



GreeningIT

Sustainable IT tips: When to print

Printing – it's not always a bad thing!

Paper is a very energy-intensive product to manufacture. There are various estimates for how much energy it takes to produce, and the impact depends upon many variables – from whether the paper plant is run by coal or hydro-power, to how far the paper pulp is transported. For the sake of this comparison, let's take a general figure of ten kilo-Watt-hours per kilo of paper. The weight of a single A4 sheet of 80 gram per square metre paper is around five grams. The energy required to produce one A4 sheet is therefore 50 watt-hours.

For the sake of simplicity we'll ignore the embodied energy of the computer, and to balance that we'll ignore the energy used in printing. We'll also ignore the energy required to store and transmit the digital information. Let's assume it takes three minutes to read a single side of A4 paper. Let's also assume that the desktop computer consumes a quarter of a kilo-Watt, or 250 watt-hours of electricity. Therefore in a fifth of an hour, or twelve minutes, the computer will consume the same amount of energy as making a sheet of A4 paper. By reading a page every three minutes, the user is consuming a quarter of the energy reading from the screen than if they were reading from the paper – which is obviously better for the environment.

However, let's optimise this system. Let's assume the paper is double sided. That uses extra energy for printing, but not significantly more because much of the energy is contained in the paper itself. Reading from the screen will now take almost half the equivalent energy as reading both sides of the paper. Now let's assume that three people read the information, sharing the same piece of paper and reading it one after another. They are now using the less energy reading the paper copy than it takes to read the information from the screen individually. And, of course, if ten people read it, then the paper version is using far less energy.

In reality the figures are not so simple. For example, if we were reading the information on a laptop computer, that uses a tenth of the power of a desktop system; you'd have to share the piece of double-sided paper between twenty-five to thirty people before the paper version was better than reading it on a laptop. Quite simply, we must “think before we print”. What we can say is that where often-used information is “static”, meaning it is infrequently revised or changed, it is probably better that this information is kept as a printed volume which people can pull from a shelf and read at any time. For example, reference materials and technical manuals. Where information is in “flux”, and is continually being updated, or it is only required for a single use by a few individuals, then online distribution is probably the best option – like news bulletins and memos/emails.

What this analysis shows is that there is no one simple solution when it comes to the ecological footprint of our decisions on the use of technology. It is the peculiar characteristics of the factors in each decision that determine what it the best option overall.

*This checklist was extracted from a new publication by the APC, **A sustainable guide to IT**, written by environmental activist and ICT expert Paul Mobbs. To read the other Sustainable IT tip sheets, or to download the publication, visit greeningit.apc.org. For more information, email info@apc.org.*