

CALCULATING & REDUCING CARBON EMISSIONS



The climate is changing, temperatures have risen steadily since the 1800s, 2014 was the warmest year on record, storms are more frequent and more severe. This is due to the increase of 40% of atmospheric CO₂ since the 1800s. Methane and other greenhouse gases are also increasing and these trap more of the sun's energy and raise temperatures.

If we do nothing, temperatures will increase by 6 degrees by the end of the century and people will have to cope with higher sea levels, loss of food production, floods and starvation with climate refugees.

We have the answers:

- Sustainable energy technology
- Increased energy efficiency
- More local food production
- Better building insulation
- Lower carbon transport and fuel

The answers when implemented will lead to healthier lives, less reliance on fossil fuels, less economic turbulence and more secure jobs.

We need to act now for self-preservation, and to preserve the limited resources of our planet for our descendants. We have a moral obligation to only take from our planet that which can be sustainably reproduced for future generations to survive.

Calculating carbon emissions

The easiest way to calculate carbon emissions and therefore calculate how to reduce emissions is to use a carbon calculator on the internet. These can be found at www.carbonfootprint.com or www.carbonindependent.org.



Examples include 0.38443kg of CO₂ per kWh of electricity used.

- 0.04 metric tons per 100kWh of electricity
- 0.02 metric tons per 100kWh of natural gas
- 0.30 metric tons per 100 litres of heating oil
- 2.86 metric tons per 1 metric tons of coal
- 0.15 metric tons per 100 litres of LPG
- 0.15 metric tons per 100 litres of propane
- 5.95 metric tons per 100 metric tons of wooden pellets

- 0.22 metric tons for a single flight London to Europe
- 3 to 4 metric tons for 10,000 miles a year in an average size petrol car
- 1.65 metric tonnes for 10,000 miles on a bus
- 0.20 metric tonnes for 10,000 miles on a train

- 0.12 metric tons per £100 of food and drink products
- 0.06 metric tons per £100 of pharmaceuticals
- 0.04 metric tons per £100 of clothes, textiles and shoes
- 0.08 metric tons per £100 of paper based products
- 0.08 metric tons per £100 of computers and IT equipment
- 0.05 metric tons per £100 of television and radio
- 0.09 metric tons per £100 of motor vehicles
- 0.06 metric tons per £100 of furniture and other manufactured goods

- 0.07 metric tons per £100 of telephone and mobile calls
- 0.02 metric tons per £100 of banking and finance
- 0.03 metric tons per £100 of education
- 0.03 metric tons per £100 of recreational, cultural and sporting activities

Once you have calculated the carbon emissions of your organisation, then it will be easy to see how you can reduce your own emissions or assist others to reduce their emissions. All applications for a grant from the BGCT must include a calculation of the carbon reduction that the project will achieve. Some projects are easy to calculate, such as:

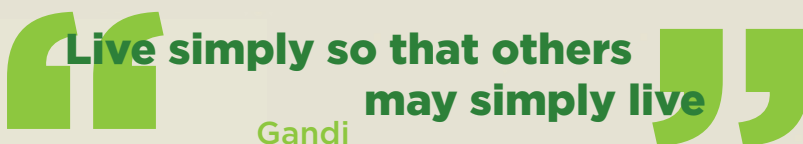
- Reduction of electricity, if lights are replaced with LED lights.
- Reduction of electricity/oil/gas with installation of a new boiler or double glazing.

Other projects are more difficult, such as:

- Gardening equipment, tools and sheds increase emissions and the organisation must prove that more people will consequently grow food and how much carbon this will save per extra person growing food to more than offset the extra emissions. Buying second hand equipment will not increase emissions.
- Purchase of office equipment will increase carbon emissions and should only be awarded monies if the organisation can prove that the extra emissions can be more than offset by the project.
- Recycling of equipment or goods must prove that this will save someone buying new, or prove that the recycled goods will save carbon emissions being produced i.e. someone will cycle instead of drive.
- Establishment of urban gardening areas must prove how much food will be grown and how many people this will feed, to save purchasing the same in the shops.

The Bright Green Community Trust hope that this information will be helpful to everyone applying for grants from the Trust to reduce carbon emissions.

If you use the recommended internet site to calculate the carbon reduction of your proposed project please print off the calculations and attach to your application.



If applicants require assistance please email info@hott.org.uk



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Examples of Reducing Carbon Emissions

The average family creates around 10 tonnes of CO₂ emissions each year. There are many ways to reduce carbon emissions:

- Stop using tumble drier to save 153kg CO₂ per year.
- Turn heating down by 1 degree to save 184kg CO₂ per year.
- Only filling the kettle with the amount of water needed, to save 72kg CO₂ per year.
- Turn electrical equipment off when not in use, to save 5kg CO₂ per year.

Other recommendations include:

Adopting energy efficient technology

- Fit energy saving light bulbs
- Install thermostats on your radiators
- Insulate the hot water tank
- Install cavity wall insulation
- Install 180mm loft insulation
- Replace fridge/freezer with an energy efficiency rating of A++
- Replace old boilers with new energy efficient condensing boiler
- Install air/ground source heating

Travelling more efficiently

- Share cars for travel to work
- Use the bus or train more
- Walk or cycle when possible
- Reduce flights
- Work from home sometimes
- Buy an electric, hybrid car or low emission vehicle

Purchasing sustainably

- Refill water bottles from the tap
- Buy local fruit and vegetables
- Grow your own fruit and vegetables
- Buy produce in season only
- Buy locally to save car miles
- Buy organic produce
- Don't buy packaged produce
- Recycle where possible
- Choose leisure activities that are low in carbon emissions
- Buy goods manufactured in Britain
- Buy clothes of natural products not synthetic

Brief purpose of grant	Carbon saving methodology	CO ₂ saving - tonnes/yr
Replace lighting with energy efficient LEDs & replace floodlighting	36 bulbs replaced, each 100W with 6W LEDs, saving 94W each. Usage say 10hrs each per week, say 500 hrs per year, saving 1692 kWh per year. At 0.384kg CO ₂ per kWh, carbon saving 415kg CO ₂ per year	0.65
Pilot an educational project for enhancing the use/recycling of clothes or textiles by running an event	Shop Swap Sew event - say 100 second hand garments value say £50 average value each recycled back to other users, saving £5,000 new textile manufacture. At 0.04 tonnes CO ₂ per £100 of newly manufactured textile garments, carbon saving is 1.0 tonnes CO ₂	1.00
Installation of six more double glazed units in the worship area of a church	6 No double glazing units replacing single glazed units, area replaced is say 9m ² . Heating costs saved per Window unit of 1.6m ² is about 300kWh per year when single replaced with double glazed. Gas heating cost savings per year are then say about 1700kWh per year. Carbon savings at 0.02 metric tonnes per 100kWh of natural gas is 0.34 tonnes CO ₂	0.34
Remove water heating boiler with more efficient model for energy efficiency in a communal building	Boiler changed from say G rated 70% efficient to A rated 90% efficient boiler, say 20% improvement in efficiency. Say annual boiler gas consumption for hall is 30,000kWh per year, so saving 5,000kWh. Carbon saving on natural gas at 0.02 metric tonnes per 6000kWh is 1.2 tonnes CO ₂ per year	1.20
Showcase community planting area to generate interest in the creation of further areas	Assume project generates some 50kg fruit/veg food per year from plots and inspires local community to grow a further 200kg per year, total 250kg local food growing, value say £500 pa. At a saving 0.12 metric tonnes CO ₂ per £100 value of food & drink products, carbon saving 0.6 tonnes CO ₂ per year	0.60
Set up a recycling project to make free bikes available to encourage young people to cycle rather than use a car or fossil fuelled transport	Assume say 50 bikes recycled in a year, each bike saves 10 miles car transport per month at 3 tonnes CO ₂ per 10,000 car miles. Carbon saving 1.8 tonnes CO ₂	1.80

