

For the latest news and more information, please see our website

Forthcoming events

Autumn village leaves clear-up – Sunday 2nd December, 2–4 pm

Every autumn we clear slippery leaves from our lovely footpaths and turn this into a fun event for all the family. It's a great way to do your bit to help keep Blewbury beautiful. And if you can take a few bags of leaves to compost in your garden please let us know.

Meet at the Playclose at 2 pm. Bring rakes, barrows and leaf scoops if you have them, or borrow ours. Afterwards there's **free tea/coffee/juice and home-made cake** for everyone who volunteers at **The Blueberry, from 3.45 pm.** (Thanks to *The Blueberry* for sponsoring this.)

In case of bad weather on 2nd December the clear-up will be postponed to Sunday 9th December and publicised widely.



Thermal imaging – February 2019

- Would you like a warmer home and lower heating bills? Thermal imaging can find where heat is escaping.
- If you have already improved your insulation, would you like us to check that it's effective?

To have your home thermally imaged by Sustainable Blewbury volunteers in February, just email us at info@sustainable-blewbury.org.uk, or phone Jo Lakeland (850490). This service is FREE, so it's best to book soon.

Green drinks – Monday 3rd December, from 7.30 pm at The Blueberry

What are 'green drinks'? Not crème de menthe or a kale smoothie, but a chance to talk over a drink, ask questions, or tell us what you think about green topics: anything from issues in and around Blewbury to climate change, biodiversity, or what SB does. Everyone welcome, completely informal, no agenda, just come along and chat.



* * * * *

News

Community orchard

Earlier this year we had the misfortune to have four trees uprooted and stolen from the orchard. We have now received three of the replacement trees and planted them on 18th November. The last tree, a Windsor pear, is being specially grafted for us and will be available next March or April when we will be back to a full complement.



Site of a stolen plum tree just after the theft

BBC coverage of climate change transformed

At long last, the BBC has admitted that it got climate change wrong too often. They have decided that climate change is scientifically accepted and have ended their practice of ‘balancing’ items on climate change by routinely including someone who denies that climate change is happening, or that it is not due to human influence.

The new guidance, including the offer of a one-hour course on climate change, was sent to BBC journalists by Fran Unsworth, the BBC’s director of news and current affairs. It followed a ruling earlier this year by Ofcom which found that the Today programme, Radio 4’s current-affairs flagship, had breached broadcasting rules by ‘not sufficiently challenging’ Lord Lawson, the former Conservative chancellor who chairs a UK-based climate-sceptic lobby group, when he made false claims about climate change in an interview in August 2017.

Some quotes from the BBC ‘crib sheet’:

‘Climate change has been a difficult subject for the BBC, and we get coverage of it wrong too often.’

‘Man-made climate change exists: If the science proves it we should report it.’

‘Be aware of “false balance”: As climate change is accepted as happening, you do not need a “denier” to balance the debate ... in the same way you would not have someone denying that Manchester United won 2-0 last Saturday.’

You can read the BBC memo here:

bit.ly/2wT5xz3 and an article about it here:

bit.ly/2CvkXzn. The BBC has now greatly

expanded its coverage of climate change and treats it as something that is definitely happening.

* * * * *

Data centres: Are online streaming and cloud storage green?

By Eric Eisenhandler

Do you watch TV programmes on BBC iPlayer? Or stream films from the likes of Netflix? Do you back up your photos, videos and the contents of your computer to storage in ‘the cloud’? Or use social media? All of these, and many others, require huge data centres, as well as fast data links spanning the world.

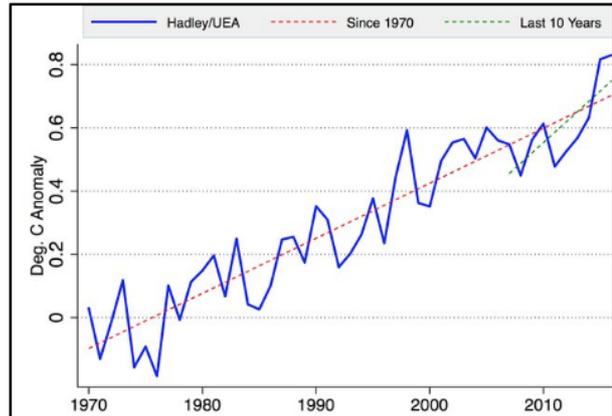


A Google data centre in Oklahoma, USA

Like electric cars, the amount of electricity consumed by all this data infrastructure is rising, and is becoming a significant proportion of total electricity used. In this article I will look at some of the positive claims and negative aspects of data centres.

What do data centres do?

Data centres started out to handle a variety of things including email, software downloads, website hosting, banking and insurance data, and search facilities such as Google or Wikipedia. As data



Lord Lawson argues that temperatures have declined in the past 10 years. But the opposite is true – they have actually warmed faster than the long-term trend.

storage got cheaper and capacity increased greatly, data centres began to be used to store things like photos and music. A big step occurred when they could deliver ('stream') high quality video content – TV programmes and films – to individual users on demand, via services such as Netflix. High-definition video requires a lot of storage, and streaming it on individual demand requires high-speed, high capacity data links and hubs – streaming is now about three-quarters of internet traffic. Another recent activity in some data centres is the intensive computing capacity needed for cryptocurrencies like Bitcoin.

Cheaper, higher capacity storage in data centres also meant that we could back up large amounts of our own data at low cost. This started with photos, videos and important files, and now full copies of our hard disks, securely stored remote from our own computers in 'the cloud'. At present big companies like Google and Microsoft are offering this, along with others such as Dropbox.



Rows of racks, each rack filled with servers, in a data centre

Data centres are buildings filled with specialised computers called servers, together with huge amounts of attached storage, densely packed into hundreds of racks of electronics (see photo above). If you store or download data from a data centre you won't know where it is located –often it will be in another country, and the companies that run them tend to duplicate data in more than one data centre so it's always available even if a particular centre has problems. And of course you won't know whether it uses coal power or renewables for its electricity, nor how efficient its energy use is.

These huge concentrations of electronics use a lot of electricity and generate a lot of heat, so they must also be cooled using air or water. Cooling the air or water uses yet more electricity, so data centres have very high energy consumption.

How much energy do they use?

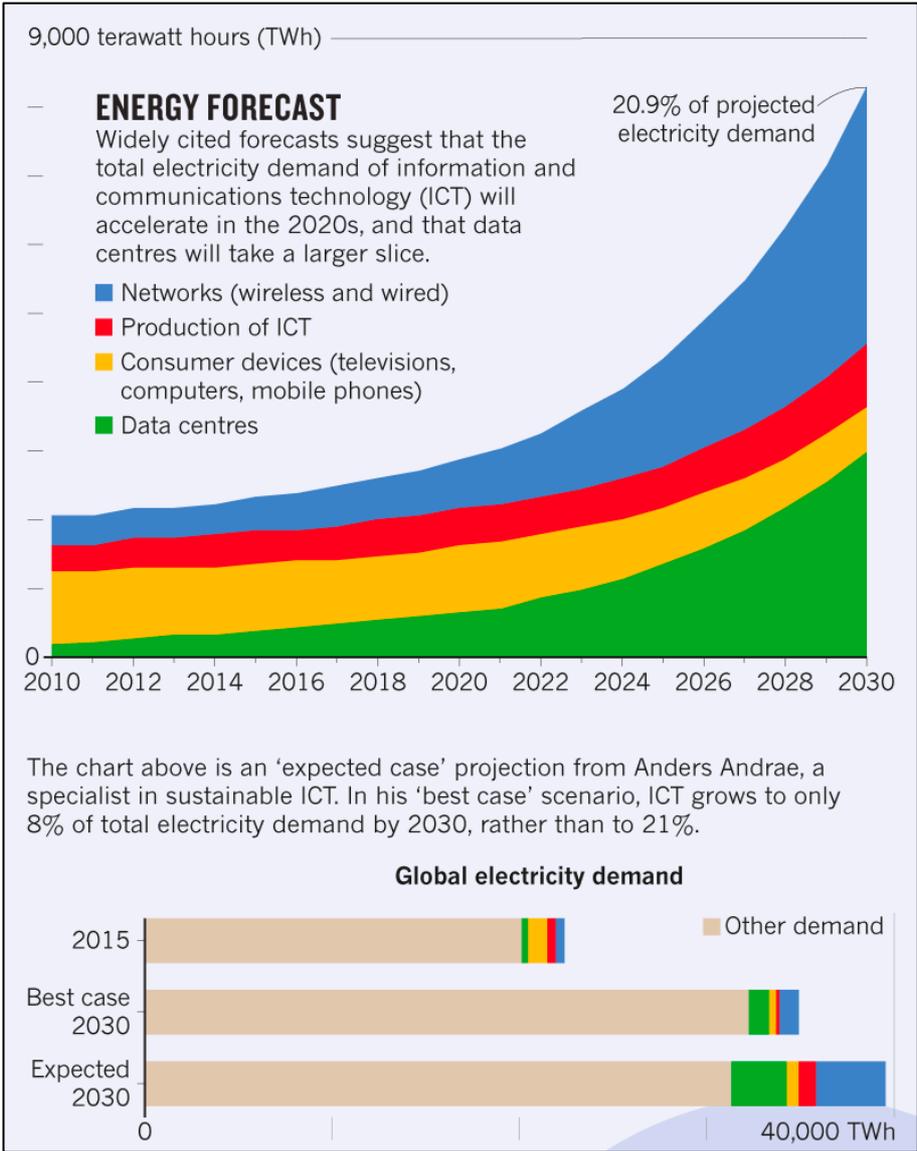
At present, data centres globally consume about 200 TWh* of electricity per year, which is roughly 1% of the world's electricity. That's equivalent to about 60% of the annual electricity consumption of the UK. Many more data centres are being built, so how much more electricity might they consume in the future, and can they be green?

Predicting future electricity consumption isn't easy. For example, total UK consumption was predicted to rise over the last few years due to more gadgets and appliances being used, but in fact our consumption has actually been dropping. That's because electric and electronic devices have become much more efficient. For example, the latest LED light bulbs now use less than one-eighth as much energy as incandescent bulbs and half as much as 'low energy' (CFL) light bulbs and

* TWh is terawatt-hours. Tera means thousand billion, i.e. trillion, so a terawatt-hour is a billion kilowatt-hours. A kilowatt-hour is the energy used by a one-bar (1000 watt) electric heater running for an hour.

fluorescents. And it's no longer quite so sinful to leave your TV on standby: older TVs typically used 10 to 20 watts on standby, but current ones tend to use less than one watt.

Building more and more data centres as new technologies appear will probably increase their total consumption, but the increase might be much less, or much more, than expected – it depends on the balance between increased efficiency and new developments. The diagram below shows a prediction up to 2030 in which electricity consumption by both data centres and data networks hugely increases. This would mean that all ICT (information and communications technology, including personal digital devices, mobile-phone networks and televisions) grows to use nearly 21% of global electricity. However, in a more optimistic projection the total demand of all ICT grows to 'only' 8% of electricity demand, as shown in the bar chart at the bottom of the figure. (On the other hand, a



Source: Nature, from Andrae, A. & Edler, T. Challenges 6, 117–157 (2015)

worst-case projection is for ICT to take more than 50% of total electricity use.)[†]

Reducing energy demand

Some experts disagree with these predictions, saying data centre consumption may only increase slightly – or even decrease. One obvious step being taken is to manage things better, for example automatically turning off servers that are not active instead of just leaving them idle. A steady trend for decades is that the power consumption and efficiency of electronic chips has improved hugely.

[†] These predictions assume that non-ICT electricity usage rises at 3% per year.

On top of that, the way the computing is being done can also be made more efficient – this is an area that has recently seen some big advances, notably the use of ‘hyperscale’ computing architectures.

In a conventional data centre, standard air conditioning can use up to 40% of the energy, and using evaporative cooling towers can also mean large amounts of water are also consumed (an estimated 100 billion litres of water in the US in 2014). It is much more efficient to cool the electronics directly with piped water (or other fluids) to the chips themselves (see for example go.nature.com/2Af1zm1).

An obvious improvement is to locate data centres in colder places, so that much of the time all that’s needed for cooling is outside air. That’s why Iceland now has some data centres. But a number of the world’s biggest data centres are in very hot locations, such as the Nevada desert, Georgia and Virginia in the US and Bangalore in India.

Another option is to use the waste heat from a data centre to reduce energy demand elsewhere. This requires a possible ‘customer’ nearby. A data centre in Stockholm heats some of the hot water in the city’s district heating system. A data centre in Switzerland heats a swimming pool, and one in Paris heats a nearby research arboretum studying the impact of high temperatures on vegetation.

Renewable energy



In 2011 and 2012 Facebook, Google and Apple committed to using 100% renewable energy in their data centres, and more internet companies have followed. In some cases the companies themselves have built huge solar-arrays, but more often they buy energy from existing solar and wind farms.

However, many internet companies have not gone green, for example Chinese internet giants Baidu, Tencent and Alibaba, South Korea’s Naver and India’s Tulip Telecom. Netflix does not have its own data centres; it uses Amazon Web Services. Amazon has been quiet about its massive data operations, though it does say that it has a long-term commitment to 100% renewable energy.

Buying renewably generated electricity does not mean that is what you get all the time. To take a domestic example, if you buy electricity from a green supplier like Good Energy or Ecotricity, an equivalent amount of green energy is generated but what comes into your house is whatever is available on the grid. However, that means the green electricity is used elsewhere.

Carbon neutrality can also be claimed by paying for carbon offsetting projects. For example, Microsoft invests in planting forests to offset its use of non-renewable electricity. But it’s not easy to verify the effectiveness of such schemes.

What might the future hold?

At present the situation is very mixed. Some of the biggest tech companies do seem to ‘get’ climate change, but many others don’t. The growing number and size of data centres means that their operators might be convinced that they should convert to renewables. That would require enough criticism from digital consumers who want them to change from being part of the problem to being

part of the solution. And if more and more data centre operators are convinced to go green, that would push electricity suppliers to convert to renewables.

More information

This article is mainly based on two sources:

How to stop data centres from gobbling up the world's electricity, by Nicola Jones. Nature, 13 September 2018: www.nature.com/articles/d41586-018-06610-y

The data on green data centers is still pretty cloudy, by Fred Pearce. GreenBiz, 24 April 2018: www.greenbiz.com/article/data-green-data-centers-still-pretty-cloudy

The second article above largely draws on a very detailed report by Greenpeace-USA that includes detailed ratings of the green credentials of a large number of internet companies:

Clicking Clean: A guide to building the green internet, by Greenpeace, May 2015: www.greenpeace.org/usa/wp-content/uploads/2015/05/2015ClickingClean.pdf

There is also a brief article on the BBC News website:

Climate change: is your Netflix habit bad for the environment?, by Reality Check team. BBC News, 12 October 2018: www.bbc.co.uk/news/amp/technology-45798523

* * * * *

The Sustainable Blewbury newsletter is edited by Jo Lakeland and Eric Eisenhandler

* * * * *

We have a substantial programme of activities in and around the village. Getting involved is fun and can make a very positive contribution to village life and local environment. If you'd like to get involved in what we do, or to receive our free Newsletter, email us at info@sustainable-blewbury.org.uk or phone Eric Eisenhandler at 01235 850558.