

Sony Reader versus books: what's greener?

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The Sony Reader e-book viewer hits the UK today, hoping to "revolutionise" the way we read. Whether you think it's a hot gadget, a solution in search of a problem, an opportunity for new authors (Toby Young's opinion) or an over-priced gizmo (Nick Hornby's take), one question remains: is it green?

Does Sony's e-book viewer have a smaller environmental impact than the printed book? Let's take a look. Below, I've looked at how the two technologies square up on their environmental impact in three areas. First is the 'embodied carbon', the amount of carbon dioxide emitted to manufacture a book and the Sony Reader in the first place. Second is the carbon running cost -- the energy consumed to acquire new books and read them. Lastly, I've considered what happens to books and the Reader when they reach their end of life. So, without further ado... let eco battle commence!

Round one: embodied carbon

Reader

My requests for information from Sony on the Reader's green record fell on deaf ears. So, to guesstimate how much carbon it takes to make one, I've used the UN University's 2004 study on PC manufacturing as a yardstick. According to the UN, the production of one desktop PC and 17 inch monitor consumes 240kg of fossil fuels. Let's be generous and assume the hi-tech Reader, which is far smaller than a PC and monitor, uses one tenth of fuel. That's still 24kg worth of oil and other fossil fuels. The Reader's most likely made in China or Japan before being shipped to the UK. It'll then be delivered to a depot before being sent to individual shops. Unlike a book, it has packaging, which adds to the carbon cost of transporting it and producing the packaging in the first place. **Score: 3/5**

Scores are out of 5, with 1 representing the worst negative environmental impact and 5 the least)

Books

UK publisher Penguin estimates the carbon footprint of a 500 page paperback -- like Zadie Smith's *White Teeth* -- is around 2.5kg CO₂. That figure includes the entire production, from chopping trees and pulping them, transporting the paper, printing the book and transporting the finished book from warehouses to shops. Most UK books utilise paper sourced from Finland and other European sources. **Score: 3/5**

Verdict

Neither technology appears much greener than the other on manufacturing. While a single book's carbon footprint is almost certainly a fraction of the Reader's, the difference is less clear cut when you factor in tens or hundreds of printed books. Due to a lack of hard evidence in the public realm, the jury's out here: it's a draw.

Round two: carbon running costs

Reader

The Reader surely wins here, right? To get a new book, you just download a few zeros and ones from the web. No printing, no transport. But running the Reader requires energy in more ways than you'd think. It uses electricity to charge its internal battery, to power the PC you use to download new titles, and to run the servers that host the e-books. I think we can write off the Reader's own battery as a big power suck. Sony says the battery lasts 7,000 page turns -- the only time it draws power -- so you'll only be recharging every 14 books or thereabouts. Even if the Reader has a huge capacity battery (Sony won't tell me how many mAh it's rated at), it's still going to use very little power when compared to your mobile

phone. It's hard to say how much energy your PC and a server consume when downloading a Reader book, because there are so many variables. One indicator is a [2003 report](#) by Forum for the Future, which compares the carbon footprint of CDs purchased in shops and MP3s downloaded online. To purchase 56 minutes of music, the CD route produces 1.6kg CO2 and the MP3 download produces just 0.7kg CO2.

Comparing books to CDs is like comparing apples and pears, but I'd wager the Forum for the Future findings hold broadly true for books and e-books. Factor in the fact that file sizes for eBooks are smaller than most MP3 singles, and the odds look even more stacked in the Reader's favour. **Score: 4/5**

Books

The brilliant simplicity of the book is that, once it's been produced, it consumes no energy to run. The printed book, however, loses out against the Reader when you apply the multiplier effect. As we've seen above, each new book comes with a carbon footprint in the region of 2.5kg CO2. So if you buy 50 new books a year you're creating 125kg of carbon dioxide every year: more than 11 times the average Brit's carbon footprint. You could also factor in the carbon cost of lighting and heating bookshops. But I think that would be stretching the definition of a book's carbon footprint. With all carbon accounting, there's the question of where you draw the line. And if you begin counting bookshops' energy use, than surely you have to start factoring in the heating and lighting for the offices where the Sony eBook Store crew work? No, I think we can say the main carbon 'running cost' of the printed book comes from paper production, printing and transport. **Score: 3/5**

Verdict

Another close-run round, but the Sony Reader appears to have the edge. Despite the fact the Reader needs electricity to run, the carbon footprint of acquiring new printed books is comparatively large. So the more books you consume, the greener the Reader looks compared to the printed word. Reader wins.

Round three: end of life impact

Reader

What happens when your Reader gets dropped, or the battery finally dies? We don't know. Sony doesn't have a specific recycling scheme in place for the Reader, and it doesn't say what percentage of the Reader is recyclable. Then there's the question of upgrades. Sony's already on the second generation of the Reader, so what's to say version three won't arrive within a decade? It could allow you to download books straight to the Reader rather than using a PC, and might persuade gadget junkies to ditch their old Reader and rush to buy a new one.

Result: more carbon and more old Readers in landfill. **Score: 2/5**

Books

Books are a proven technology that last for hundreds of years. Just visit the British Library in London or the Deansgate Library in Manchester for proof. They can also be recycled, easily passed on to other 'users' and are low value, making them a suitable medium for loan libraries. Modern consumer electronics, on the other hand, are lucky if they last for ten years before requiring replacement or repair. So it's not unreasonable to guess that over the course of a book's life -- let's conservatively say 100 years -- you might buy 10 different Readers. Which wouldn't be very green. Printed books' Achilles Heel is the number of unsold books. The UK Publishers Association says 12.2 per cent of total book sales were returned unsold in 2007. That works out at 60.8 million books each year in the UK. Some of those are restocked, some are recycled and some are pulped and binned, increasing greenhouse gases from landfill. Regardless of where the copies end up, there's no doubting it's an inefficient way of distributing books. To the industry's credit, it is trying to reduce returns, and they're down 5.4 per cent between 2003 and 2007. **Score: 4/5**

Verdict

Printed books beat the Reader hands-down on end of life impact. And even when you consider the inefficiencies of returns and pulping in the print book trade, print still looks better. Printed books are durable and easily recycled.

Total scores

Reader: 9/15

Books: 10/15

On balance, it looks like sticking with Julian Barnes in print is slightly greener than downloading his latest novel digitally. But due to the lack of hard evidence and studies, I'd never pretend the comparison above is scientific or precise. Neither does it encompass a comprehensive ecological impact assessment; I've chosen to focus on carbon rather than, say, the toxic chemicals involved in paper production or inside the Reader.

What it does is offer a broad sense of the environmental pros and cons of print books versus e-books. And, with the information available right now, the humble book looks like the eco champion.

Source: www.smartplanet.com