Sustainability in Media

By Barbara H. Lange, Kibo121, Guest Editor

Welcome to this special issue on sustainability in media. I am very excited to see SMPTE publish this issue on an important topic that has been growing in our consciousness in recent years. As you read through the articles, you will gain an understanding of the issues as well as the case studies that are helping to mitigate the impacts of climate change within our industry.

For context, it is helpful to provide a brief overview of what we mean by sustainability, in general, and, more specifically, in the media technology industry.

Sustainability was defined in 1987 by the UN Brundtland Commission as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."[1] Furthermore, sustainability considers three areas of concern: 1) social, 2) economic, and 3) environmental. Combined, the three areas form the foundation for the UN's Sustainable Development Goals (SDGs),[2] which provide the framework as a call to action to nations around the world. Climate change and environmental sustainability are just two of the 17 SDGs that form this framework.

The industrial revolution was a period of great innovation that transformed humanity from an economy based on hand production methods to one based on machines. These machines brought excellent efficiency and growth to expand human endeavors. Without these capabilities, we would not have seen the extraordinary growth and potential of today's economies. But the power to drive these innovations has also contributed to climate change. Scientists have measured the Earth's global average temperature change and tell us that the consequence of a warmer environment is contributing to climate change, for example, in the form of extreme weather events.[3]

The 2015 Paris Agreement[4] is a legally binding international climate change treaty to hold the increase in the global average temperature to well below 2°C, preferably 1.5 °C, above preindustrial levels. In practice, this means reducing global carbon emissions by 45% (more than 2010 levels) by 2030 and reaching net zero by 2050.

The Paris Agreement, adopted by 196 countries, is the driving force for integrating climate change into our daily lives. Countries are actively introducing regulations that incentivize industries to develop alternative approaches to energy consumption, water conservation, and waste reduction, among other sustainability targets.

According to the U.S. Environmental Protection Agency,[5] the greatest contributors to carbon emissions are transportation (28%), electric power (25%), industry/manufacturing (23%), commercial and residential buildings (13%), and agriculture (10%).

Measuring carbon emissions is guided by the greenhouse gas (GHG) protocol's[6] three scopes of measurements. The GHG forms a global standardized framework to measure and manage GHG emissions from private and public operations, value chains, and mitigation actions. Briefly, the scopes are defined as:

- Scope 1 are the direct emissions calculated from operating the business. This generally includes the machinery to make products, driving vehicles, heating/cooling buildings, and powering computers.
- Scope 2 are the indirect emissions calculated from the production of the energy that the business buys.
- Scope 3 are the indirect emissions calculated from up and down the business' value chain, meaning suppliers to customers.

It is worth noting that Scope 3 is the leading contributor to the business' carbon emissions calculation, often upward of 80% of the total. In the media and entertainment industry, media tech suppliers are a "scope 3" to their customers.

While the media and entertainment industry is not the largest contributor to carbon emissions, it does have an impact through its high use of power (think data centers, studios, and productions) and transportation. It also wields significant influence through the content it delivers to consumers.

As a result of demand from investors, many media companies from around the world have made net-zero target announcements, including the BBC (U.K.), GrupoGLOBO (Brazil), ProSiebenSat.1 (Germany), Disney (U.S.), Adobe (U.S.), and SDVI (U.S.) to name just

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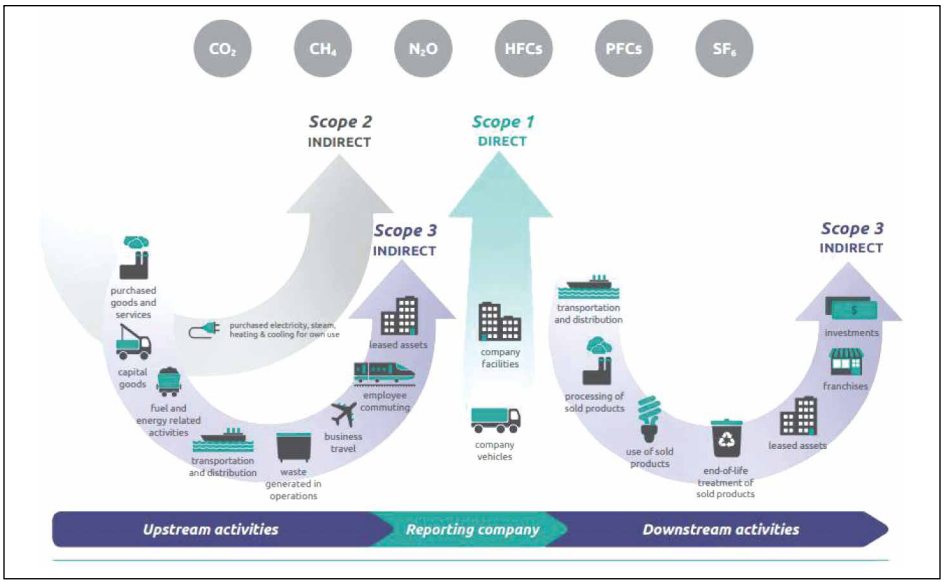

FIGURE 1. Overview of GHG protocol scopes and emissions across the value chain. Source: GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

a few. With these targets in place, media companies will need to report their sustainability metrics, just as they do financial figures.

Sustainability groups in media and entertainment:

- BAFTA's Albert
- The Sustainability Production Alliance
- The DPP's Sustainability Program
- The Environmental Media Association
- The Greening of Streaming
- DIMPACT
- iMasons
- Awards Programs:
  - IABM
  - IBC
  - NAB Show
  - Corporate Star
- Conference Events:
  - Media Tech Sustainability Summit
  - EBU Sustainability Summit

The good news is that work is taking place in the media and entertainment industry with much of it coming from Europe, as European Union (EU) regulations press all industries to act on climate change.

From content creation to distribution, some organizations and activities are helping the industry to understand the issues better, providing guidance and forms of certification, and even awards.

The articles in this issue take a variety of approaches to addressing sustainability in media. A brief overview of this content may be helpful for further context:

- In *Media and Entertainment Sustainability on the Cloud*, Thomas Edwards and Jason O'Malley provide an overview of one cloud provider's approach to sustainability, highlighting the notion of energy efficiency, water stewardship, and embodied carbon. The article includes examples of cloud-based sustainability in production, media supply chain, and editing.
- In *Encoding and Storing Only Once: The Road to CMAF Adoption*, Christophe Burdinat and his co-authors explain the value of the Common Media Application Format (CMAF) as a solution for efficient, and therefore sustainable, streaming.
- In *Improving Information Technology Sustainability with Modern Tape Storage*, Bradley Johns provides a rationale for tape storage as a modern sustainability solution, able to reduce carbon emissions by up to 97%.
- In *Considerations in Designing for Reduced Environmental Impact of Digital Media Production and Distribution Systems*, Tom Moran makes the case that by focusing on energy proportionality and techniques that reduce and adjust energy consumption, designers and operators can create a direct impact on CO_2e emissions while also increasing efficiency and reducing costs.
- In *Pixel Value Adjustment to Reduce the Energy Requirements of Display Devices*, Erik Reinhard and his co-authors present a video processing technique that can reduce the energy requirements from display devices without altering the visual quality of the displayed material.

Thank you to all these authors, as well as those who we were not able to include, for their participation in this issue. Sustainability is a topic that will be with us for many years to come, so it is imperative that organizations understand how to proceed. We hope that this special issue gives you a bit of an understanding of sustainability in media. Mostly, I hope that you are inspired and encouraged to join in the sustainability journey for the media and entertainment industry.

About the Author

Barbara Lange is the principal and the CEO of Kibo121, White Plains, NY, a consultancy firm focused on guiding media tech organizations on their path to sustainability by understanding each client's unique needs and interests to develop and execute a sustainability action plan. She has been an invited speaker on sustainability and is engaged in industry groups developing a greener future in media. She served as a program manager for the NAB Show's Excellence in Sustainability Awards, is a secretariat volunteer member of Greening of Streaming, and cofounded the Media Tech Sustainability Summit. She is a member of the International Society of Sustainability Professionals (ISSP). Before launching Kibo121, she served as the executive director at SMPTE for 12 years. She holds a BA degree in chemistry and German from Washington & Jefferson College, Washington, PA, and completed the Executive Development program at the Kellogg School of Management, Northwestern University, Evanston, IL, and the Entrepreneurial Growth Lab program at the Women's Enterprise Development Center (WEDC), White Plains. She has been recognized for her leadership by Washington & Jefferson College, the IEEE, StudioDaily50, and with the TVNewscheck's 2020 Woman in Technology Award. In 2021, she was honored by TVB Europe as a 2021 Technology Leader to Watch and by *Broadcast & Cable* with the 2021 Tech Leadership Award.

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