Cover Page

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It's Not Easy Being Green

Towards Truly Sustainable Books

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The publishing industry has not been left unaffected by society's concern for climate change; book production is now expected to be concerned with the environmental impacts of paper use and other aspects associated with publishing that can have a negative effect on the environment. 'Green publishing' has thus been an interesting development in the book industry, and many publishing houses have indeed adopted strategies to limit their contributions to climate change.

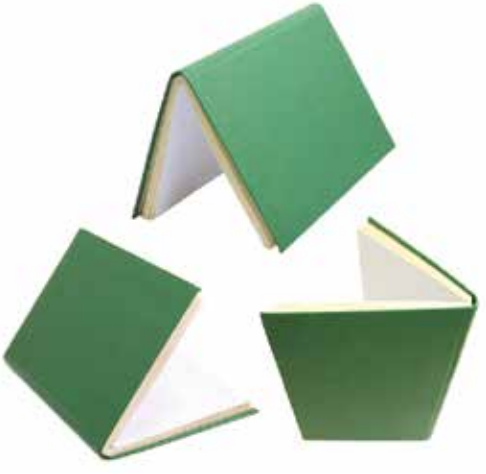
So far, these strategies mainly concern the amount, type and recyclability of the paper used for printing books. Some have, however, also claimed that new media, such as e-readers and e-books, contribute to a more environmentally conscious approach. Research, however, shows that digital devices may not necessarily be less of a burden to the environment than paper. The question thus arises whether publishing houses are right to refer to their digital projects in their attempts in green publishing, and it what way the industry could really become greener.

This paper will examine these questions, by analysing the environmental impact of both paper and digital books.[1] It will also be argued that it would be foolish to think that the solution to environmental issues in the book industry would lie in choosing either paper or digital, even though it is worthwhile to invest in e-reading more than is done now. It should be attempted to find a way to produce books with a valid concern for sustainability, which requires first and foremost a good insight into the environmental impacts, as well as including a concern for the environment into marketing strategies. An approach that will optimise the best of both worlds, and that includes governmental

policies, publisher's marketing strategies and technological developments will prove most effective, and may help the book industry to adopt a truly green way of publishing.

Current Initiatives towards Green Publishing

Green publishing is not new. Initiatives to make the publishing industry more environmental-friendly and durable have been around for several decades now. Already in 1996, the Recycled Products Cooperative programme was founded, which aimed at promoting recycled copy paper. From this very successful national program, the Green Press Initiative arose, which is one of the largest and best-known initiatives in the field of Green Publishing.[2] This American association wishes to make book and newspaper production and consumption more sustainable.[3] They have identified the following main issues that need to be resolved with regards to making these industries more environmental-friendly:



The impact on endangered forests

The source of all the printed materials, is to a great extent harvested in forests all over the world (Indonesia, Canada, South America) that are suffering severely from the enormous rate of deforestation. This has affected the wildlife, as well as the human residents of these regions, who depend on the forests for their livelihood. Unfortunately, a large portion of the trees is cut illegally, which complicates the effectiveness of any regulations regarding responsible harvesting. The number of species of trees is also dropping dramatically in some forests, which affects the habitat of wildlife in a very negative way.[4]

The impact on the climate

It is not well-known that the paper industry takes up the fourth place in the list of largest industrial sources of greenhouse gasses in the United States. No less than 40% of all the wood that is harvested is used for paper products. Undisturbed forests are able to store much more carbon than regrown forests. The gasses produced during manufacture also contribute to climate change.[5]

The impact on people

Deforestation also affects the local inhabitants. Especially in poorer countries, people are suffering from the industrial wood harvesting, as they are often forced to move, lose op-

portunities to harvest wood themselves, or hunt.[6]

The impact of the book and newspaper industry is thus large and wide-ranging. The question is of course, how these effects can be reduced. The Green Press Initiative has formulated an extensive list of actions as solutions to these issues.

The main focus should lie on the use of recycled paper, or paper from non-endangered forests, that bears FSC (Forest Stewardship Council) certification. Moreover, the absence of chlorine in the bleaching process can lower the amount of toxins used in the production of paper. To indicate this, another set of certificates was introduced: PCF stands for processed chlorine free; TCF for totally chlorine free, and ECF for elemental chlorine free. Ideally, less paper would be used altogether. Furthermore, vegetable inks (for instance, soy based) are to be preferred to petroleum inks. Climate impacts can be reduced by offsetting greenhouse gas emissions[7] and limiting energy use in offices. To achieve these goals, the Book Industry Treatise on Environmentally Responsible Publishing was introduced, which was signed by more than 220 printers, publishers and paper manufactures in the United States.[8]

The above is thus a good example of how paper and printing can become more environmental-friendly. These initiatives have proven very successful indeed: FSC paper is used ever more, as is recycled paper (between 2004 and 2007, the use of recycled fiber increased by 600%).[9] And in total, the industry reduced its emissions with over 25% between 2006 and 2010.[10]

Table 1. Environmental Progress Reported by Paper Manufacturers

Source: Milliot, 'Keeping te Green in Publishing', <http://www.publishersweekly.com/pw/by-topic/industry-news/manufacturing/article/58373-keeping-the-green-in-publishing.html> (17 January 2014).

Environmental Metric	2006	2010	% Change
Total Paper Consumption	1,763,698 tons	1,159,000 tons	34%
Average Recycled Content*	5%	24%	380%
Percentage of FSC Certified Paper	<5%	16%	>320%
Industry Greenhouse Gas Emissions**	12,400,000 metric tons	9,009,190 metric tons	-27%

*Estimate based on average for printing and writing sector

**Scope 1 and 2 Emissions, Inclusive of forest carbon loss. Source: Book Industry Environmental Trends

Therefore, although we must not forget that publishers may represent themselves as 'greener' than they in fact are in order to satisfy society's concern with climate change, responsible paper use has become an issue that the industry can no longer ignore.

However, these figures are influenced also by an increase in digital publishing in the form of e-books.[11] Many people have indeed found here a solution to the impact of paper

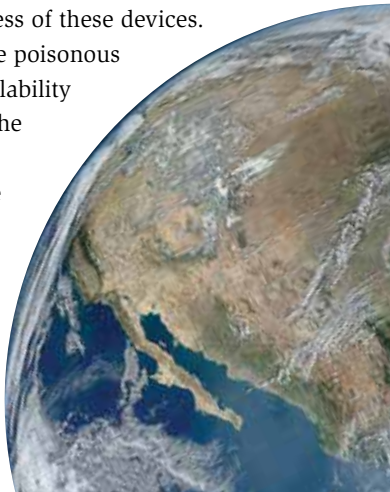
for book production; technological developments eliminating paper and printing are presented as the only way to produce and distribute books, and e-books are thus promoted as the solution to the industry's struggle to become greener. *Het Boekenschap*, a Dutch website that promotes self-publishing, claims to contribute to sustainability by sending mail digitally, and stimulating the use of e-books.[12] Another Dutch website, devoted to Green Publishing, also advertises e-books as the greener choice.[13] This thus sounds like a fairly straightforward solution to overcoming the environmental issues concerned with paper and book production: we simply need to go digital. Unfortunately, there are many indications that the solution is not quite that simple: the environmental impact of digital reading devices needs to be assessed and compared to that of paper; in other words, if the production of these devices causes as much or even more harm to the environment than the production of paper and books, the optimistic numbers reporting a trend towards sustainable book production may be nothing more than misleading, as the cause of non-sustainable book production would only be transferred from the book industry to the technology industry. In the second chapter, we will compare the impact on the environment caused by printed books to that of e-books, e-readers and tablets.

It's not Easy being Green: Paper vs. Digital

E-books are widely advertised as the 'greener' choice in books. The main arguments for the environment-friendliness of e-books rely mostly on the fact that for the consumption of e-books no paper is needed, and the above downsides and environmental impacts of the production of paper books are thus avoided. Furthermore, transportation of books in a digital fashion is less of a burden to the environment than the use of trucks and freight trains to transport paper books.

However, the production and use of e-books is to be reckoned with as well before we can be certain that reading digitally is 'greener' than reading printed books, and many people have started to doubt the initial support for e-books as sustainable options for reading books. Furthermore, several studies have been conducted to assess the carbon footprint of e-books, and the comparison indeed does not yield a straightforward answer in advantage of e-books.

Even though no paper is required for the production of e-books, the production of e-reading devices is not exactly environmentally neutral. Only a few companies, such as Apple, have given insight into the carbon footprint associated with tablet production, and therefore much remains unknown about the production process of these devices. Nevertheless, it is clear that the use and mining of rare metals, the poisonous gasses that are released during production, and the minimal recyclability of these electronic devices are a serious problem with regards to the environmental-friendliness of e-books.[14]



Besides the impacts of production, which is responsible for the largest part of the carbon footprint of e-books, e-readers also require electricity to be operational. As in many countries, such as

the United States of America, electricity is produced with the help of fossil fuels, reading digitally becomes even less harmless.[15] However, it must be said that e-ink screens are less burdensome in this respect, because they only use power to load a page, and not to display it, as their screens are not back-lit.[16] On the other hand, it has been observed that, as with reading a paper book, a light is needed for reading from an e-ink device at night.

Though studies do not consider this factor, because technically it is not regarded as pertaining to the environment, we must not forget the impact on the people who produce these devices. As with paper, local inhabitants are suffering from the production of e-readers as well. It was recently in the news that a shockingly high rate of the employers of the factories in China that produce Apple's iPhones and iPads, committed suicide.[17] Though this may be an avoidable effect of the production of e-readers, it still is a factor to be reckoned with when examining the impact of e-reading.

Even though customers now usually go for the cheapest option, this may change once their awareness of sustainability with regards to books and reading rises

Another factor in the comparison between the paper book and its electronic counterpart, lies in the extent to which recyclability is an option. With paper, as we have seen, this is increasingly done, but electronic devices such as e-readers and tablets are hardly recycled at all. Plastic is a difficult material to reuse, and these devices are not collected systematically for recycling. [18] Moreover, as e-readers and tablets are still being improved and developed, new features and better devices are released every year, which results in a shorter lifespan for these devices. This adds to the environmental impact as well. Finally, people use different devices for reading books, and besides e-readers, tablets, computers, laptops and smartphones are used for reading. Owning three devices obviously has a greater impact than owning just one. In that sense, one could argue that e-readers are quite unfriendly to the environment, because most people already have other devices that can be used for reading books.

All in all, researchers are still struggling to acquire the necessary data to provide a definite answer to the question of whether paper books or e-books are 'greener'.[19] It is difficult to compare two mediums that are so different in nature. In general, it is assumed that the decisive factor lies with the number of books that are being read, and the amount of time the device is used per day. If the e-reader is used frequently, and replaces the acquisition of paper books, e-reading will in the end be 'greener'. The limit generally lies somewhere around

twenty-five to thirty books (or ten books per year, with the device having an average lifespan of three years), which is in line with the reading pattern of an average reader, and with this number of books being read on the device, the carbon footprint of e-reading becomes smaller than that of buying this number of paper books.[20] When the iPad is used, e-reading produces a lower carbon footprint than reading paper books when the device is used for two hours per day.[21] Whether e-reading is indeed more sustainable, thus depends on how much you use your e-reader, and whether you use it exclusively, or also purchase paper books.

Thus there is still much more research that needs to be done before a definite verdict can be given regarding the question whether e-reading is better for the environment than reading printed books. A number of factors are crucial: how many books one reads on the e-reader, what type of e-reader is used (e-ink versus backlit screen), etcetera.

Moreover, we should realise that it is highly unlikely that either form of reading will completely disappear in the near future, and thus, instead of asking which is better, we should rather focus on the question how to benefit from the particular strengths of both modes of reading, in a way that appeals to the customer. It is with these questions that the final chapter will be concerned.

Towards a Greener Future

How are we to envisage a development towards truly green publishing? With the above facts, a number of steps can be identified which will help to make the best of both worlds: the printed book and e-books. These questions will be discussed from the perspective of the situation in the Netherlands.

First, we need to have a good insight into the developments regarding e-reading in order to establish what will be the best way towards a greener future, as it depends on the popularity of digital reading whether the most sustainable option is to focus on developments in the e-reading sphere. As it stands, e-books and e-reading are indeed becoming increasingly popular. In 2012, 1.1 million e-books were sold in the Netherlands, which means an increase of 75% compared to 2011. Printed book sales dropped with 7,3% in the same period, with 43,5 million books being sold.[22] Moreover, there are four million tablets and one million e-readers in use at this point in time, which means that approximately a third of the Dutch population owns an e-reading device.[23] However, printed books are still the main focus of the book industry.[24] It is thus likely that e-books and p-books will continue to exist side by side for many years to come, if not forever, but there is a clear trend towards more e-reading, and less p-reading. We should thus not focus solely on the question whether paper books or e-books are more environmental-friendly, but should rather find a way to find a balance between the two to achieve the most sustainable outcome possible. Nevertheless, as tablets are becoming increasingly popular,[25] it would be wise, from an environmental perspective, to put more eggs in the e-book basket, than in the p-reading one, as in the latter options for increased sustainability are already widely available.

It should be clear that the least sustainable option is to provide both a digital and a paper edition of a single book, which brings along the environmental impacts of both for the production of a single title. Still, this is what usually happens, as titles are published in different formats, as hardback, paperback and e-book. Sometimes, a combination deal is even offered, where buying both the e-book and the p-book is the most attractive option.[26] The problem with providing only a digital version of a book, from the publishers point of view, however, is that e-books have a lower profit margin than paper books; even though the costs of paper are absent in the production process of e-books, publishing e-books brings with it other types of costs, which do not make an e-book necessarily cheaper to produce. These aspect include conversion costs, database storage, and DRM contributions.[27]

It is highly unlikely that either form of reading will completely disappear in the near future, and thus, instead of asking which is better, we should rather focus on on the question how to benefit from the particular strengths of both modes of reading

An additional difference between paper books and e-books is the VAT rate; taxes on paper books are only 6%, but 21% on e-books in the Netherlands. A final obstacle for publishers to make publishing e-books alone for certain titles a profitable undertaking, is the mindset of the customer; many people are not willing to pay the same amount of money for a digital file as they would for the physical object when it comes to books.[28] How can these obstacles be overcome?

First of all, the policy regarding the higher VAT rate should be changed. In fact, the European court is investigating whether e-books should be promoted from a service (high VAT rate) to an actual book, which is a cultural product (low VAT rate).[29] France and Luxembourg already have a lower VAT rate, and it is likely that European legislation will be altered.

The attitude of the customer is perhaps more difficult to overcome in order to provide publishers with a motive to produce certain titles as e-books only.[30] However, with the rise of public concern for environmental issues, it may simply be the case that the book industry can profit from this current awareness. This requires a certain marketing strategy that would make the most of environmental concerns. For instance, an estimate of the levels of CO2 that were necessary to produce the item could be displayed by websites such as Amazon and Bol.com. This at least provides the customer with more insight into the environmental impact of books, which is always the first step towards a greener future. The same goes for e-readers and tablets. Even though customers now usually go for the cheapest option, this may change once their awareness of sustainability with regards to books and reading rises.

As we have seen, e-reading can outdo paper books with regard to sustainability when the number of e-books read rises above approximately twenty, and thus, as the popularity of e-reading is rising, customers should be motivated to buy as many e-books as possible. This means that bulk deals, or discounts on the purchase of multiple e-books should be provided, which have indeed started to appear more frequently during the last few years. It is likely that these offers will be popular, as readers are already acquiring e-books in bulk illegally.[31] Of course, a way should first be found to stop this type of crime in order for publishers to make a reasonable profit margin.

The source of all the printed materials is to a great extent harvested in forests all over the world that are suffering severely from the enormous rate of deforestation

A particular sector for which e-reading would most likely be a more sustainable choice, is that of schools and universities. Here, students are required to purchase a great number of books, and especially for this specific group of readers, e-reading is unequivocally a more sustainable option than the use of paper textbooks.[32]

Therefore, though there are some additional conditions that need to be met when the impact on the environment is compared to paper books, the claims for a greener future with e-books can indeed become true, but the book industry is not yet exploiting e-reading as the greener choice in an adequate way.

However, by and large, paper editions are still the dominant mode of reading, and it is not realistic to assume a paperless future altogether. To overcome the issues attached to paper books, as well as the common problem of overproduction, printing on demand can prove promising. It is not only more sustainable because no more copies are produced than are sold, but also because with traditional offset printing, much paper is wasted during the initial preparation of the presses.[33] If the paper used for printing on demand is from recycled and sustainable forests, printing on demand is the way to go for a truly green future for the printed book.

Another necessary step towards sustainability is to invest in making the production of technological devices more environment-friendly. Initiatives are now still quite rare, but they have proven very successful (one can think of the 'FairPhone', which was sold out almost immediately after its production was announced).[34] The average production processes of tablet and e-reader, however, are still lagging behind with regard to sustainability.

The publishing industry can thus contribute to a more sustainable future for books, but many elements for a truly green way of publishing are out of their hands, such as the VAT rate, the production of e-reading devices and the willingness of the customer to make green choices. Moreover, more research is necessary to establish the environmental impacts of all forms of reading that are current right now. But even though we are trying

to put our finger on a moving target, and many question still remain, the primary factor in whether the future for books will be a green one consists of the awareness of the public, and the willingness of both customer, publisher, the technological industry and the authorities to take sustainability into account.

Conclusions

The publishing industry is faced with a challenge in its efforts to become 'green'. The developments towards digital reading complicate these attempts even more, and further research is required for an accurate estimate of the impacts on the environment of all types of reading that are currently available.

Producing a paper book, however, is as yet far from sustainable; forest devastation and the amount of greenhouse gasses released in the production of paper and the transportation of books makes the industry a great contributor to global warming. Fortunately, the paper industry has started to resolve some of these issues by developing recycled paper and paper from responsibly grown forests, which, if this becomes the norm, can make the book industry significantly more sustainable.

With the advent of paperless reading in the form of e-books, many have seen a solu-

tion to the environmental concerns of the book industry. However, the production of e-reading devices such as e-readers and tablets, is far from sustainable, as rare metals and poisonous gasses are part of the fabrication process. However, when the carbon footprint of paper books and e-books are compared, e-reading proves most sustainable when approximately thirty books are read on the device, which is in line with the average reader's consumption pattern. Especially considering the popularity of e-reading devices (tablets and e-readers) and e-books, investments should be made to take advantage of these developments in order to make the book industry as sustainable as possible.

To achieve this, publishers should change their habit of publishing a paper edition

together with an e-book of a single title, and should try to produce more titles only in e-book format. In order to help publishers make reasonable profit margins, authorities should lower the VAT-rate. Moreover, customers should be made more aware of the environmental impacts of reading, and the technological industry should be required to produce in a more sustainable fashion. Printing on demand should be the default mode of book printing, and education in particular should make more use of digital reading.

All in all, green publishing is still work in progress, but if cooperation between authorities, publishers, technological industries and customers can be accomplished, the future of sustainable publishing is predominantly digital—and very green indeed. ■

Notes

1. Of course, other considerations are also relevant to the differences between e- and p-reading, such as the effects on deep reading, issues regarding ownership, etcetera, but these will not be discussed in this paper. For these issues, see for instance A. van der Weel, Changing our textual minds: towards a digital order of knowledge. (Manchester: Manchester University Press, 2011).
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