Electronic Communication

The Facts

As global demand for resources continues to grow, a sustainable future will depend heavily on the use of products that are highly recyclable and based on renewable materials and energy, as opposed to non-renewable materials produced with fossil fuel energy. Paper is well positioned given its unique sustainable features. "Go paperless, go green" is a common claim that encourages us to switch to electronic transactions and communications. But are appeals to help the environment by eliminating paper based on sound science or on marketing strategies?

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

Environmental marketing rules are often broken

A study by Two Sides found that half the leading Fortune 500 telecommunications companies, banks and utilities were making unsubstantiated claims about the environmental benefits of electronic billing. In response, Two Sides initiated a campaign to educate senior executives on the sustainability of print and paper and to encourage them to abandon misleading environmental claims. As of June 2021, 146 North American companies and over 700 globally had removed or changed inaccurate anti-paper claims.[1]

Marketing claims like "go green, go paperless" do not meet guidelines for environmental marketing established by the U.S. Federal Trade Commission and the Competition Bureau of Canada. Marketers must ensure that all reasonable interpretations of their claims are truthful, not misleading, and supported by reliable scientific evidence.[2,3]

A recent consumer survey commissioned by Two Sides in the United States showed that 57% of respondents agreed that claims about switching from paper to digital being better for the environment were made because the sender wants to save money.[4]

Digital information has an environmental impact

The material footprint of digital technology is largely underestimated by its users, given the miniaturization of equipment and the "invisibility" of the infrastructures used. This phenomenon is reinforced by the widespread availability of services on the "cloud," which makes the physical reality of use all the more imperceptible and leads to underestimating the direct environmental impacts of digital technology.[5]

In 2015, the global energy footprint of the Information Communications Technology (ICT) sector was 805 terawatt hours (TWh) or 3.6% of global energy consumption.[6]

The share of digital technology in global greenhouse gas emissions could reach 8% by 2025, i.e. the current share of car emissions.[7] Data centers on their own could produce 1.9Gt (or 3.2%) of the global total) carbon emissions.[8]

The energy consumption required for digital technologies is increasing by 9% each year.[5] Depending on the level of energy efficiency achieved, ICT could use as much as 51% of global electricity in 2030 and contribute up to 23% of globally released greenhouse gas emissions.[9]

By 2023, North America will have 345 million internet users (up from 328 million in 2018), and 5 billion networked devices/ connections (up from 3 billion in 2018).[10]

In 2014, data centers in the U.S. consumed an estimated 70 billion kWh, representing about 1.8% of total U.S. electricity consumption. Based on current trend estimates, U.S. data centers are projected to consume approximately 73 billion kWh in 2020. This energy consumption does not include the energy required to build, power or recharge the devices.[11]

An analysis of 113 ICT companies in the U.S. showed that 14% of the energy consumed was from renewable electricity in 2014.[12] This compares to 65% of energy demand met at U.S. pulp and paper mills by carbon-neutral biomass and renewable fuels in 2018.[13]

E-waste is a growing problem

The vast majority of Americans – 96% – now own a cellphone of some kind. The share of Americans that own smartphones is now 81%, up from just 35% in 2011.[14]

Nearly three-quarters of U.S. adults now own desktop or laptop computers, roughly half now own tablets and roughly half own e-readers.[14]

Since technologies change quickly, many users change devices regularly; often before they actually break. Average replacement cycles are becoming shorter. The average smartphone lifecycle in the USA, China and major EU economies does not usually exceed 18 to 24 months.[15]

In 2019, the world generated 53.6 million metric tons (Mt) of electronic waste, and only 17.4% of this was officially documented as properly collected and recycled. The amount recycled grew 1.8 Mt since 2014, but total e-waste generation increased by 9.2 Mt. This indicates that the recycling activities are not keeping pace with the global growth of e-waste.[16]

The U.S. and Canada annually generate 7.7 million metric tons (Mt) of electronic waste or 20.9 kilograms (kg) per capita. Of that 7.7 Mt, the U.S. generates 7 Mt and Canada generates 0.7 Mt. Only 15% of e-waste in North America is recycled.[16] This compares to 66% of paper and paperboard recycled in the U.S.[17] and 70% recycled in Canada.[18]

Increasing levels of e-waste, improper and unsafe treatment, and disposal through incineration or in landfills pose significant challenges to the environment, human health, and to the achievement of the U.N Sustainable Development Goals.[16]

Recent studies have continued to highlight the dangers to human health from exposure to well-studied toxins. Research has found that unregulated e-waste is associated with increasing numbers of adverse health effects. These include adverse birth outcomes (Zhang Y et al. 2018), altered neuro-development (Huo X et al. 2019b), adverse learning outcomes (Soetrisno et al. 2020), DNA damage (Alabi OA et al. 2012.), adverse cardiovascular effects (Cong X et al. 2018), adverse respiratory effects (Amoabeng Nti AA et al. 2020), adverse effects on the immune system (Huo X et al. 2019b), skin diseases (Decharat S et al. 2019; Seith et al. 2019), hearing loss (Xu L et al. 2020), and cancer (Davis JM et al. 2019).[16]

E-waste contains precious metals including gold, silver, copper, platinum and palladium; valuable bulky materials such as iron and aluminum along with plastics that can be recycled. It also contains rare earth and scarce metals as well as hazardous materials such as mercury, lead, cadmium, fluorocarbons or various flame retardants.[16]

The increasing need for raw materials (especially for rare earth and minor elements) and unregulated e-waste recycling operations in developing and underdeveloped counties contribute to the growing concerns for e-waste management.[19]

Sources

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