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Straddling digital and environmental goals: tips for investors

BY LYNN L. BERGESON

The environmental impacts of the digital economy are increasingly the focus of attention and concern. There is no question the demand for electricity, water and land have increased sharply in response to the growth in digital activity. Identifying, quantifying and mitigating environmental and ecological impacts are core to value creation, and investors must be mindful of how a company is positioned to create value while avoiding public rebuke for neglecting to account for the environmental impacts of greatly increased digital activity.

This article explores the digital economy, the growing set of metrics used to assess environmental sustainability in a digital economy, the tools companies are using to improve efficiency, lessen environmental impacts and increase supply chain transparency and traceability, and tips for investors in assessing a company's environmental awareness of the impacts of greatly increased digital activity.

Our digital world

David Rejeski, a noted scholar and current visiting scholar at the Washington, DC-based Environmental Law Institute, famously quipped, "Why should environmental policymakers pay any attention to something like electronic commerce? … Electronic commerce is about convenience, not the environment, isn't it?" Mr Rejeski asked this prescient question a shocking 22 years ago in an article intended to focus attention on the now obvious but, then and still, overlooked issue of electronic commerce's impacts on the environment. When originally asked in 1999, only 7 percent of US households had purchased something online. Decades later, much has changed commercially, but awareness of the issue curiously remains below the radar.

The changing landscape

This appears to be changing. The coronavirus (COVID-19) pandemic has changed our world dramatically in ways large and small, and has hastened a transition to an increasingly digital lifestyle. Movies are streamed, dinners are ordered and delivered through online apps, and work is conducted remotely via Zoom and other digital platforms. While service providers offer us a virtual experience, the

increasingly significant environmental and energy impacts of powering our digital world are entirely real, albeit hidden from view.

According to the journal *Resources, Conservation, & Recycling*, the surge in digital activity occasioned by the pandemic has resulted in skyrocketing carbon emissions and increased water consumption and land usage. Internet usage increased by 40 percent worldwide following the stay-at-home mandates issued in the first quarter of 2020. The Yale-led study the article summarises concludes that the increase in online activity triggered a demand for up to 42.6 million megawatt-hours of additional electricity to support the increase in data transmission and enhanced power demand placed on data centres, the brick-and-mortar structures that house the hardware, computer networks, cloud services, and related infrastructure the digital world requires.

While the pandemic also resulted in a sharp reduction in travel-related carbon dioxide emissions and, according to the study, changes in internet use do not result in linear changes in energy use and environmental footprints, most would agree, however, that many companies and most consumers are blissfully unaware of the environmental consequences of their online use behaviours. Who knew, for example, that if 70 million streaming subscribers lowered the quality of streaming video from high definition to standard definition, it could reduce monthly greenhouse gas emissions by up to 3.5 million tons? According to the study, this is the equivalent of eliminating 6 percent of monthly coal consumption in the US. Metrics like these are relatable, and more are needed to raise awareness of the issue.

Internet usage is only a part of the growing demand. Information and communications technology (ICT) devices require enormous resources to power. Internet of things (IoT) devices, excluding smartphones, tablets and computers, also collect data for analysis and storage. Similarly, artificial intelligence (AI) and machine learning (ML) require significant computing power, data processing and computer storage.

These demands are consequential and growing. CISCO Systems, Inc. estimated that cloud storage increased more than threefold between 2016 and 2021, with big data and the IoT chiefly driving the growth. Data centre companies and industry analysts widely cite a figure that claims 1 to 3 percent of all global energy is consumed by data centre operations alone, with some suggesting the number doubles every four years. Interestingly, data are not stored and processed on a country-by-country basis, and it is not uncommon for data centres to concentrate in geographic locations. For example, Singapore is an island of some 581 square kilometres, yet it has more than 70 data centres classified as large or very large. Unsurprisingly, these centers have a disproportionate impact on energy use. A typical data centre is said to consume as much power as 60,000 households. Since Singapore imports more than 90 percent of its total power supply and does not rely heavily on renewable energy, this inconvenient fact is a source of growing concern and highlights the need for a more strategic approach to powering a digital world.

Emerging industries rooted in e-commerce are also relevant to this discussion. Bitcoin, powered by blockchain technology, is reported to consume 0.55 percent of global electricity production, an amount comparable to the energy draw of Sweden. While experts debate whether the value of Bitcoin justifies the energy demand, some question whether that is the correct question to be asking. What we can all agree on is the need for more research and better metrics to assess the scope of the energy drawn down to ensure informed decisions can be made about how to power our digital world sustainably.

Sustainability and circulatory issues loom large

Researchers are heeding the call and are beginning to explore the environmental impacts of greatly increased digital activity. The Yale-led study is one such example, and the study cites other recent research intended to provide greater transparency on this emerging new aspect of environmental, social and governance (ESG) issues.

Investors know well that regulatory oversight and the increased focus on ESG are making commercial transactions more complicated. According to one survey, approximately one-third of G20 companies reported that they are under 'extreme' pressure to improve performance on ESG matters. As interest in the digital activity footprint ramps up, corporate managers and the companies that invest in them will need to be more conversant in the language of digital impact and well positioned to commit to define that footprint and limit the digital impact on the environment.

What might that look like? For starters, recognition of the issue is a step in the right direction. What goes on behind the scenes in supporting our digital reality may not be visible, but its environmental and energy impacts are real. As stakeholder interest in the issue picks up, companies, and investors in them, need to start expressing awareness of the consequences of increased digital activity. Corporate interests beyond service providers, including cloud-based storage companies and streaming and videoconferencing providers, are expected to be among those conversant with and sensitive to the issue. Supporting research on the environmental impacts of increased digital activity is one expression of interest. Much more research is needed to inform the decision-making process to ensure the responsible development of sustainable digital norms and practices.

Supporting greater transparency and consumer education on this topic is another sensible measure. For example, consumers may or may not be fully aware of the environmental costs of preferring high definition over standard definition. In some cases, high-definition video quality may be the default purchase option. Providers could instead require user consent to force the election of this option and thus prompt a teachable moment and a more sustainable decision-making process.

Investors have a role to play. Including the digital footprint in the broader spectrum of ESG considerations is one clear way of promoting awareness, enhancing transparency and diminishing adverse environmental consequences. This both helps create and sustain value in the

corporate entity and it promotes the possibility of a diminished footprint caused by the adverse effects of increased digital activity. It is not too much of a stretch to envision specific corporate metrics around digital activity expressed in qualitative or quantitative terms and routinely reported in annual reports on sustainability and circularity.

Digital activity will continue to increase. So will the focus on its environmental consequences, and that will drive media and other stakeholder interests in what companies, and investors in them, are doing to define and curb the adverse environmental and energy impacts of powering increased digital activity. This, in turn, will accelerate the focus on the ethical, environmental justice and related social costs of increased digital activity. Understanding the issues and being prepared to answer them are essential to maintaining corporate value and an entity's credible commitment to sustainability. ■

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