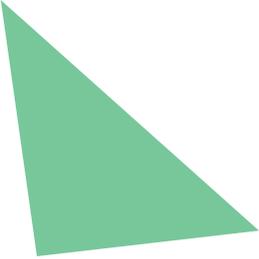


Print and Paper The Facts



Digital media has environmental impacts and may not be “greener” than print and paper

“Go paperless, go green” is a common theme these days as many corporations and governments encourage their customers and employees to switch to electronic transactions or communications. But are appeals to help the environment by eliminating paper based on sound science or on marketing strategies aimed at cost cutting? Organizations that truly want to make responsible environmental choices should do so based on rigorous, peer-reviewed and verifiable life cycle assessments of each alternative

Rather than asking which is better, paper or electronic communication, we should be working to determine which combination of the two has the least impact on the environment while best meeting social and economic needs. As the population and resulting demand on resources continues to grow, a sustainable future will necessarily depend more heavily on the use of renewable and recyclable products and less on non-renewable materials and the use of fossil fuel energy.

Because the responsible manufacture and use of print and paper contributes to long-term, sustainable forest management in North America and helps mitigate climate change, it will remain an important element in our media mix. It will also continue to provide social and economic benefits that contribute significantly to the well-being of North American businesses and citizens alike.

“Paper has been an integral part of our cultural development and is essential for modern life. Paper helps to increase levels of literacy and democracy worldwide and plays an important role in protecting goods and foodstuffs during transit. Paper is made from renewable resources, and responsibly produced and used paper has many advantages over other, non-renewable alternative materials.”¹

“The direct impact of information communication technology (ICT) products and services replacing paper is far from negligible, and the trade-off between the two “technologies” depends on conditions such as use frequency, source of energy, end-of-life management of the products, etc.”²

In 2013, 1.3 million tons of selected consumer electronics (TVs, VCRs, DVD players, video cameras, stereo systems, telephones, and computer equipment), were collected for recycling (40% recovery rate) in the U.S. Worldwide about 15% of all electronic waste (e-waste) is recycled.³ This compares to a 2013 recovery rate of 67% for newspaper/mechanical paper, and 75% for containers and packaging in the U.S. Paper is recycled more than any other commodity in the U.S. municipal solid waste stream, including plastics, glass and metals.⁴

Paper recycling reuses a renewable resource that sequesters carbon and helps reduce greenhouse gas emissions. Greenhouse gas reductions result from avoided methane emissions. In addition, recovering paper extends the fiber

supply and saves considerable landfill space.^{5 6}

Paper and paperboard recovery of about 43 million tons in 2013 resulted in a reduction of 149 million metric tons of carbon dioxide equivalent emissions. This is equivalent to removing 31 million cars from the road in one year.⁷

A recent study estimates that developing countries will produce at least twice as much e-waste as developed countries within the next six to eight years. The authors, based in China and the U.S., forecast that in 2030 developing countries will discard some 400 million to 700 million obsolete personal computers per year compared to 200 million to 300 million in developed countries. This is significant because uncontrolled toxic emissions result from the informal recycling practices that are often used to deal with e-waste in the developing world. The resulting emissions, which can include dioxins, furans, and cyanide, can harm the recycling workers and pollute local environments.⁸

A study by Two Sides found that half the leading telecommunications companies, banks and utilities in North America made unsubstantiated claims about the environmental benefits of electronic billing. In response, Two Sides initiated a campaign to educate senior executives on the sustainability of paper and to encourage them to abandon misleading environmental claims. To date, over 30 companies have either changed or removed their online environmental claims and several more are working with Two

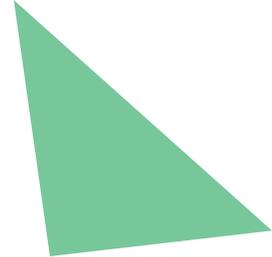
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Print and Paper The Facts



Sides to develop language that does not contain misleading or factually incorrect environmental claims about the use of online transactions and communications.⁹

“According to the IEA, in 2013, the global electricity demand of ICT comprising network-enabled devices, network infrastructure and networks exceeded 1 560 terrawatt hours (TWh), corresponding to approximately 8% of total current final global electricity use. All trends indicate that this demand will continue to grow at a rapid rate.”¹⁰

Until recently, discussion of the energy consumed by cloud services focused on access via wired connections. However, use of wireless access has grown very rapidly and in 2015, the global wireless cloud alone will consume up to 43 TWh, compared to only 9.2 TWh in 2012, an increase of 460%. This is an increase in carbon footprint from 6 megatonnes (MT) of CO₂ in 2012 to up to 30 MT of CO₂ in 2015, the equivalent of adding 4.9 million cars to the roads. Up to 90% of this consumption is attributable to wireless access network technologies, data centers account for 9%.”¹¹

“Data centers are one of the largest and fastest growing consumers of electricity in the United States. In 2013, U.S. data centers consumed an estimated 91 billion kilowatt-hours of electricity – enough electricity to power all the households in New York City twice over – and are on-track to reach 140 billion kilowatt-hours by 2020.”¹²

“Much of what makes electronics work is attributable to certain kinds of minerals known as rare earth metals. The earth’s supply of these minerals is dwindling.”¹³

Electronics contain hazardous substances like cadmium, lead and mercury and should never be put into the trash.

If these toxic compounds end up in a landfill they can poison the soil and water. If they are incinerated they can emit toxic gases.”¹⁴

“It is estimated that the production and running of the ICT sector equates to 2% of global GHG emissions, similar to the airline industry, and this is expected to double by 2020.”¹⁵

The pulp, paper and print industry accounts for 1% of global carbon dioxide emissions.¹⁶

Small network equipment like routers and modems used together in a household consume about as much energy as a new flat-screen television. On a nationwide basis, these devices consume 8.3 billion kilowatt-hours a year – more than the consumption of every home in Silicon Valley. It is estimated that small network equipment in America’s homes consumed more than \$1 billion worth of electricity in 2012, equivalent to the output of three large (500 MW) coal-fired power plants. This resulted in 5 million metric tons of carbon dioxide emissions, which represents the annual tailpipe emissions of 1.1 million vehicles.¹⁷

An analysis of 113 ICT companies in the U.S. showed that they collectively consumed 1.5% of the total U.S. electricity used in 2014 and only 14% of that was from renewable electricity.¹⁸

On average, about two-thirds of the energy used for production by the U.S. pulp and paper industry comes from using carbon-neutral biomass onsite, including spent pulping liquors, bark, wood, wood scraps, wood by-products, and process residuals. An additional small, but significant, amount of energy is produced by other renewable sources such as hydropower.¹⁹

¹ [WWF, 2010](#)

² [Arnfalk, 2010](#)

³ [Baldé et al, 2015](#)

⁴ [EPA, 2015](#)

⁵ [AF&PA, 2014](#)

⁶ [AF&PA, 2014](#)

⁷ [EPA, 2015](#)

⁸ [Yu et al, 2010](#)

⁹ [Two Sides N.A., 2015](#)

¹⁰ [International Energy Agency \(IEA\), 2014](#)

¹¹ [CEET, 2013](#)

¹² [Natural Resources Defense Council, 2015](#)

¹³ [Arrow Value Recovery, 2014](#)

¹⁴ [Arrow Value Recovery, 2014](#)

¹⁵ [Gartner, 2007](#)

¹⁶ [ECOFYS, 2013](#)

¹⁷ [Natural Resources Defence Council, 2013](#)

¹⁸ [NREL, 2015](#)

¹⁹ [American Forest and Paper Association, 2014](#)

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