

# The 1 kilowatt Challenge

**How to reduce the power  
consumption of your  
home, its ICTs and save  
money**

**From FG ICTs&CC Wiki Topics\***

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\*[http://ituwiki.com/How\\_to\\_reduce\\_the\\_energy\\_consumption\\_of\\_your\\_home%2C\\_its\\_ICTs\\_and\\_save\\_money%3F](http://ituwiki.com/How_to_reduce_the_energy_consumption_of_your_home%2C_its_ICTs_and_save_money%3F)

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# What is the purpose of this presentation?

- Introduce the concept of the 2kW Society
- To show practical steps you can take yourself to reduce your own carbon footprint
  - **Highlighting ICTs and the ‘big wins’**
- Make the FG appeal to a wide audience
- Introduce the FG ICTs&CC Wiki
  - **Where new ideas can be discussed and developed**
- Highlight some fundamentals regarding control of emissions to minimize climate change

## What is the 2kW Society?

- **“The 2000 Watt society is a vision of a sustainable energy supply that will be environmentally acceptable and at the same time allow for a ‘reasonable’ standard of living.**
- **Energy use of 2000 Watts per person (or 17,520 kWh per person per year) represents about the current global average demand.**
- **In Switzerland energy use is currently about 5000 Watts**
  - **Not counting “grey” energy in imports that amounts to almost 4000 Watts.**
  - **By comparison, a large part of humanity exists today on less than 1000 Watts per person”**

## What can we do?

- **“It is not the level of 2000 Watts alone that is decisive, but rather how this power is produced. We need more energy efficiency, energy savings and new technologies. These methods can save at most 30% of demand by 2050 in a way that is reconcilable with our society.**
- **But that we cannot reach the 2000 Watt level per person is not essential for the climate. From the perspective of climate change, the first and foremost need is to reduce CO2 emissions as fast as possible.**
- **The long term goal is about one tonne of CO2 per person per year, or 500 Watt per person from fossil sources”.**

[http://globe.web.psi.ch/pdfs/Energiespiegel\\_18e.pdf](http://globe.web.psi.ch/pdfs/Energiespiegel_18e.pdf)

# What can you do to reduce your home power consumption by 1kW?

\* “Watts matter

Can you save a kilowatt?

If you can, you will save approximately 1200 Euros, and up to 5 tonnes of CO<sub>2</sub> per year”

## How?

- Improve the use of your electronic devices
- Monitor and control your home power consumption

\*[http://ituwiki.com/Focus\\_Group\\_on\\_ICTs\\_and\\_Climate\\_Change](http://ituwiki.com/Focus_Group_on_ICTs_and_Climate_Change)

## Improve the use of your electronic devices #1

- **Your desktop PC and monitor is probably consuming 150 Watts**
  - **Consider using a laptop and/or...**
  
- **Activate the power management features on your computer and monitor (see Control Panel in Windows)**
  - **Use 'standby' or 'hibernation' for periods of inactivity**
    - **Simple mouse movement brings it all back on**
    - **Standby is 1 or 2 Watts**
  - **Turn off when not in use for long periods**
  
- **Switch off or unplug your printer, scanner, and fax when not in use**
  - **This could save 20 Watts**

## Improve the use of your electronic devices #2

- **Turn off (instead of using stand by mode) devices such as TV, DVD, video and stereo during night.**
  - **This could save 20 Watts**
  
- **Consider using a plug/distribution board that can be turned off when you have finished using your electronics**
  - **For example there are sockets that recognise when you switch off your PC, or put it in standby mode.**
  - **These shut down the power to the peripheral appliances as well (monitor, sound system, fax etc)**
  
- **Replace malfunctioning electronic devices**



# Monitor and control your home power consumption #1

- A small monitor or power meter can show
  - how much electricity you use at home
  - how much it costs you
  - how much harmful CO<sub>2</sub> emissions you are contributing to the environment,
    - This can show you where you can reduce electricity consumption
    - Focussing on the greedy standby devices
    - Picking up inefficiencies due to aging
- Example:
  - Is your freezer still working efficiently?
  - Has the insulation become saturated with water?
  - Is the pump running almost continuously?
    - Dave's was and it consumed 250 Watts
    - The replacement was only 70 Watts
    - Saving £180 (\$300) a year



## Monitor and control your home power consumption #2

- Check the level of roof insulation is up to local standards
  - Recommended by Bill Clinton to reduce air-conditioning requirements in summer\*
  - Also, in northern climates, keeps in the heat in winter
- Do all rooms need to be heated in winter?
  - The saving can be up to 1-3 kilowatts per room during the winter
  - Dave's 'door closer' shows how to keep the heat where you want it during winter months



\*<http://www.cdproject.net/viewspeech.asp?id=15>

## **Monitor and control your home power consumption #3**

- **Do you run a boiler to store hot water for a home supply?**
  - **Consider turning off the boiler**
  - **and just heat the water when you need it, such as an electric shower, electric kettle for the kitchen use**
  - **Turning off the pilot light and electric pump can save 100 Watts**
  - **Further savings because no heat is lost from the system or tank**

# Can you choose your energy supplier?

- **Some suppliers have sustainable sources-the ‘greenest of green’**
  - **Hyrdoelectricity, wind or solar power**
- **Others offer a low-cost night rate option which could have a high proportion of nuclear\***
  - **Not the ‘greenest of green’ but avoids CO<sub>2</sub> emissions and can keep more humans comfortable over the next 1000 years**
  - **Power plants cannot all be switched on and off instantly**
  - **Surplus power is otherwise pumped into the sea as waste**
  - **A new electricity meter is installed and plug-top timers can be used to operate machines such as washing machines and dishwashers at night**
  - **66% of your electricity cost can be saved and it’s likely to be all fossil fuel**



\*economy 7 is not advertised as such but see  
<http://www.simplyswitch.com/economy7.html>



# What comes next #1?

*A step by step process- to 2016*

*Tackling everything at once is too big a change*

- **Year 1 Your home energy use (as above)**
  - **Reduces total house load by 50% (approximately) and saves a 1 kW**
- **Year 2 Your air travel**
  - **Our largest contribution to emissions**
  - **One long-haul flight emits 4t CO<sub>2</sub>e (at least)**
  - **Teleconferencing**
- **Year 3 Your Car(s)**
  - **Lower fuel consumption per mile, slower speed**
  - **Longer life before replacement**

## What comes next #2?

- **Year 4 Your food**

- **9 times its calorific value is spent in production**

- 2 tonnes per person per year on average

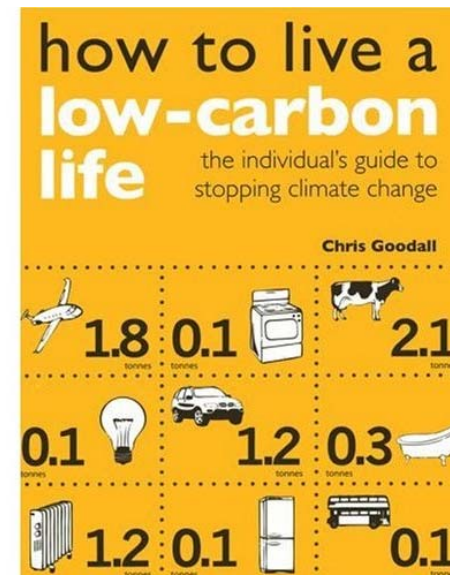
- **Choose products with low energy, sustainable production and distribution**

- **Year 5 Your ‘stuff’ (consumer goods)**

- **Less energy in production, from recycled sources, fewer rare elements (hence less mining)**

- **Longer life/reuse**

- E.g. pv solar panel may use 3-5 years of its energy output in construction and have a life of only 10 years



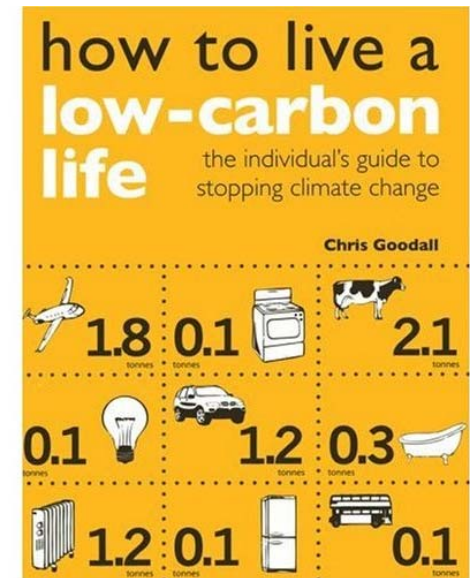
## What comes next #3?

- **Year 6 Your business and teleworking**

- **Move out of your office, avoid travel**
- **Work at home**

- **Year 7 Your family and education**

- **Is the future world going to be ‘habitable’ for your children?**
  - What is the ideal global population?
- **Can schooling be done on-line as it is increasingly for business training?**





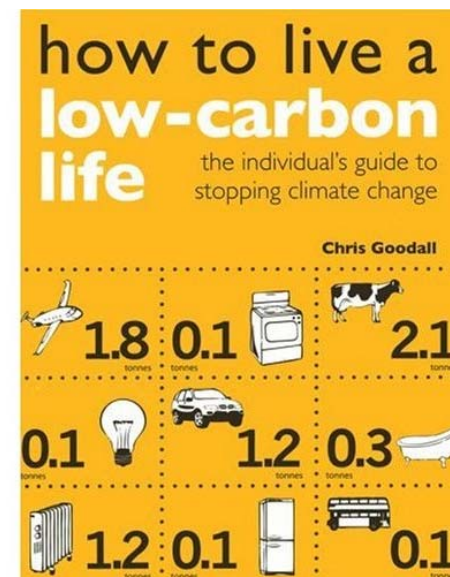
## What comes next #4?

- **Year 8 Your water supply**

- **Desalination uses 1kg fossil fuel for 4.5 kg water**
- **Pumping, distribution and maintenance adds more**
- **Can you usefully economise on water?**
  - Consider imported fruit and vegetables from places where water problems exist

- **We are now in 2016 (after 8 years of CO<sub>2</sub> reductions)**

- **Has the climate stabilised or have we passed a tipping point of natural runaway which means our further energy saving is useless?**





# Summing up

- **Everyone needs to reduce their dependence on fossil fuels**
  - **You can do it and save money**
- **If every home in the developed world saved 1kWyear –**
  - **just 10% of their average energy requirement**
  - **how much money would be ploughed back into the economy?**
- **It's simple to estimate, 1B homes in the developed world @ \$2000 a year is a \$2 trillion saving (10Gt CO<sub>2</sub>)**
  - **A massive boost to the world economy**
  - **Now what should we spend it on?**
  - **Any ideas: sustainable ones please!**
- **How can we spread the '1kW challenge' to every home in the developed world?**
- **Can we help governments in promoting this kind of challenge?\***

[http://www.energysavingtrust.org.uk/what\\_can\\_i\\_do\\_today](http://www.energysavingtrust.org.uk/what_can_i_do_today)

"Looking to improve your home's energy efficiency – and cut your energy costs?"

A guide for householders in England and Wales

<http://www.energysavingtrust.org.uk/>

## Source

- **FG ICTs&CC Wiki**

- [http://ituwiki.com/Focus\\_Group\\_on\\_ICTs\\_and\\_Climate\\_Change](http://ituwiki.com/Focus_Group_on_ICTs_and_Climate_Change)

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and new ideas**