

A Paper Submitted for the 2023 SES World Standards Day Competition on the Theme of *Shared Vision for a Better World*

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Abstract

Standardization is the process of formulating, issuing, and implementing standards. Strategic standardization, an approach that requires knowledge about the standards ecosystem, is more than a technical tool that can be used for planning the development and use of standards to respond to market needs and policy and regulatory objectives. A sustainable standards model is needed to ensure there is a long-term strategic standardization plan in place addressing the needs of diverse stakeholders and facilitating cross-border business for a country to remain competitive in the global marketplace. This paper provides a brief overview of standardization systems in the United States, European Union, and China and introduces a strategic framework for achieving a sustainable standards model based on a “3 C’s” approach of collaboration, community, and capacity building.

INTRODUCTION

The term *standardization system* defines the standards strategy, stakeholder participation models, degree of government direction, diversity and inclusion principles, key standards leadership areas, relevant partnerships, and adoption of relevant standards. A regional standards strategy is a high-level, forward-looking document that helps to guide and shape the standardization work addressing the needs of all within the standards community. It typically includes a vision, mission, principles, strategic objectives, and goals (both long term and short term). This document is periodically reviewed and updated as needed.

Standardization systems differ across the globe. The following is a brief overview of standardization systems in three major markets.

United States

The U.S. standardization system is a decentralized, bottom-up, sector-based approach led by the private sector to develop market-driven, voluntary, consensus-based standards. This approach drives innovation in the U.S. by promoting practical solutions based on real-world applications; it also helps in producing standards that are consistent with the principles of the World Trade Organization Agreement on Technical Barriers to Trade (WTO TBT) and the WTO TBT Committee Decision on International Standards. The U.S. government plays a supporting role in this system by participating in the standards development process.

The U.S. has multiple standards development organizations (SDOs), each addressing

the needs of its own sector by bringing the most relevant stakeholders together and developing consensus-based documents through an open and rules-based process. As there are multiple SDOs, the American National Standards Institute (ANSI) serves as a facilitator of ANSI-accredited SDOs, coordinating to avoid duplication of work and to build and strengthen the public-private partnership. Following this sectoral and cross-sectoral approach, the U.S. has national standards, harmonized regional standards, and nationally adopted international standards.

European Union

The EU standardization system also follows a bottom-up approach to developing market-driven standards that respond to business and consumer needs. The standards are based on the consensus of the different actors involved in the standardization system. The European Committee for Standardization (CEN), European Committee for Electrotechnical Standardization (CENELEC), and the European Telecommunications Standards Institute (ETSI) are recognized by the EU and the European Free Trade Association (EFTA) as the European standardization organizations (ESOs) responsible for the development of standards at the European level.

CEN and CENELEC's members are the national standards bodies and national electrotechnical committees of 34 European countries, which are obliged to implement the European standards at the national level and withdraw any conflicting standards. The ETSI allows direct participation in the standards development process by industry and other relevant actors. However, in all three ESOs, the development of standards relies on collaboration among technical experts appointed by industry, subject matter experts, academia, consumer and environmental organizations, and other stakeholders.

The public-private partnership established between the European Commission and the ESOs enables voluntary and consensus-

based standards to play a key role in building the EU single market by supporting the implementation of EU legislative actions and policy objectives. In this context, European standards may be developed in response to European Commission requests to support the implementation of EU legislation and/or policies. At the same time, worldwide adoption of ISO and IEC standards is encouraged through the strong alignment between CEN and CENELEC and its international counterparts as a result of the technical cooperation agreements between CEN and CENELEC with ISO and IEC, respectively.

China

The standardization system of the People's Republic of China is a centralized, top-down system guided by the heavy influence of, and with direction from, the Chinese government. In recent years, China has undergone a significant reform of its standardization system, and there has been some improvement in foreign participation in standards development and increased participation in international standards development activities. The system is designed to operate simultaneously with regulations and in alignment with the needs of China's regulatory agency. This model tends to value quantity over quality in standards as a primary measure of success.

There are five different types of Chinese standards: national (mandatory and voluntary), industry, local, social organization/association, and enterprise. Most of the technical committees responsible for drafting these standards are overseen by government ministries or state-affiliated industry associations. The government may also create a standard in specific areas when there is no technical committee or in areas related to national security.

STRATEGIC FRAMEWORK FOR A SUSTAINABLE STANDARDS MODEL

The 3 C's (collaboration, community, and capacity building) are key elements of a

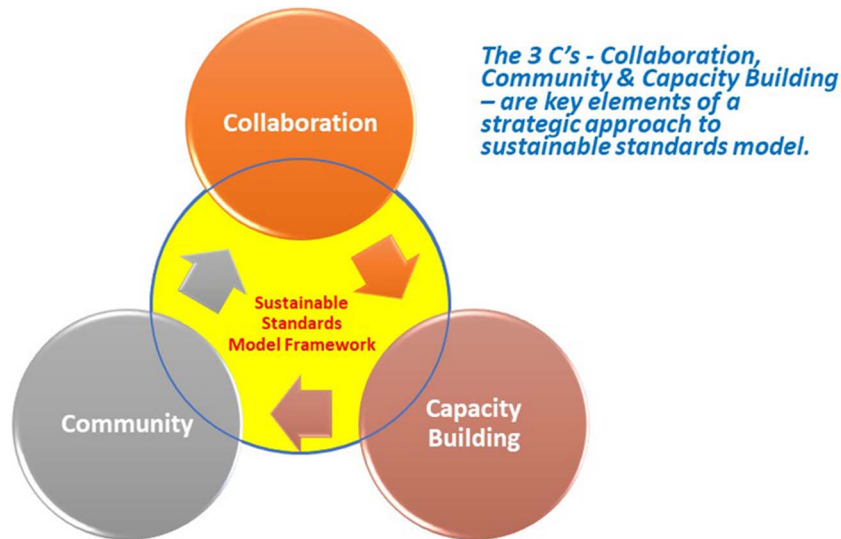


Figure 1. A “3 C’s” approach to Sustainable Standards Model.

strategic approach to a sustainable standards model (see Figure 1). Each of these pillars includes key areas where industry, government, and SDOs can take on a leadership role to make this a successful framework.

Pillar 1: Collaboration

Cross-cultural competency has been named among the 10 most important skills for the future workforce by the Institute for the Future¹. This skill is key to successfully working together in diverse and inclusive teams. Standards development is a collaborative activity and requires consensus to create novel solutions. International standards development committees are diverse, composed of members from different countries with various cultures, perspectives, languages, areas of expertise, and ways of working.

Developing an open and global mindset in standards development requires cultural intelligence, building trust and consensus, and adaptability. Therefore, collaboration is essential within standardization.

Key consideration: emerging technologies. The world is changing at a much faster pace than ever before. The global pandemic has accelerated digital transformation in all sectors

and areas. While the pandemic has disrupted society on an unprecedented level, it has also required us to take a fresh look at trends impacting the global economy, public health, education, and the future of work.

It is important for the standards community to keep track of future emerging technology trends and adjust standardization activities or initiate new activities. Standards play a key role in expanding market access and promoting the successful deployment of new technologies and products by ensuring interoperability, safety, and reliability. In addition, standards can accelerate the speed at which innovations become more than ideas.

The interrelation of standardization and innovation needs to be recognized and appreciated to assist in the development of standards roadmaps, coordination and collaboration opportunities, and timely and efficient implementation of standards to support emerging technologies. Every SDO should try to identify the key emerging technologies relevant to its own sector and prioritize standardization needs accordingly to lead to a faster uptake of innovative solutions and transfer into the market.

An example of this is ISO/IEC JTC 1 (Information Technology) Advisory Group (AG) 2 on JTC 1 Emerging Technology and Innovation (JETI). JETI is mandated to seek

¹ <https://www.iftf.org/projects/future-work-skills-2020/>

opportunities to facilitate JTC 1 standards development for future emerging and innovation technologies as a technology watch group in JTC 1. ISO/IEC JTC 1 AG 2, JETI carries out information collection via market research reports, information from business plans of JTC 1 Sub Committees (SCs), and other SDOs and compiles a list of technologies. The list then gets prioritized for top technologies via an internal survey to JTC 1 National Bodies and JTC 1 SC/WG/AGs.

The survey responses then get analyzed within the advisory group to come up with proposals to write Technology Trend Reports (TTRs). TTRs are reports from JETI to JTC 1 about specific technology topics for consideration of standards development and include a robust set of 1-5 recommendations for JTC 1 to act on, which are then reviewed during the next JTC 1 plenary meeting. This process has allowed ISO/IEC JTC 1 to identify standardization or coordination/collaboration needs for emerging technologies and initiate standards projects at the right time. The TTRs typically include relevant ongoing standardization activities (if applicable), any standards gaps, and recommendations to JTC1.

Standardization for emerging technologies such as artificial intelligence (AI), Quantum Computing, the metaverse, and so on has been a top priority for governments to stay competitive. We are shifting from the model of traditional physical product-based standardization to physical products and digital services² standardization, which means that different approaches will also emerge for standardization and conformity assessment. Collaboration on defining technical requirements and coordination on conformity assessment methods could help to avoid regulatory divergence, incompatibility, and technical barriers to trade.

The federal government can play a leadership role in this area to ensure regulatory

alignment between countries in the areas of standards, trade, and conformity assessment. An example of this type of collaboration is the recently established EU-U.S. Technology and Trade Council (TTC), a bilateral forum between the U.S. and European Union (EU) to coordinate approaches on standards, trade, and technology issues. EU-U.S. TTC WG 1 on Technology Standards has established a subgroup on AI to identify common principles for assessing AI risk levels and identify relevant standards.

Key consideration: different approaches to standardization. In today's market, no single solution fits the needs of diverse stakeholders with respect to standards. Speed is another factor when it comes to emerging technologies and the ability to quickly publish standards supporting and accelerating the adoption of a technology as required by industry. There are currently multiple consortia, fora, and alliances developing standards in different areas. These groups play an important role in the standardization community by increasing the speed to market, facilitating global market access, and removing technical barriers to trade. Their membership models and standards development processes are slightly different than that of a traditional SDO. Their development processes generally allow the publication of technical specifications faster than a traditional SDO.

Global and regional SDOs must recognize the value of different approaches to standardization and should leverage the work (where possible) carried out in consortia, fora, special interest groups, alliances, and other venues to make them globally relevant by partnerships and/or formal agreements. An example of this type of collaboration is the Publicly Available Specifications (PAS) process in ISO/IEC JTC 1. This process allows a technical specification from an approved PAS submitter (consortia) to be transposed into an ISO/IEC Standard gaining global acceptance and expanded outreach as per ISO/IEC JTC 1 Standing Document 9 on PAS:

² *Digital Services* means the electronic delivery of information (including facts, data, opinions and content) across multiple platforms, devices, and delivery mechanisms like web or mobile.

International standards (IS) are recognized throughout the world, and in many countries constitute the technical regulatory basis for public procurement of IT goods and services. The transposition of a specification into an IS makes it eligible for such procurement, and hence widens the market recognition of such a specification.

In this process, the consortia willing to become a PAS submitter must meet organizational-related criteria (including cooperative stance, characteristics of the organization, and IP rights) along with document-related criteria, which includes quality, consensus, and alignment. Once a PAS submitter submits a specification for transposition, the submission goes straight to draft international standard (DIS) level and then final draft international standard (FDIS) level. Therefore, the approval timeframe via this process is usually shorter than the development of a typical ISO/IEC standard.

More than 115 ISO/IEC international standards have been approved through this process. Similarly, IEEE SA has an Industry Affiliate Network (IAN) which allows the specifications from consortia, industry alliances and other organizations to have their standards adopted as IEEE standards.

Key consideration: value creation via strategic partnerships. Strategic partnerships are important in standards development to ensure the standards developed are market-relevant and not duplicative. The SDOs must prioritize their work and shift from output to outcomes to create value for industry and other relevant stakeholders.

One method to prioritize standards development projects could be to find out the intrinsic value of the projects by assigning them a numerical value. An intrinsic value can be determined by assigning a strategic theme (Digital Transformation, Electrification, and others depending on industry key priorities) to a project and weighting it according to the contribution potential (e.g., expands market access or solves an industry

problem such as improving safety). Prioritizing the work also helps to determine which projects truly belong to an organization and which projects should be worked on jointly with other organizations. A joint standards project may also be of value to attract the right expertise and to reach wider audiences. Some examples include the following:

- The Council for Harmonization of Electrotechnical Standards of the Nations in the Americas (CANENA), an organization focused on the harmonization of electrotechnical standards and conformity assessment activities. CANENA provides a forum for harmonization discussions; upon agreement, these standards are then processed by the respective standards developers in each country according to their own procedures. The result is a bi-national (U.S./Canada) or a tri-national (U.S./Canada/Mexico) standard.
- A partner standards development organization (PSDO), a cooperation agreement that allows a collaborative approach to standards development. A PSDO agreement covers fast-tracking the adoption process of the partner organization's standard as an international standard, formal adoption of a published ISO/IEC standard by the partner organization, and maintenance of published standards. Some examples include the relationship between ASTM F42 and ISO TC 261 on Additive Manufacturing and IEEE and ISO/IEC JTC 1.

Pillar 2: Community

The standards development community is the heart of standardization. Without a robust community, standards activities would not be successful. They are only possible through collaboration and cooperation from all diverse stakeholders involved in the standardization process, from industry to academia to societal stakeholders to government and others. The U.S. Standards Strategy specifically states that, "The U.S. standards community should work to improve global relevance by promoting

participation in standards processes by a broad cross-section of both domestic and international stakeholders, particularly in markets where the relevant products, services, and systems are used.” The same applies to other standards strategies, such as the recently published European Standardization Strategy, which calls for better inclusiveness for civil society, users and SMEs.

Key consideration: diversity and inclusion. Diversity and Inclusion at all levels drive innovation and performance. SDOs should focus on a robust process to get feedback from external stakeholders to not just comply with public review requirements but also to increase the diversity of interest categories on committees.

Standards development is not possible without the use of collaborative teams. The effective use of inclusive language is essential to productive collaboration and promoting diversity and inclusion in standards development. Language that is racially, ethnically, and culturally inclusive is effective in promoting respect, reflecting diversity, and avoiding negative stereotypes. Therefore, every SDO should consider pursuing an effort to revise their standards, procedures, and other relevant documents to ensure they are using inclusive terminology, avoiding gender bias, and promoting diversity. This will benefit the entire standards ecosystem.

Furthermore, there should be efforts to track the interest categories on standards development and policy committees and having a policy and/or guidance document for participants in committees. For example, using *chairperson* instead of *chairman*, *society* instead of *mankind*, and *native language* instead of *mother tongue* are just a few inclusive choices of language.

The use of idioms, jargon, and acronyms with problematic or offensive roots should be avoided. For example, using the terms *master* and *slave* to describe a model where one device or process controls another as subordinate should be avoided. Alternatives, such as *main/secondary*, *primary/secondary*, *primary/replica*, *host/target*, *leader/follower*, *orchestrator/*

worker, initiator/responder or similar descriptive terminology should be used as applicable and where possible.

The International Committee for Information Technology Standards (INCITS), a central U.S. forum dedicated to creating technology standards for information and communication technology (ICT) products, recently adopted principles of inclusive terminology. Inclusive terminology is defined in this document as “terminology perceived or likely to be perceived as neutral or welcoming by everyone, regardless of their sex, gender, race, color, religion, etc.”

ISO house style specifies the language, formatting, and presentation of ISO documents, including editorial elements that are outside the scope of the ISO/IEC Directives, Part 2. It is intended to be used alongside the ISO/IEC Directives, Part 2 and generally does not duplicate its content, although some relevant sections have been reproduced to add further details. It has a section on inclusive language that can serve as a helpful guide when drafting international standards.

Using inclusive terminology contributes to the overall goal of gender-responsive standards and therefore also contributes to United Nations Sustainable Development Goal 5 (UN SDG 5) on Gender Equality. ISO and IEC have both mapped their standards to UN SDGs, and you can now search standards meeting-specific SDGs. These voluntary, consensus-based documents incorporating inclusive terminology standards remove technical barriers to trade, build trust, and promote safety, interoperability, and performance while translating the ambitions into concrete actions.

Key consideration: growth mindset. In a growth mindset, people believe their skills can be improved with hard work and dedication. People with a growth mindset find success in doing their best and constantly learning; they are more creative, innovative, and resilient. The growth mindset encourages persistence in the face of setbacks and an

optimistic outlook toward eventual success through that persistence. Together, these result in better performance.

The standards development process naturally promotes a growth mindset, and it can be implemented throughout all different stages of the ISO/IEC development process, from creating a draft and getting consensus to collaboration and facilitation. A brain-based model known as SCARF can be used for practicing growth mindset in standards development. The SCARF model was first developed by David Rock in 2008 and can be implemented by minimizing threats and maximizing rewards. It suggests that there are five social domains that activate the same threat and reward responses that are relied on for physical survival. These five domains are as follows:

- Status, which refers to the perception of one's own position relative to others;
- Certainty, the need to predict outcomes of events;
- Autonomy, the need for control and the ability to make choices for oneself;
- Relatedness, the need for a sense of safety or connection with others; and
- Fairness, the need to be treated with equity.

CASE STUDY: GROWTH MINDSET IN STANDARDS DEVELOPMENT VIA SCARF MODEL

The merits of the SCARF model can be seen in the following case study regarding a staff member named Najma, a member and convener of an ISO working group. The working group has been tasked to create a new standard, with a standards development track of 36 months. The working group is small, and most of the members are new to standards. She is seeing very little engagement from the group and encountering difficulty in filling key positions such as editor and secretary. Najma is overwhelmed.

Here are the steps taken by Najma using a growth mindset and the components of SCARF, specifically focusing on certainty, autonomy, and fairness:

- Realizing that most members were new to standards, Najma began allocating 15 minutes in her working group meetings for microlearning opportunities on topics such as the role of editor and secretary, the standards development process, and so on.
- She communicated directly with committee members in between meetings on a one-on-one basis.
- She kept meetings enjoyable through good organization, distributing agendas and minutes on time, and remaining on topic.

As a result, after the first six working group meetings, the committee members became much more engaged. The roles of editor and secretary were filled. The working group was able to complete and publish the standard in 30 months. Najma shared the win at the plenary meeting by sharing the process and approach she used to achieve success.

Pillar 3: Capacity Building

To be successful and effective in standards engagement efforts, it is important to have the skillsets and competencies required by a standards system. Standards education must be a priority for a sustainable standards system. The standardization school of talent should be based on a T-shaped, value-driven, systematic solution, which means that one needs to know the depth of this discipline (which is standards development) and also the breadth of it, which is cross-disciplinary competencies in trade, Intellectual Property Rights (IPR), standards-essential patents, business implications, and digital literacy.

A competency framework for each type of standards participant is needed to ensure robust standards educational programs. ISO IWA 30-1, Competence of Standards Professionals Part 1: In Companies, and ISO IWA 30-2, Competence of Standards Professionals

Part 2: In Standards-related Organizations, could serve as great resources for anyone looking to create a standards education program. The Society of Standards Professionals (SES) has a certification program for standards professionals. Several organizations have recently invested in creating standards education programs tailored to students, industry, SDOs, and policy professionals.

CONCLUSION

A strategic framework for a sustainable standards model can be achieved by following a “3 C’s” approach that includes establishing strategic partnerships and collaboration agreements at the right time and creating value for those involved in the standardization process. By incorporating the principles of diversity and inclusion, tailoring capacity-building activities to the needs of the stakeholders, and fostering a growth mindset, this approach will build the next generation of standards professionals in a way that strengthens the standardization community going forward.

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RESEARCH ARTICLE

The Environmental Benefits of Renewable Energy

By Denice Durrant, Ph.D. and Wathma Jayathilake

As our global economy rapidly evolves, products are becoming energized, autonomous, digital, and interconnected. Sustainable practices are also being introduced, and prioritizing these practices (such as waste elimination and regenerating natural resources) can help address global environmental issues.

Renewable energy sources can also play a significant role in protecting environmental resources by limiting the release of hazardous emissions, including greenhouse gases (GHGs) and pollutants. Advancements in the safety science landscape have led researchers and scientists to recognize the significant benefits that renewable energy sources bring to our environmental ecosystem.

Notably, renewable energy can mitigate the impact of burning fossil fuels, which is one of the largest sources of carbon emissions and contributes to smog. According to the International Energy Agency, global energy-related carbon dioxide (CO₂) emissions were estimated at 36.8 billion tons last year.¹ In 2021, human activity caused 36.3 billion tons of CO₂ to be released into our atmosphere.² (For context, the largest naturally occurring pollutants that exist are volcanoes, releasing approximately 500 million tons of volcanic CO₂ annually.³)

Climate-related actions such as burning fossil fuels are creating long-term and irreversible consequences for our planet. We see the consequences of our actions daily through climate

change phenomena, including an increased prevalence of natural disasters, rising sea levels, extreme temperatures, and poor air quality.

The main cause of climate change is the greenhouse effect. The greenhouse effect is caused when greenhouse gases like methane, nitrous oxides, and carbon dioxide let sunlight in but prevent some of the heat from escaping. As we release more greenhouse gases into our atmosphere, more heat gets trapped, strengthening the greenhouse effect and increasing the Earth's temperatures.

Researchers and standards development organizations (SDOs) are exploring alternative technologies for energy production and identifying the environmental benefits associated with harnessing renewable energy sources. These benefits primarily center around the limiting of greenhouse gas emissions from processes that use fossil fuels and contribute to air pollution.

FACILITATING CLEAN ENERGY TECHNOLOGIES

In 2022, UL Standards & Engagement (ULSE) hosted a standards forum in Washington, D.C. ULSE's executive director, Dr. David Steel, presented to stakeholders around the world on the topic of "Clean Energy Through UL Standards: Pathway to Net Zero."

In his presentation, Dr. Steel noted that standards are an important contributor to facilitating clean energy technology. ULSE's portfolio of standards includes a number of electrification-focused standards that promote clean energy technologies. From generation to transmission and distribution to storage, use, and repurposing, standards such as UL 9540 (Standard for Energy Storage Systems and Equipment), UL 9540A (Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems), and UL 1974 (Standard for Evaluation for Repurposing Batteries) are forging a sustainable pathway to net-zero emissions across the energy value chain. Net-zero emissions will also ensure a decrease in GHGs, thereby reducing air pollution and other climatic risk factors.

Circular production models are also being introduced to prioritize sustainable practices, and these models are advancing the landscape of new standards to quantify circular efforts. ULSE and the International Organization for Standardization (ISO) have taken steps to publish new standards to address sustainability in areas such as environmental, social, and governance objectives. UL 3600, the Standard for Measuring and Reporting Circular Economy Aspects of Products, Sites and Organizations, is ULSE's first standard designed to help organizations measure sustainability by quantifying circularity in the areas of recyclability, bio-based content, and waste and landfill minimization.

By measuring circularity at the product, site, and company levels, an overall score can be generated to report factors such as material flow, worker health, and worker safety throughout the supply chain process, as well as diversity, equity, and inclusion. The score takes a simple approach to using existing corporate data inputs and metrics along with new collection data.

ISO is also approaching sustainability through the optimal balance of an organization's environmental, social, and financial

landscape. These standards support the renewable energy landscape by ensuring that sustainable practices are prioritized to drive global impact. This approach strengthens the environmental benefits of renewable energy through the elimination of waste and the regeneration of natural resources.

IMPACTS OF RENEWABLE ENERGIES

Environmental assessments play an important role in truly understanding how to mitigate climate risks. The 2023 Climate Change Report from the Intergovernmental Panel on Climate Change notes that continued emissions from greenhouse gases will be catastrophic to the Earth, leading to amplified levels of global warming that will intensify climate disruptions (such as food and water scarcities) and presenting a risk of not meeting the U.N. Sustainable Development Goals for 2030.⁴ Environmental assessments can evaluate variables such as global warming levels to help ensure we can monitor climatic changes affecting temperature, soil moisture, and precipitation.

Mitigating climate risks through the use of renewable energies has significant environmental benefits, but there are also important societal and physiological impacts that need to be recognized. Burning fossil fuels has been and continues to be detrimental to the environment and to human health, but it is undeniable that these energy sources have helped improve the global economy over the years, creating jobs for thousands of people.

Human health is a state of physical, mental, and social well-being, not just the absence of disease or infirmity.⁵ Implementing renewable energy systems in our communities—whether in industrial spaces or in residential environments—has the potential to *exceed* the employment benefits created through fossil fuel-based energy production and, most importantly, to improve the physical health of individuals. Renewable energy systems leverage labor, materials, and businesses at

the local level, and the energy produced typically directly benefits the regions in which it is collected. Renewable energies also generate opportunities for consumers to make more economical and sustainable decisions about their energy usage.⁶

Additionally, producing energy by burning fossil fuels is far more hazardous and dangerous than producing energy through renewable resources. Air pollution is a major contributor to the development of disease and premature death, making it one of the largest environmental risk factors to human health. Exposure to harmful pollutants like particulate matter and nitrous oxides has been linked to an increased risk of respiratory infections, heart disease, and lung cancer. Epidemiological studies have also proven the link between exposure to air pollutants and rates of asthma, emergency visits, and hospital admissions.

The pollutants most prevalent in fossil fuel combustion include particulate matter, ozone, carbon monoxide, and mercury.⁷ By implementing renewable energy sources, we can help reduce the incidence of premature deaths, heart attacks, asthma cases, and hospitalization due to cardiovascular and respiratory issues. Furthermore, we can significantly reduce the negative impact on our environment. As the world transitions to the use of more renewable energy sources, a concentrated effort relying on standards and data will help ensure that this transition truly promotes environmental safety through standardization.

CONCLUSION

The health of our planet will continue to be influenced by the renewable energy ecosystem. Burning fossil fuels contributes to the release of greenhouse gases, which creates environmental consequences such as global warming and climate change. Data

from the National Aeronautics and Space Administration indicates that carbon dioxide generated and released into the atmosphere from fossil fuels can remain for a period of 300 to 1,000 years.⁸ As our global society transitions away from fossil fuels, countries like the United States are helping to ensure that we reduce human-generated emissions to truly become carbon neutral.

Transitioning to renewable energy sources such as solar, wind, batteries, and other electrification-focused technologies significantly decreases this rate of emissions. This transition must be swift and intentional, as our current trajectory is not sustainable if we continue to rely solely on fossil fuels. If you would like to help guide the safe development of renewable energy technology through standardization, please visit ULSE.org/get-involved to learn how you can take part in our standards development process.

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RESEARCH ARTICLE

Advancing the ESG Landscape: The Role of Standards

By *Ulrikke Oernholt*

Organizations around the world are increasingly integrating environmental, social, and corporate/organizational governance (ESG) practices into their business and investment decisions. The need for sustainable practices and the demonstration of support for worldwide initiatives such as the United Nations Sustainable Development Goals and the transition to a net zero economy have put pressure on these organizations to find ways to incorporate sustainability into their strategy and operations. Meanwhile, government and regulatory sectors are increasingly paying attention to how ESG frameworks can be leveraged and adjusted for organizations of all types and sizes. This interest has been driven by factors such as climate change, a rising awareness of social inequality, and the impact of the COVID-19 pandemic.

According to Bloomberg Intelligence, the global value of ESG assets is projected to surpass \$50 trillion by 2025, having already exceeded \$35 trillion in 2020 (Bloomberg Finance LP 2022). While positive, the surge in interest has created a complex and rapidly evolving landscape that presents significant challenges for organizations seeking to enhance and disclose their ESG performance. While mandatory standards like the IFRS Accounting Standards exist for financial reporting, there is a lack of equivalent standards for non-financial reporting frameworks. This has created a complex environment wherein there is an overall

lack of harmonization and consensus within ESG frameworks, as there is no universal categorization for ESG issues.

In addition, guidance is lacking on the best ways to transform existing processes and operations to respond to ESG indicators and targets, incorporate ESG considerations, and manage sustainable performance. For instance, existing indicators have varying and, at times, limited protocols to support users to report on ESG topics of interest. Further, the differences between ESG indicators and targets result in a lack of confidence in the ranking results, casting doubt on the validity and relevance of these rankings (SCC 2023).

Consequently, the differences in measurement and reporting methods presented in different ESG frameworks has undermined trust and transparency in the market, making it difficult for investors and stakeholders to make informed decisions. The standardization system can play a significant role in addressing these challenges to promote a more cohesive and confident ESG ecosystem.

THE STANDARDIZATION SYSTEM AS A DRIVER OF CHANGE

Standards and conformity assessment represent effective tools for tackling these challenges. Through collaboration with national and international standardization systems,

we can cater to user requirements beyond disclosure. We can achieve this by making available standardized management practices, tools, and guidance. Additionally, we can enhance the precision of measurement and assurance processes through conformity assessment systems. Lastly, we can ensure that a diverse range of perspectives is represented in ESG discussions by developing and updating national and international standards that will support ESG.

As the national standardization body of Canada, the Standards Council of Canada (SCC) convened the Canadian Standardization Advisory Committee on ESG (CSAC ESG) in 2022 to identify a path forward on standardization and ESG—one that would find rigor and harmonization through the national standardization system. Through the work of the CSAC ESG, the SCC established a foundation for Canadian ESG standardization strategies and formulated a set of recommendations to identify needs and prioritize the development of ESG standards and guidance. These efforts culminated in the publication of “Beyond Disclosure: Driving Performance & Trust in ESG—Getting beyond Greenwashing Through Standardization.”

Per this report, the SCC is recommending the following priorities for advancing ESG through national and international standardization: (1) developing and updating national standards of Canada that will fill ESG needs, (2) finding ways to help small and medium-size enterprises enter the ESG space, (3) ensuring that standards that support ESG practices are known and understood, and (4) identifying key areas where accreditation programming and conformity assessment can build trust in ESG reporting.

DEVELOPING AND UPDATING CANADIAN STANDARDS TO FILL ESG NEEDS

While leading ESG frameworks generally align with Canadian priorities (as voiced

through the CSAC ESG), there is still a need to bridge the lack of consensus on definitions, required reporting, and measures for reporting. The CSAC ESG highlighted (1) key areas and priorities where ESG frameworks could benefit from standards to provide a common language and requirements and (2) systems for managing and improving performance.

For example, net zero and environmental stewardship—which are highlighted in many ESG frameworks—do not have consistent ways of measuring performance. Similarly, many ESG frameworks highlight diversity, equity and inclusion goals, but measuring performance on these goals differs by framework. Finally, although the committee identified Indigenous perspectives and considerations as a key Canadian priority, the CSAC ESG found few or no references to them.

Through “Beyond Disclosure: Driving Performance & Trust in ESG,” SCC proposes the development and updating of relevant standards in priority areas (for example, net zero and the circular economy). Such standards could support ESG frameworks through incorporation or reference in disclosure requirements. All would benefit from the updating or development of standards to increase harmonization and comparability and create common understanding. This will subsequently provide guidance to a broad range of Canadian and international organizations in addressing their ESG needs and drive overall sustainability performance. Finally, we are exploring how best to consult with Canadian rights holders and remain committed to ongoing consultations to align ESG standards with the priorities of Indigenous peoples in Canada.

HELPING SMALL AND MEDIUM ENTERPRISES ENTER THE ESG SPACE

The way varying ESG indicators are presented might hinder young, small and medium-sized organizations or those new to ESG from participating because they lack the

organizational resources required to respond to the requirements within ESG frameworks and the related standards. Further, current ESG indicators don't always reflect ESG practices and performance and instead focus entirely on numbers. For example, reporting that would allow for a deeper analysis of an entity's policies and procedures—and, by extension, its ongoing work, impact and commitment toward ESG goals and underlying values—would better reflect actual ESG performance.

To eliminate this barrier, new and updated standards relevant to ESG need to be developed in a way that allows all entities, of different maturity and capacity levels, to access and utilize them. The SCC recommends that ESG-relevant standards employ a “maturity matrix” approach whereby organizations could respond and report at varying levels depending on their size and the maturity, i.e., an organization's available resources, knowledge, and experience, to operate. Such an approach could help to make ESG-relevant standards accessible to all.

The maturity matrix could work both as a guidance document and as a tool, providing guidance in the adoption and implementation of ESG frameworks and setting a minimum level of requirements to strive for while allowing for the growth and expansion of activities to improve performance. For an SME, this could demonstrate that its hiring practices, conflict resolution mechanisms, staff training, and so on promote gender equality, diversity, and inclusion in the workplace, even though it does not yet achieve all requirements. The matrix would provide an on-ramp for organizations of all types and sizes to go beyond disclosure and enhance sustainability performance in key areas of focus.

An example of how a maturity matrix could work is found in the Government of Canada's 50-30 Challenge, which seeks to promote a gender parity level of 50% in senior management and boards of directors of Canadian organizations and diversity

representation of 30% in senior management and boards. The maturity matrix would enable organizations that have not achieved (or cannot achieve) 50-30 due to their size, current workforce composition, or other reason to demonstrate how are they working toward the underlying goal of the challenge. The matrix will provide policies and procedures that enable a given entity to achieve 50-30, thus demonstrating their commitment to it.

ENSURING THAT STANDARDS SUPPORTING ESG PRACTICES ARE KNOWN AND UNDERSTOOD

A wide range of standards are directly applicable to managing, measuring, and reporting on ESG performance. Moreover, there is a significant range in the topic matter and scope of relevant standards based on factors such as sector, organization type, and the ESG indicators being addressed. However, standards catalogs are large and generally sort standards based on specific technical areas, and ESG applications of relevant standards are often not clearly identified in the titles or scopes. This is why standards that can support ESG-related needs often are not visible to potential users, slowing the adoption of tools that can be leveraged to enhance sustainability performance.

The SCC recommends increasing and promoting the visibility of ESG-relevant standards. Through its work with accredited standards development organizations, the SCC recommends that the Canadian standardization system develop a standardized and visible approach for identifying ESG-relevant standards to users. Key options include relating standards to the UN Sustainable Development Goals and common ESG disclosure criteria, augmenting scope statements, and including annexes in relevant standards and conformity assessment schemes that specify ESG applications for users. These annexes could include ESG indicators and performance applications that are being

addressed, sector-specific needs, and other applications specific to management, measurement, and disclosure. This will ultimately increase the visibility and uptake of ESG-relevant standards and promote and increase ESG practices and performance.

BUILDING TRUST IN ESG REPORTING

Consumers and the public increasingly are joining the investment and financing sectors in expecting better ESG practices. In addition, they are exercising greater scrutiny of organizational sustainability efforts and are on the lookout for “greenwashing.” As discussed earlier, obstacles within the ESG landscape such as the proliferation of frameworks, absence of uniform standards, varying terminology, and guidance gaps are collectively shaping how organizations communicate and report on their ESG practices and impacts.

The SCC is proposing that new conformity assessment schemes be developed to promote and boost actual ESG performance while facilitating high-quality disclosures. This approach can play a significant role in helping organizations leverage assurance on sustainability information. The schemes can be used to measure, verify, and validate impacts and ensure products, processes, services, personnel, systems and bodies meet specific requirements. Early efforts will be made in areas where there is a strong need/demand for solutions (e.g., net zero and the circular economy) and where there is existing momentum to be captured.

IMPACT ON THE ESG LANDSCAPE

To advance these recommendations and translate them into concrete actions with a lasting impact on the national and international ESG landscape, the SCC is working with the Canadian standardization system to develop a comprehensive road map that provides a clear direction for short-, medium-,

and long-term goals. The standardization system’s work in prioritizing and advancing ESG standards and guidance will have far-reaching effects, benefiting various stakeholders at different levels.

First-Level Beneficiaries

- Industry and business: Improved standards and accreditation programming will help businesses align with ESG principles, fostering responsible practices.
- Investors: Reliable ESG standards will enable investors to make informed decisions, promoting sustainable investments.
- Indigenous partners: With guidance from Indigenous peoples, ESG standards could incorporate Indigenous perspectives and priorities and promote sustainable development.
- Government and regulatory partners: ESG standards could inform policies and regulations, ensuring they align with global best practices.
- Standards development organizations: Enhanced standards will guide the development and uptake of ESG-related guidelines and regulations.

Second-Level Beneficiaries

- Employees and affiliates: Organizations following ESG standards will create a positive work environment and contribute to the well-being of employees.
- Communities: Sustainable practices adopted by organizations will benefit the communities in which they operate, enhancing social and environmental well-being.
- The planet: ESG standards will ultimately enhance long-term sustainability and planetary welfare.

Standards play a pivotal role in advancing ESG practices. New and updated standards and accreditation programming will set industry best practices, create consistency in definitions and metrics, align with global initiatives, and drive progress in key sustainability areas such as achieving net zero and promoting the circular economy. These

standards will contribute to setting benchmarks, enhancing trust within the public and private sectors, and promoting transparency in ESG implementation and reporting.

WHAT'S NEXT?

To continue making strides in the ESG landscape, collaboration and coordination are essential. The standardization system needs to continue working closely with stakeholders, including industry, government, and Indigenous partners, to refine and expand ESG standards. This collaborative approach will ensure that efforts are aligned with the evolving needs of the Canadian and global ESG ecosystems.

ESG-relevant standards will be central in addressing global challenges such as climate change and greenwashing and promoting responsible business practices. By providing

clear guidelines, harmonizing metrics, and collaborating with stakeholders, the standardization system is poised to make a lasting impact on the ESG landscape, ultimately contributing to a more sustainable and equitable future for Canada and the world.

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CONFLICT OF INTEREST

The author declares that there are no conflicts of interest.



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