 10% of its heat through the windows.
- Floor insulation** – It is said that timber floors can be insulated by lifting floorboards and laying mineral wool insulation supported by netting between the joists but experience has shown it can tend to sag and be ineffective. If you don't have a good air seal above so that moist warm air gets through, condensation on the underside of the insulation can increase the tendency to sag. It has been found better to use rigid insulation sheets attached immediately under the floorboards. Or use a tube sealant, such as silicon to fill gaps between floorboards and skirting boards to stop draughts. N.B - don't block under-floor airbricks in your outside walls. Floorboards will rot without adequate ventilation. See www.energysavingtrust.org.uk/home_improvementsandproducts/home_insulation_glazing/floor_insulation.
- Lag the hot water tank. A new one should already be foam covered. Lag hot water pipes especially between boiler and hot tank.

Sources of energy

For grants and details re planning permission for microgeneration technologies see www.energysavingtrust.org.uk under 'generate your own energy'. For grants see also www.lowcarbonbuildings.org.uk or call 0800 915 0990 and www.nef.org.uk/actonCO2/energygrants.asp. (However, the low carbon building programme is closed to new entrants.)

- Consider a **woodburning stove or boiler**, burning sustainably produced local wood. Modern ones are clean-burning and pellet-fired boilers can be fully automatic. Visit www.logpile.co.uk ® to find a local wood or pellet supplier, or ring 01908 256 904. For pellet-fired boilers try Organic Energy Company (0845 458 4076, or www.organicenergy.co.uk) Econergy (01767 652800, www.econergy.ltd.uk). For wide selection of woodburning stoves with or without boiler see www.stovesareus.co.uk.
- Switch to a **green electricity supplier**. (<http://www.ethicalconsumer.org/BuyersGuides/Energy/GreenElectricitySuppliers.aspx>) See *EC95* July 2005, www.greenenergyworks.org.uk/sites/greenenergyworks/links.html and *earthQuaker* 54 Aug '06 or www.carbonrationing.org.uk/fora/threads/green-tariff-electricity-cragcentral-message-219 (or more recently www.independent.co.uk/environment/green-living/green-energy-deals-mislead-customers-439266.html for how Government's Renewables Obligation Certificates (ROCs) complicate things. **Good Energy** (0845 456 1640, www.good-energy.co.uk), *EC Best Buy*, supply 100% renewable and retire 5% of ROCs above legal requirement.. **Ecotricity** (08000 302 302, www.ecotricity.co.uk) don't supply 100% renewable but are

recommended as they charge same as normal supplier and invest profits in new wind farms. See http://www.energywatch.org.uk/help_and_advice/green_tariffs/tariff_types.asp or www.greenelectricity.org. Joining one of these green suppliers will encourage the renewables sector by building up a reliable market and encouraging investment in new renewable generation. You can switch supplier by phone or online. www.greenelectricity.org lists local suppliers and prices. For info to counter negative publicity about wind power visit www.yes2wind.com.

- Solar panels** can provide up to half of domestic hot water and contribute to central heating in conjunction with a thermal store (see below) ®. Contact Energy Saving Trust or National Energy Foundation for advice and grants. For suppliers and installer see solar trade association at www.greenenergy.org.uk/sta or *Ethical Consumer* which recommended Filsol (www.filsolsolar.com) and Solar Twin (www.Solartwin.com). CAT has *Solar Water Heating Resource Guide* and a *DIY Guide*.
- Thermal Stores** enable solar panels, biomass and/or heat pumps to provide hot water and heating in the most efficient way possible – see www.gasapplianceguide.co.uk/gledhill_torrent_solar.htm. Contact the compiler for personal experience.
- Heat pumps** – ground, air or water source give 3 to 4 kW output per 1kW electricity input ideally from renewable sources. Especially useful if no access to gas as carbon emissions are equivalent to heating with gas. CAT has useful resources. Contact compiler for experience of air source heat pump. See also <http://www.energysavingtrust.org.uk/Generate-your-own-energy/Heat-pump-field-trial>, www.microgeneration.com, www.geowarmth.co.uk.
- Photovoltaic cells** generate electricity. Contact Energy Saving Trust, National Energy Foundation or British Photovoltaic Association for advice and grants. CAT has useful publications. The Carbon Trust has launched a programme aiming to make **photovoltaic energy generation radically cheaper** within ten years (<http://www.carbontrust.co.uk/emerging-technologies/current-focus-areas/pages/advanced-photovoltaic.aspx>.) The new PV systems will also be simpler to implement making PV technology more widely available. Thin sheets of PV film, made from a polymer base, will be able to sit on a wide range of surfaces, including windows.
- Domestic wind turbine** See *Wind Power Resource Guide* from CAT or <http://www.energysavingtrust.org.uk/Generate-your-own-energy/Can-I-generate-electricity-from-the-wind-at-my-home> or <http://www.lowcarbonbuildings.org.uk/Microgeneration-Technologies/Wind-turbines>. See also the Carbon Trust publication “Smallscale Wind Energy Policy Insights and practical guidance” <http://www.carbontrust.co.uk/publications/pages/publicationdetail.aspx?id=CTC738>
- There is no UK renewable source of **gas** except homemade bio-gas (only really an option if you live on a farm!) Equigas (www.equigas.co.uk, 0800 458 7689 or 01993 608404) which avoids penalising low-income customers by charging all customers the same per kWh is an ethical option. Like British Gas (www.house.co.uk/climate) it sells CO₂ “offsets” against your gas consumption, but see **carbon offsetting** page 4.

Appliances

- Central heating boiler** See *EC105* March 2007, www.boilers.org.uk to find the most efficient and Energy Saving Trust for grants for condensing flue boilers. See **Energy Sources** for wood burning boilers and heat pumps. Fitting thermostats to each radiator and a programmable timer to the boiler ensures heat is provided where and when needed. Install radiators against inside walls if possible. Put foil behind radiators against outside walls, and a shelf above any radiator below curtained windows.
- Choose **grade ‘A’ electrical appliances (A⁺ or A⁺⁺ for fridges/freezers)** or look for Energy Saving Trusts’ blue *Energy Saving Recommended* label. A very useful website www.sust-it.net has energy consumption of different brands and models of fridges,

freezers, washing machines, dryers and dish-washers. With www.ethiscore.org you can select the most ethical, energy-efficient model to suit. Avoid freezers and tumble dryers if possible – they consume lots of energy!

- ❖ **Tumble dryers** - most energy-efficient are gas powered or electric with condenser and heat pump to recycle heat.
- ❖ **Freezers**. Choose as small as possible. Fridge-freezer may be more efficient than separate fridge and freezer. Frost-free models generally consume more energy. CAT offer Savaplug for fridges/freezers to produce energy savings by matching power drawn to that needed by the motor. Not suitable for all models - contact CAT for compatibility.
- ❖ **Washing machines** Only buy larger capacity machine if you will run it full. With solar panels a hot-fill machine saves energy – search for hot-fill on www.appliances.co.uk or see recommended LG Steam Direct Drive Washing Machine on the www.sust-it.net. A twin tub may be energy-saving - see www.mobility-direct.co.uk.
- ❖ **Cookers** – The Remoska®, a small portable electric oven/grill cooks a full meal using far less electricity than a normal oven – www.hoorayforhomecooking.co.uk. An efficient Woodburning range cooker is available – <http://www.carbontrust.co.uk/publications/pages/publicationdetail.aspx?id=CTC738>.
- ❖ **Dishwashers** can use less energy and water than some ways of hand-washing but are energy-intensive to build. Look for AAA models and choose smallest appropriate. Info and best buys *EC89* July 2004.
- ❖ **Microwave ovens** can use 50-90% less energy than conventional ovens but as quantity and cooking time increase, positive energy benefits decrease. Environmental costs of manufacturing and disposal should be considered – microwaves often have a short lifespan. *EC99* March 2006 – best buys were Russell Hobbs and Miele. There are doubts about the nutritional value of microwaved food e.g. www.relfe.com/microwave.html.
- Low energy light bulbs (CFLs)** pay for themselves in energy savings see www.nef.org.uk/energysaving/lowenergylighting.htm. Suitable ones for all uses, including dimmable bulbs, are now available and warm-up times for recommended brands are now very short. *EC107* July 2007 best buy was Omicron (www.omicronuk.com). Also recommended were Kosnic, Biobulb (a full-spectrum daylight bulb) and Megaman. Philips scored best of the readily available brands. Sources - www.bltdirect.co.uk (Omicron, Philips); www.low-energy-lighting.com (Omicron, Megaman, Philips); CAT (Biobulb); www.lightbulbs-direct.com (Biobulb, Megaman, Philips); www.efficientlight.co.uk (Kosnic, Megaman, Philips); www.doctorenergy.co.uk (Biobulb, Kosnic). CFLs contain mercury and should not be land-filled – for recycling see Section 6. **LEDs** may soon replace CFLs - a 3.4 watt LED is equivalent to a 40 watt incandescent lightbulb or a 10 watt CFL - but don't yet produce light quality to match that from halogen or new generation CFLs. Current advice is they're OK in side lights, but not for lighting a whole room. They're more expensive than CFLs, but last even longer. Omicron LEDs were best buy in *EC107*. Advances in technology should see them becoming brighter and cheaper. They should solve the problem of negative health impact of CFLs on a small number of people.
- Computers** *EC104* Jan 2007 – overall best buy was Dell, also top computer manufacturer in Greenpeace's green guide to electronics (Dec 2006) www.greenpeace.org/international/press/reports/green-guide-to-electronics-se (Apr 2007), Guide to Greener Electronics (Apr 2010). The EU Energy Star initiative promotes energy-efficient hardware – products must meet guidelines such as having a low-power sleep mode. At the website (energy-star.org) you can search by category, brand and feature for products awarded the Star. Most new computers now come with flat screens, which use half as much energy as CRT monitors and contain less toxic materials.
- Mobile phones** Greenpeace green guide to electronics also rates mobile phone manufacturers (see computers above).
- Televisions and other home entertainment** LCD (flat screen) TVs have lower energy consumption, less toxic materials and produce less electromagnetic radiation than CRT and plasma, but are more expensive than CRTs. Plasma TVs use 3 times as much

energy as CRTs and are best avoided. (EC94 May '05). DVD players were covered in EC95 July 2005. See www.sust-it.net for energy consumption of home entertainment electronic equipment.

- Efergy meter** (www.efergy.com) gives feedback on electricity consumption to discourage energy wastage. It has a memory facility that stores cumulative data over 18 months so you can see if you are improving! Easy to install and use. It can be hired for 2 weeks from www.electricity-monitor.com, which has a range of similar gadgets that may be helpful.

4. ENERGY SAVING AT WORK

Much of **ENERGY SAVING IN THE HOME** applies. The Green Book Guide *Greening Your Office - from cupboard to corporation: an A-Z guide* from CAT is helpful. For business travel see Section 2 and for recycling Section 6.

- www.envirowise.gov.uk offers UK businesses free, independent, confidential advice and support on practical ways to increase profits, minimise waste and reduce environmental impact
- www.nef.org.uk/greencompany/consultancy.htm offer help on all aspects of developing a sustainable energy strategy.
- The Carbon Trust (www.carbontrust.co.uk) helps business and the public sector cut carbon emissions. They offer free survey, action plan tool, and helpful publications (www.carbontrust.co.uk/publications) that can be downloaded or ordered for free. Areas covered are:
 - ❖ **Energy use** in offices
 - ❖ **Lighting** can account for up to 40 per cent of businesses' electricity bills. This publication helps identify main areas where energy is being wasted through inefficient lighting and provides energy saving advice.
 - ❖ **Air conditioning** technology
 - ❖ **Office equipment** technical overview.
- Air Conditioning** A new German technology should reduce need for air conditioning in buildings and vehicles. Ultra-thin plastic foils on glass or as laminates between layers of glass, vary their transparency, automatically regulating amount of light and heat radiation passing through them.
- Buying or hiring for a period an **Efergy meter** (see Section 3) for the office may encourage more efficient use of office equipment and can be used to check that everything is switched off at the end of the working day.

5. FOOD

Eating Fossil Fuels: Oil, Food and the Coming Crisis in Agriculture by Dale Allen Pfeiffer is a call to action. The *Little Food Book* by Craig Sams www.fragile-earth.com is informative. Christian Ecology Link 'LOAF' (local, organic, animal-friendly, fair-traded) campaign has resources (www.christian-ecology.org.uk/loaf.htm). See also UK Food Group - www.ukfg.org.uk. Total greenhouse gas emissions from the UK food chain amounts to 126 million tonnes per year (CO₂ equivalent) and this would reduce to 19.75 million tonnes if we all switched to a vegan, organic diet with locally grown unprocessed ingredients. (Chris Goodall in *how to live a low-carbon life*)

- Eating more **vegetarian/vegan** food will reduce exploitation of sentient creatures, release land for trees and wildlife, save energy and water, and reduce emission of greenhouse gases. It can also cost less and improve your health.☺ Vegans should eat a wide range of whole foods and ensure adequate B12 intake. Useful info from Vegetarian Society and Vegan Society.
- Organic food** costs more but is tastier, more nutritious, and better for the environment. Long distance imports negate environmental benefit but see EC95 July 2005 re Kenyan organic green beans. Organic farm soil is rich in humus and trace elements and locks up far more carbon than conventional farm soils. Organic farms have increased bio-diversity

and high standards of animal welfare. *The Organic Directory 2007-8* available on-line (www.whyorganic.org) or as a book from the Soil Association lists suppliers of local organic produce and organic boxes. Many of these do not use air freight at all - e.g. Farmaround 020 7627 8066 and 01748 813690 www.farmaround.co.uk, based in Yorkshire, delivers produce from UK farms and continental Europe (for citrus fruits etc.). Abel & Cole 020 8944 3700, www.abel-cole.co.uk, deliver mainly in the south-east at present, offer fair trade terms to British farmers and minimise packaging. Riverford www.riverford.co.uk, 0845 600 23110 (01803 762 059) now have 3 farms located around the country and deliver to eastern and southern England. Using a local box scheme is best if it works for you, especially one with a drop-off point rather than door-to-door delivery. Provided you don't drive to the drop-off point!

- In addition to environmental benefits eating organic produce avoids bad **health effects of pesticides and additives** (colouring, flavourings, preservatives) in food, particularly on young children. The Pesticide Action Network is very informative in conjunction with data from the government's pesticide residue committee (www.pesticides.gov.uk). Oily fish, citrus fruits, and cereals seem to be particularly liable to have pesticide residues. All non-organic fruits both UK and imported have some pesticide residues in over 15% of samples tested. No pesticide residues were found on corn on the cob/baby corn, cauliflower, marrow, squash, swede.
- Cut '**food miles**' – buy local or UK produce. Use the local farmers' market (www.farmersmarkets.net). www.bigbarn.co.uk has details of local producers and <http://www.soilassociation.org/Takeaction/Getinvolvedlocally/Communitysupportedagriculture/tabid/201/Default.aspx> also has details on new funding available Spring 2008 for community groups involved in local food. Try to **grow some food** – a window box can produce herbs; dwarf lettuces and vegetables can look good in flowerbeds; sprouted seeds – alfalfa, mung beans, lentils, etc. – grow well on a windowsill. No garden? What about an **allotment** often available through the local council or there may be private sites. The local library may have details or try www.allotment.org.uk, www.nsalg.org.uk or www.allotments4all.co.uk.
- Food processing** uses energy and destroys nutrients. Fresh or dried foods are preferable. Frozen foods consume much energy for freezing and storage. Chilled foods also use quite a lot for both chilling and storage. Homogenising milk is energy intensive and may be unhealthy – see e.g. www.holisticonline.com/Remedies/Heart/heart_trueculprits-of-high-cholesterol.htm. Duchy Original, Waitrose own and Rachel's organic milks are unhomogenised.
- Buying in bulk** saves packaging and money. You could form a buying co-operative ☺ with friends/neighbours and use co-operative suppliers such as SUMA (0845 458 2291 (01422 313840), www.suma.coop), Infinity Foods (01273 603 563, www.Infinityfoods.co.uk) or Essential Trading Co-op (0117 958 3550, www.essential-trading.coop).
- Support livelihoods and the local environment abroad by choosing **fair-trade** tea, coffee, sugar, chocolate, bananas, etc. – available from supermarkets, especially the Co-op, and from Traidcraft, but support small, local shops if they stock them. Contact Fairtrade Foundation for more info.
- Fish?** Many species are suffering dramatic falls in stocks. For fish to avoid and sustainable sources see www.fishonline.org or look for Marine Stewardship Council eco-label. The Soil Association has now certified organic farmed salmon. Prawn (shrimp) fishing causes 1/3rd of the world's discarded bycatch (dead and dying fish, turtles, etc.), seriously damages the seabed and destroys the livelihood of native fishermen. ☹ Shrimp farming is also environmentally unsound. Details from Environmental Justice Foundation. Fish4Ever, sustainably caught tinned fish, is available from e.g. www.goodnessdirect.co.uk (01327 706611) and www.graigfarm.co.uk (01686 627979)

who both also stock organic fresh fish. Vegans don't need fish for omega 3 oils; good plant sources are linseed, walnuts and pumpkin seeds.

- **Avoid GM foods.** GM technology poses serious ecological risks. See CAT tipsheet (*GMOs why all the fuss...*), www.genewatch.org, www.GMFreeBritain.com (FoE campaign "Say no to GMO" and GM food section of the Greenpeace website. For government reports and plans contact DEFRA.
- There is growing concern about **palm oil**, found in 1 in 3 of supermarket foods. Oil palm plantations destroy tropical rainforests – www.foe.org.uk/resource/reports/greasy_palms_summary.pdf also EC89 July 2004 for facts and suggested actions.
- **Supermarkets** are associated with corporate control of food and closure of small local businesses. Consult Grassroots Action on Food and Farming. If you use them encourage change by buying local organic or fair trade produce. See EC97 Nov 2005 for supermarket rating – Marks & Spencer, Waitrose and Co-op take ethical issues most seriously.

6. WASTE

Composting is a great way to reduce waste. Also Reduce (consumption), Re-use, Repair and Recycle! See <http://www.greenchoices.org/green-living/waste-recycling/recycling> and Waste Watch. To locate local recycling points see www.recycle-more.co.uk and www.wasteconnect.co.uk. Recycle More provides detailed maps, while Wasteconnect gives more options for specifying waste. Both have sections for **business recycling** and www.envirowise.gov.uk or 0800 585 794 also offers UK businesses free, independent advice and support on practical ways to minimise waste and reduce environmental impact.

Composting

- Cut your rubbish by up to 1/3rd, make your own fertiliser and prevent production of CH₄ from decaying organic material in landfills, by putting vegetable food waste, lawn mowings, garden weeds and up to 40% crumpled paper or torn up cardboard on a **compost heap**. WRAP run a home composting hotline 0845 600 0323 (0161 234 9057), CAT have Factsheets or consult Garden Organic, www.communitycompost.org, www.compostworks.org.uk, or www.wasteonline.org.uk/resources/InformationSheets/Compost.htm. Tampons and sanitary towels with plastic removed, break down in a compost heap ®, as do biodegradable disposable nappies with soil flushed off. Or put vegetable waste in a **wormery** – info from Wiggly Wiggles (01981 500391, www.wigglywiggles.co.uk). **Greencone composter** (www.greencone.com) (0800 731 2572 or 01884 308075) will take food waste, including meat, fish and animal excrement but not garden waste. The same firm offers Green Joanna that can compost two parts food waste to one part garden waste.
- To keep nutrients in circulation, save urine for the compost heap – it is a good activator. **Composting toilets** may be an option – info from CAT and www.compostingtoilet.org.
- Turn fallen leaves into fibrous compost – better and more environmentally friendly than peat. Put the leaves in a large bag – a second-hand builder's bag is ideal – cover, and keep moist. 18 months later use as seed compost (sieved), or mixed with ordinary compost for potting up. Fuller details from FAQ section (*leaves*) on www.compostworks.org.uk.

Reduce

- Avoid **excess packaging** e.g. choose loose food items rather than pre-packed and refuse plastic carrier bags.
- **Junk mail** – Register with Mailing Preference Service (call 0845 7034 599 or 020 7291 3310 or visit www.mpsonline.org.uk) to stop up to 95% of addressed direct mail for free. To stop circulars (mail with no name & address) contact Freepost RRBT-ZBxB-TTTS, Royal Mail Door to Door Opt Outs, Kingsmead House, Oxpens Road, OXFORD OX1

1RX or email optout@royalmail.com but see 'more info for personal customers' on <http://www2.royalmail.com/personal-customers/environment>.

- Avoid products designed for a short life span, such as disposable nappies, razors and cameras, and paper plates. If **disposable cups or plates** are essential try Biobags – compostable cups made of sustainable materials. You can order small quantities online - www.biobags.co.uk but you may have to phone (01467 651 247) as the website is due for update. Electronic goods are increasingly seen as throwaway. They are energy intensive to make and include toxic metals and chemicals. Think carefully before buying!
- Only subscribe to papers and journals you are going to read. Use Internet and radio news. *Positive News* 01588 640 022, www.positivenews.org.uk is encouraging. ☺ Buy 2nd hand books through www.greenmetropolis.com.

Re-use

- Buy **clothes** etc from charity shops.
- Use **terry nappies**, not disposables, but minimise energy use when laundering them – see *EC109* Nov 2007 – best buys were organic nappies from Tots Bots (0141 778 7486) and Mother-ease (from Little Green Earthlets Ltd. 01435 811555). For Disposable nappies Best Buy was compostable Nature Babycare nappies (in many mainstream supermarkets) (www.naty.com, 01494 681174) as long as you put them in your compost bin! **Second hand nappies** from www.thenappysite.co.uk offer chance to try out cotton nappies cheaply and sell nappies no longer needed. Useful contacts are Real Nappy Helpline (0845 850 0606) www.goreal.org.uk, Women's environmental network (020 7481 9004, www.wen.org.uk) and The Nappy Lady (0845 652 6532, www.thenappylady.co.uk).
- Use blank side of used paper where appropriate and re-use envelopes.
- Try **re-usable sanitary wear** – *EC106* May 2007 best buys for internal use MoonCup® a re-usable soft silicon rubber cup (www.mooncup.co.uk, 01273 673845) and for external use washable STs from Drapers (www.drapersorganiccotton.co.uk, 08452 60 35 60) Consult WEN (020 7481 9004, www.wen.org.uk) for stockists and how to make your own. ☺
- Soak up old cooking oil with stale bread or cake and feed to birds or convert it to biodiesel!

Re-cycle

- Don't make a **special** car journey to the recycling centre.
- Paper, cardboard, glass, clothes, cans, shoes/boots, foil, scrap metal, green garden rubbish and engine oil and, increasingly, plastic, tetrapacks, batteries, scrap wood, building rubble and fluorescent light bulbs can be recycled at **local authority centres**. Local authorities should also now be providing recycling facilities for electronic goods including computers. Lobby for plastic recycling if not available – www.plasticsrecycling.info has advice and facts.
- **The Freecycle Network®** is a non-profit organisation trying to keep stuff out of landfill. To give away things you no longer need, and find free things you do, see www.freecycle.org or www.ilovefreecycle.org - click on UK to find a local scheme.
- To recycle or buy 2nd hand **books** try www.greenmetropolis.com.
- **Local charity shops** will recycle clothes, books, toys, unwanted gifts etc.
- **Household Batteries** See www.wasteonline.org.uk. A UK recycling plant opened in 2005 and some local authorities now collect household batteries for recycling. Ikea stores have battery recycling collection points. Energizer UK and Panasonic (Panasonic House, Willoughby Road, Bracknell, Berkshire, RG12 8FP) will accept back their own brand nickel cadmium rechargeable batteries for recycling.

- To encourage recycling **buy recycled products**. See EC96 Sept 2005 for **recycled paper** – best buy copier paper was Cyclus Office from Premier paper (www.paper.co.uk, see website for regional tel no's). Papers with Blue Angel environmental label were generally recommended.. See www.bioregional.com. Recommended stationery retailers - Green Stationery (www.greenstat.co.uk, 01225 480556) and Paperback (www.paperback.coop, 020 8980 2233). Recycling paper uses 1/6 to 1/3 less energy, ½ as much water, produces far fewer greenhouse gases and emits a tiny fraction of toxic chemicals to air and water compared to making paper from virgin fibre (from USA Paper Task Force life cycle analysis 1998). For recycled stationery made from used plastic cups, tyres, computer printers, etc. try www.remarkable.co.uk, 01905 769 999. Printers may use **refilled cartridges** available from most office equipment shops. 100% **recycled aluminium foil** (www.ifyoucare.com) is available from Natural Collection (0870 331 3335, www.naturalcollection.com) and some health stores. See also www.recycledproducts.org.uk. **Recycled furniture** is available from Green Works (www.green-works.co.uk, 0845 230 2231 or 020 8810 5245) who offer low-priced, redundant, quality furniture from commercial organisations and government departments to businesses and individuals (extra discount for charities).
- **Drinks cartons or tetrapacks**. Many local authorities now have collection facilities either kerbside or more usually banks – see www.ace-uk.co.uk. Otherwise send rinsed, flattened tetrapacks to the Bridgewater recycling plant using labels downloaded from the website. You must use these labels or the box will be landfilled.
- Some supermarkets have **plastic bag** recycling facilities, otherwise send clean printed and unprinted polythene bags, as used to mail magazines and wrap some foodstuffs, to Polyprint Mailing Films, Mackintosh Road, Rackheath Industrial Estate, Rackheath, Norwich NR13 6LJ, (www.polyprint.co.uk 01603 735425) for recycling. Remove paper labels. Polythene marked 'degradable' is not suitable. Send s.a.e. with first batch for confirmation that type of bags sent is OK.
- **Computers** should be recycled or disposed of in an environmentally-friendly way as they contain many hazardous substances. Contact www.computeraid.org or www.computersforcharity.org.uk (01288 361154) or try www.donateapc.org.uk - free 'matchmaking' service for individuals and organisations to donate 1 or 2 items of hardware (computers, printers etc) to UK charities, not-for-profit organisations and educational establishments. EC104 Jan 2007 and www.wasteonline.org.uk have useful info. The WEEE (Waste Electrical and Electronic Equipment) directive aims to minimise the amount of WEEE householders throw out with their general rubbish by establishing a network of collection points. Under the directive householders can: ask the retailer if they will take products back; take old appliances to their local civic Amenity site; arrange for their local authority to collect the equipment (some local authorities provide a free collection service and others charge); or arrange for an electrical retailer delivering new equipment to take away the old appliance. Householders are now covered by the Duty of Care and must ensure they only pass their waste to a Registered Waste Carrier or other approved person. Businesses – see **office waste** below
- Recycle **mobile phones and toner and ink cartridges** from printers, fax machines and photocopiers through Actionaid Recycling, or choose a charity to support through Recycling Appeal – www.recyclingappeal.com or 08451 30 20 10 or 01324 678900-Freepost boxes provided.
- **Brita water cartridges** can be returned to BRITA RECYCLING, FREEPOST NAT17876, Bicester, OX26 4BR, (0844 7424800) to go to their recycling plant in Germany or go to their website http://www.brita.net/uk/promotion_recycling.html?L=1 and enter postcode to find the nearest collection point. Natural Collection (0845 367 7003 or 0191 418 8256), www.naturalcollection.com) sells a water filter jug with refillable cartridges and supply packs of refill granules.

- **Light bulbs and fluorescent tubes** including energy efficient compact fluorescents (CFLs) are now recycled in the UK to recover mercury and sodium – see www.lampcare.com. The price of a CFL includes amount to pay for recycling and manufacturers/importers must collect and recycle them. Local authorities can say where to recycle bulbs in every area, and a few have set up their own scheme. IKEA stores have CFL recycling points. See **office waste** below for businesses. CFLs contain a minute amount of mercury and should not be binned. Note however that as they use 75% less energy than an incandescent bulb and last six times longer, they are responsible for less mercury pollution in the long run because coal-burning power plants emit 4 times more mercury to produce electricity consumed over its life by an incandescent bulb than that consumed by a CFL.
- QPSW stamp club at Friends House takes used **stamps**, as do many charity shops. Sort into Christmas, foreign, commemorative, ordinary (except common 1st and 2nd).
- Disused or outgrown **bikes** can be found a new home locally (try Freecycle or charity shops) or sent to developing countries. Contact 01206 863111 or visit www.re-cycle.org.
- **Binoculars, telescopes, and tripods** are recycled by RSPB second-hand binocular scheme, Unit 17, St Martins Business Centre, St Martins Way, Bedford MK42 0LF, or hand in at an RSPB nature reserve.
- **CDs, DVDs, VHS and cassette tapes** can be posted to The Laundry CD Recycling, Lauren Dean, London Recycling, 4d North Crescent, Cody Road, London E16 4TG (020 7940 8295) – see www.thelaundry.biz.
- **Office waste.** Rabbitt Recycling (www.rabbittrecycling.co.uk, 0845 337 3343 or 01453 844343) offers consultancy package and deal with range of waste including batteries, bulbs & tubes, cardboard & paper, foundry sand, metals, pallets, plastics, waste materials from construction industry and skip hire companies. Office Green (www.officegreen.co.uk, 01277 237740) recycle computers, light bulbs, fluorescent tubes, mobile phones, paper and toner and inkjet cartridges. Businesses can also dispose of old **computers** through Digital Links (www.digital-links.org, 020 7922 7875) or www.recycle-it.ltd.uk. (020 8317 2155). **Old office furniture** can be donated to voluntary groups, charities, etc. through Green Works (www.green-works.co.uk, 0845 230 2231 or 0208810 5245). **For small businesses in Central London** www.thelaundry.biz collect Paper, Cardboard, Drinks cans and plastic bottles, CDs, VHS, DVDs and Toner Cartridges, Computers. The paper is recycled into Evolve paper which a Laundry customer can buy at a discount from Osman Stationers in Wardour Street. www.plasticwaste.co.uk (0800 619181) – offer free nationwide collection service for **all plastic waste** for recycling. Post less than half ton lots of CDs and DVDs to Poly C Reclaimers, CD & DVD Recycling Program, 47 Stanley Road, Manchester M7 4FR. For low volume of High Security information discs call 0800 6 191817 (01494 510168) before sending. www.save-a-cup.co.uk offer disposal route for used **hard wall polystyrene vending cups** - check the base for small triangle with (6) on inside and P S on outside.

7. BIODIVERSITY

Encourage biodiversity by buying and eating organic!

In your garden

- **Encourage wildlife.** Garden organically Put up nests for birds, red mason and bumblebees, ladybirds and lacewings (from e.g. RSPB), build a pond, plant native British plants. Traditional hedges – hawthorn, holly, etc. provide food and shelter for insects and birds. Prune hedges Jan/Feb to leave winter berries and undisturbed nesting places in spring and summer. ☺
- Buy or make alternatives to **peat** –it is irreplaceable. For sources see www.recyclenow.com/what_more_can_i_do/buy_and_use_recycled_materials/buying_peatfree.html. Over 94% of UK's lowland peat bogs have been destroyed or damaged - healthy bogs store CO₂ and harbour much wildlife.

- Buy cultivated bulbs to avoid those illegally uprooted from the wild. Digging up wild plants is illegal and damages the local environment.
- Think about using permaculture principles – Permaculture Magazine 0845 458 4150 or 01730 823311, www.permaculture.co.uk. For vegan-organic permaculture – Plants for a Future 01208 872 963 or www.pfaf.org

Save forests

- Use **less paper!** London and Surrey businesses see <http://www.bioregional.com/what-we-do/our-work/local-paper-for-london/> and <http://www.bioregional.com/what-we-do/our-work/local-paper-for-surrey/> for information on sustainable paper use.
- Buy timber and timber products marked FSC (Forestry Stewardship Council, www.fsc-uk.org).
- For barbecues buy British charcoal – e.g. BioRegional Charcoal Company's Local Charcoal (see www.bioregional.com) from B&Q. Imported charcoal involves transport and may come from endangered rainforests or mangroves.

In the countryside

- Water sports can damage marine life. Jet skis are especially disruptive.
- Take home all rubbish (yours and other people's!). Plastic multi-pack can holders can kill wild creatures. Discarded fishing line kills sea birds ☹

8. MINIMISING CHEMICAL POLLUTION

Hazardous man-made chemicals may be responsible for rising cancer and auto-immune diseases, and falling fertility of humans and other species. ☹ Studies have found up to 300 hazardous man-made chemicals in our bodies and that such chemicals can be passed on to babies during pregnancy and via breast milk – see <http://www.wwf.org.uk/filelibrary/pdf/biomonitoringresults.pdf>. Following EU REACH Regulation 2007 chemicals which build-up in living organisms and which persist in the environment must be replaced by safer alternatives, if available. However this ruling does not apply to chemicals which may cause cancer or birth defects, affect DNA or disturb the hormone system. See www.chemtrust.org.uk for current campaign to limit hazardous chemicals.

- Buy **organic produce** – food (see Section 5) **and textiles** (especially cotton) whenever possible. 1/4 of the world's insecticides are used on cotton. The World Health Organisation says 20,000 people die, and 3 million suffer chronic health problems, each year from pesticide poisoning. See www.peopletree.co.uk/content/organic_cotton_fibre.php. Other organic fabrics – linen, hemp, wool, leather – are produced and dyed in environmentally sustainable ways. ☺ The Soil Association certifies organic textiles and their website lists suppliers, e.g. Green Fibres (01803 868 001, www.greenfibres.com), Liv (01386 792 622, www.liv-uk.com) or albatross(www.albatross-global.com, 08708 502098) – see Section 10 for more on clothing.
- **Garden organically** without chemical pesticides, herbicides and fungicides. Garden Organic and CAT are helpful. For fertility use compost, green manures or organic fertilisers. The Vegan-Organic Network advises on non-animal based fertilisers. Garden Organic www.schoolsorganic.net, 0247 630 3517, promotes organic gardens in schools.
- Use plant-based **washing-up liquid and household cleaners** (e.g. Bio-D, Caurie or Ecover). For **washing clothes** use plant-based detergents (e.g. Bio-D or Ecover) or, for light soiling, try wash-balls or soap nuts ® (www.inasoapnutshell.com (01342 811220) or www.stopforbreath.co.uk). Many ethical shopping sites (see Section 10) have wide ranges of plant-based commercial products. Avoid clothes that need dry-cleaning. For cleaning products see *Natural Stain Remover* by Angela Martin, *Home Hints and Tips* by Rosamund Richardson.

- Use **environmentally friendly paints**, varnishes, etc. See *EC102* Sept 2006. Sources: AURO (01452 772020, www.auro.co.uk), Livos (01795 530 130, www.ecomerchant.co.uk), Ecos (01524 852 371, www.ecos.me.uk) or Nutshell (01392 823760, www.nutshellpaints.com), or from e.g. Green Building Store (01484 461705, www.greenbuildingstore.co.uk). Protect sheds, fences, etc. with **natural wood preservative** rather than creosote or cuprinol, e.g. Biofa from Green Building Store or Donnos from Livos. Use non-chemical **paint and varnish remover** – e.g. Home Strip from B&Q or CAT. Details www.strip-paint.com.
- Try **Green Oil** (www.green-oil.net) to lubricate your bike chain.
- Production and disposal of **PVC** and uPVC generates dioxins – particularly nasty chemicals. Consider FSC timber windows and doors from e.g. Green Building Store (01484 461705, www.greenbuildingstore.co.uk). Buy **non-PVC cling film** (e.g. Sainsbury's). Co-op Bank offer **non-PVC credit card**.
- HFCs** and PFCs replace ozone-layer-destroying CFCs and HCFCs but are more potent greenhouse gases than CO₂ (*EC95* July 2005). Check new fridges/freezers have hydrocarbon coolants – all Hotpoint, Siemens and Bosch models do. For disposal contact local Council – coolants should be drawn off before scrapping. For home air conditioners using hydrocarbons try Earthcare products (01920 444 082, www.earthcareproducts.co.uk). Car air conditioning units contain (and leak) HFCs. For HFC-free fire extinguishers – Wormald from Tyco (0161 455 4400, www.tycofis.co.uk).
- Cut flowers** See *EC111* March 2008. For seasonal UK grown - Wiggly Wigglers (01981 500391, www.wigglywigglers.co.uk). Most flowers are flown in, often from developing countries where growers use toxic chemicals, some banned in UK, and strain scarce water supplies. Fair trade flowers are available from Interflora, Co-op and Waitrose. See www.flowercampaign.org for international code of conduct.
- Chemical air fresheners and perfumed cleaning agents may cause health problems. Stainless steel non-chemical smell absorbers® from e.g. Natural Collection (0845 367 7003 or 0191 418 8256, www.naturalcollection.com) last indefinitely.
- Toiletries** WEN (020 7481 9004, www.wen.org.uk) have natural toiletries recipes and fact sheet on toxic chemicals in common toiletries and cosmetics. For plant-based products, not tested on animals try e.g. www.greenpeople.co.uk (01403 740 350), www.livingnature.com (01794 323 222 or 0845 250 8455) or www.nealsyardremedies.com (01747 834 634 or 0845 262 3145).
- Many ailments respond to simple **homemade herbal products**®. Use dried herbs from herbal suppliers or fresh garden plants (e.g. lavender, hyssop, valerian, feverfew, elderflower, sage). See e.g. *Essential Guide to Natural Home Remedies* by Penelope Ody.

9. WATER

Water shortages may become more common, and water suppliers use energy and chemicals, so minimising consumption is good.

- Shower** rather than bath (but a 10-minute high-flow shower uses as much water as a full bath). Consider using a basin and flannel.
- About 1/3rd of our water is used for **flushing the loo**. Ideas:
 - ❖ collect urine for the compost heap
 - ❖ install *Interflush* www.interflush.co.uk – a kit for the WC cistern (with front handle) so it flushes only while the handle is held down
 - ❖ put a ‘hippo’ in old style toilet cisterns (free from many water companies)
 - ❖ *if its brown, flush it down, if its yellow, let it mellow*
 - ❖ install a rainwater collector for flushing – www.rainharvesting.co.uk.

- Choose **washing machine** (see *EC100* May 2006) and **dishwasher** (see *EC89 July 2004*) graded 'A' for water consumption. Always wash a full load. For water efficient appliances see also www.waterwise.org.uk.
- **Save water in the garden** Fit water butts. Water early morning or evening and only vegetables and newly planted trees or plants. A sprinkler can use as much water in 1 hour as a family of 4 in a day. Thorough watering of the roots is better than several sprinklings. Keep soil covered with plants or mulch. Choose plants to withstand drought – consult Garden Organic.
- Use a bucket not a hose for **washing the car**, and don't wash during a drought. A hose wash uses about 300 litres (33 buckets).
- Don't turn **taps** full on or leave running while cleaning teeth, etc. Replace worn-out washers to prevent dripping – 1 drip per second is 14 litres per day. Fit water saving taps (www.tapmagic.co.uk or 0845 6525458) to reduce water usage by up to 70%.
- A **water meter** encourages water economy.

10. USE OF MONEY

For more ideas see *EC111* March 2008.

- Invest in environmental and social projects with Triodos Bank (0117 973 9339 or 0800 328 2181, www.triodos.co.uk), Ecology Building Society (0845 674 5566 or 01535 650770, www.ecology.co.uk), ICOF (01179 166750, www.icof.co.uk) or Shared Interest (0191 233 9100, www.shared-interest.com)
- **For ethical and environmental best buys** consult *Ethical Consumer* (or www.ethicscore.org) or Ethical Products (www.ethicalproducts.org). Try Natural Collection (www.naturalcollection.com, 0845 367 7003 or 0191 418 8256), The Green Shop (01452 770 629, www.greenshop.co.uk), or online: www.ethicalsuperstore.com (0845 0099 016), www.green-england.co.uk, www.greenchoices.org, www.guidemegreen.com, www.ecotopia.co.uk, www.carbonneutral.com or www.getethical.com.
- Buy goods with Fairtrade Mark. Try www.greenfinder.co.uk. **Football**s from Fair Deal Trading Partnership. **Clothing** from Traidcraft, Gossypium (01273 409372 or 0800 085 6549, www.gossypium.co.uk), Bishopston Trading Company (www.bishopstontrading.co.uk, 0117 924 5598), Hug (0845 0099 016 or 0191 418 8260, www.hug.co.uk), People Tree (0845 450 4595 or 020 7042 8900, www.peopletree.co.uk), www.ecochicfairtrade.co.uk. (*EC98* Jan 2006).
- Vegan **trainers, walking boots and shoes** made without exploitation of animals or people – Freerangers (www.freerangers.co.uk, 01207 565957), Vegetarian Shoes (www.vegetarian-shoes.co.uk, 01273 691913), Ethical Wares® (www.ethicalwares.com, 01570 471155), Beyond Skin (hand made in UK: www.beyondskin.co.uk, 01273 778 837) and www.getethical.com. See **footwear** in *EC98* Jan 2006.

11. IN YOUR QUAKER MEETING

- Do an **environmental audit**. See guidance in the *Sustainability Toolkit*. Consider taking part in Eco-congregations, the Churches Environmental Programme. Ensure you consider environmental implications of any building work and alterations.
- Encourage switching to renewable electricity supplier – Good Energy, Ecotricity or British Gas Zero Carbon scheme for dual fuel are recommended. And look into a renewable energy supply - for advice on all aspects see www.nef.org.uk/greencompany/consultancy.htm.
- Get the children involved in thinking about green issues and encourage car-sharing for coming to Meeting etc.

12. COMMUNICATING

- The Phone Co-op (0845 458 9000 or 01608 646001, www.thephone.coop) provides cheap phone rates and distributes profits to members. Join through an affinity scheme with an ethical organisation, which receives 6% of your phone bill (e.g. Northern Friends Peace Board – visit <http://nfpb.gn.apc.org/co-op.htm> to download the registration form).
- Need an **ISP**? EC102 Sept 2006 recommends Green ISP www.greenisp.org.uk 0845 058 0659, GreenNet (www.gn.apc.org), Phone Co-op (www.thephone.coop).
- **Web hosting** www.ecologicalhosting.com are powered by renewable energy. www.ethicalinternet.co.uk offer web provision and support service.

13. FINALLY...

- Consider a **green burial** – contact Natural Death Centre on 01962 712 690, or visit www.naturaldeath.org.uk or www.uk-funerals.co.uk/green-funerals.html, or <http://www.funeralsearch.co.uk/woodlands.php>, www.greenendings.co.uk, thegreenfuneralcompany.co.uk, www.naturalendings.co.uk

14. CONTACT DETAILS – websites and telephone numbers

www.ethicaljunction.co.uk is good for useful organisations' details. Below is a list of relevant campaigning groups and organisations providing useful advice and inspiration. Contact details for businesses are shown in main body of the booklet.

Actionaid Recycling: 0845 3100 200, *www.actionaidrecycling.org.uk*
Airport Watch: 020 7248 2227, *www.airportwatch.org.uk*
Association for Environment Conscious Building (AECB): 0845 456 9773, *www.aecb.net*
Biofuel Watch: *www.biofuelwatch.org.uk*
BioRegional (Solutions for Sustainability); 020 8404 4880, *www.bioregional.com*
British Photovoltaic Association has merged with the Renewable Energy Association: 01908 442 291; new website *www.greenenergy.org.uk/pvuk2*
Building Research Establishment (BRE): 01923 664000, *www.bre.co.uk*
Carbon Rationing Action Group: *www.carbonrationing.org.uk*
Carbon Trust: 0800 085 2005, *www.thecarbontrust.co.uk*
Centre for Alternative Technology (CAT): 01654 705950, *www.cat.org.uk* ®
Christian Aid: 020 7620 4444, *www.christianaid.org.uk*
Christian Ecology Link (CEL): 01524 33858, *www.christian-ecology.org.uk*
The Climate Group: 020 7960 2970, *www.theclimategroup.org*
Climatic Research Unit: 01603 592 722, *www.cru.uea.ac.uk*
Climate Outreach & Information Network (COIN): 01865 727911, *www.coinet.org.uk*
Community Carbon Reduction Project: 01603 592 838, *www.cred-uk.org*
DEFRA (government dept.): 08459 33 55 77, *www.defra.gov.uk*
Eco-congregations: 024 7669 249, *www.ecocongregation.org*
Energy Saving Trust: 0800 512 012, *www.est.org.uk* ®
Environment Agency: 08708 506 506, *www.environment-agency.gov.uk*
Environmental Justice Foundation: 020 7359 0440, *www.ejfoundation.org*
Environmental Transport Association (ETA): 0800 212 810, *www.eta.co.uk*
Ethical Consumer: 0161 226 2929, *www.ethicalconsumer.org*
Fair Deal Trading Partnership: 07966 144 819, *www.fairdealtrading.com*
Fairtrade Foundation: 020 7405 5942, *www.fairtrade.org.uk*
Forestry Stewardship Council: 01686 413916, *www.fsc-uk.org*
Forum for the Future: 020 7324 3630, *www.forumforthefuture.org.uk*
Friends of the Earth (FoE): 020 7490 1555, *www.foe.co.uk*
Garden Organic (was HDRA): 024 7630 3517, *www.gardenorganic.org.uk*
Global Action Plan: 020 7405 5633, *www.globalactionplan.org.uk*
Grassroots Action on Food & Farming: 01865 791 391, *www.gaff.org.uk*
GreenChoices: *www.greenchoices.org*
Green Health Watch: 01309 611 200, *www.greenhealthwatch.com*
Greenpeace: 020 7865 8100, *www.greenpeace.org.uk*
GreenSpirit: 020 8552 2096, *www.greenspirit.org.uk*
John Ray Initiative: 01242 714821, *www.jri.org.uk*
Life Style Movement: 0117 951 4509, *www.lifestyle-movement.org.uk*
Living Witness: 01865 725 244, *www.livingwitness.org.uk*
Low Impact Living Initiative: *www.lowimpact.org*
Mailing preference service: 0845 703 4599 (registration line), *www.mpsonline.org.uk*
Marine Conservation Society: 01989 566017, *www.mcsuk.org*
Met Office Hadley Centre: *www.metoffice.gov.uk/research/hadleycentre/index.html*
Movement for Compassionate Living: 0845 458 4717, *www.mclveganway.org.uk*

National Energy Foundation: 01908 665 555, www.nef.org.uk
Natural Collection: 0870 331 3335, www.naturalcollection.com
One Planet Future Campaign: www.wwf.org.uk/oneplanet/ophome.asp
Pesticide Action Network: 020 7065 0905, www.pan-uk.org
PETA (People for the Ethical Treatment of Animals): www.peta.org
Planet Ark: www.planetark.com/index_uk.cfm
Quaker Green Action: www.quakergreenaction.org.uk(see Living Witness)
Quaker Peace and Social Witness Sustainability and Peace Programme: Sunniva Taylor on 020 7663 1047, www.quaker.org.uk
Renewable Energy Association: 020 7747 1830, www.r-p-a.org.uk/portal.fcm
Resurgence: 01237 441293, www.resurgence.org
RSPB: 01767 680 551, www.rspb.org.uk
Save Our World: 020 7640 0492, www.save-our-world.org.uk
Soil Association: 0117 314 5000, www.soilassociation.org
Stop Climate Chaos: 020 7729 8732, www.stopclimatechaos.org
Sustrans: 0845 113 00 65, www.sustrans.org.uk
Traidcraft: 0191 491 0591 for details of your nearest rep, www.traidcraft.co.uk
Transition Town network: www.transitiontowns.org
Trees for Life: 01309 691292, www.treesforlife.org.uk
Tyndall Centre (for climate change research): www.tyndall.ac.uk
Vegan-Organic Network (VON): 0845 223 5232/0161 928 3614, www.veganorganic.net
Vegan Society: 0845 458 8244/ 01424 427 393, www.vegansociety.com
Vegetarian Society: 0161 925 2000, www.vegsoc.org
Waste Watch: 020 7549 0300, www.wastewatch.org.uk/ or www.wasteonline.org.uk
The Wildlife Trusts: 01636 677 711, www.wildlifetrusts.org
Women's Environmental Network (WEN): 020 7481 9004, www.wen.org.uk
Woodland Trust: 01476 581111, www.woodland-trust.org.uk
World Development Movement (WDM): 0207 820 4900, www.wdm.org.uk
WWF: 01483 426444, www.wwf.org.uk
Youth Against Climate Change: www.youthagainstclimatechange.org
Zero Carbon Britain Initiative: www.zerocarbonbritain.com