



Task Force 4  
Refuelling Growth: Clean Energy  
and Green Transitions



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# STANDARDS AND CONFORMITY ASSESSMENT AS A GLOBAL INSTITUTIONAL FRAMEWORK TO PROMOTE CONSENSUS, TRANSPARENCY, AND DIVERSITY

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# **Abstract**





**T**he G20 International Standards Summit 2022 brought together over 150 participants from around the world to examine and demonstrate how consensus-based international standards enable the achievement of priority policy issues. A statement was issued calling on countries to recognise, support, and adopt international standards. It stated that the impact of climate change coupled with the continued increase in electricity demand are accelerating the need to transition towards the generation of more sustainable and clean energy.


International standards promote equity, and economic, social, and environmental sustainability while mitigating issues related to interoperability, safety, costs, and efficiency. International standards offer policymakers, regulators, and other stakeholders a platform to strengthen dialogue and interaction to ensure that societies benefit from advances in new technologies, while mitigating possible adverse effects. This policy brief<sup>a</sup> argues that the transition from a dependence on fossil fuel to green energy must maintain the principles at the core of standardisation—that of consensus, transparency, and diversity.

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# The Challenge




1



**S**ince the creation of 17 Sustainable Development Goals (SDGs) and the signing of the Paris Agreement, both in 2015, the topics of affordable clean energy, green fuels, and climate action have been in the spotlight.<sup>1</sup> The continued dependency on the traditional “brown” economy characterised by the use of fossil fuels and natural resources since countries began to industrialise has caused an increase in global temperatures. Three quarters of greenhouse gas (GHG) emissions come from the power and energy sector.<sup>2</sup> With the ambition to limit the global rise in temperatures to 1.5°C by 2050 as embodied in the Paris Agreement, an accelerated development of alternative clean fuel resources is a must. This includes green energies such as solar, wind, and hydro power, as well as newer sources such as geothermal and ocean energy. Recently, and also of importance, the development of a hydrogen economy is on the rise. With countries pledging net zero emissions by 2050, the years 2023-2030 will be decisive ones in attaining this goal.<sup>3,4</sup> As we rush to meet the time frame, the availability of cheap yet sustainable renewable resources

will be essential. G20 economies, which account for around 85 percent of the world GDP, 75 percent of global trade markets, and two-thirds of the world’s population are at the centre of this reform.<sup>5</sup> With the growing importance of green technologies including batteries, electric vehicles (EVs) and domestic appliances, it is imperative for G20 economies to spearhead this evolution.

‘Brown’ fuel-based technologies such as turbines, generators, engines, and drive systems are well developed. With the adoption of green technologies, innovations with prolonged energy storage, very high-speed drive systems and so on, are either on the rise or in the pipeline for the near future. This means that there are new vistas for exploration and that these markets will witness an unprecedented growth. To help streamline this growth and enhance production efficiency, while assuring quality and safety, international standards and conformity assessments are critical tools. For example, following the ban on the use of chlorofluorocarbons in refrigerators and air conditioners by the Indian government in January 2003,<sup>6</sup> the International Electrotechnical



Commission (IEC) 60335-2-89 standard<sup>b</sup> helped in establishing eco-friendly refrigerators in India, as well as across the world. International standards can thus form an integral

part of the link between the transition, the adoption, and sustaining of green economies. This is where G20 nations have a crucial role to play.

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b Specifies safety requirements for household and similar electrical appliances - Safety - Part 2-89: Particular requirements for commercial refrigerating appliances and icemakers with an incorporated or remote refrigerant unit or motor-compressor



# **The G20's Role**



# **2**



**W**hen developed transparently, and through consensus, stakeholders can rely on standards to support policies that are aligned with the SDGs. Standards make critical contributions to global trade, the environment, digitalisation, infrastructure, clean and efficient energy, and the future of business and technology. International standards, together with conformity assessment, provide the framework for the safe and efficient production of electricity from renewable energy sources, and encourage the circular economy, eco-design, and improvements in general energy efficiency. They also enable smart energy solutions that help reduce worldwide carbon emissions. Under India's presidency of the G20, the Think20 has the opportunity to embed the global institutional framework of standards across its priority areas to drive consensus, transparency, and diversity. It will highlight how standardisation brings about specific benefits to society, the environment, and the economy. Furthermore, it will propose the championing of the IEC Global Impact Fund, which can serve as a platform for demonstration. It will also focus upon interlinkages

with the Global Infrastructure Hub, a knowledge-sharing entity created by the G20 in 2014 with a mandate to work between governments, the private sector, development banks, and other international organisations to help implement the G20's infrastructure agenda, and the Digital Demand Driven Electricity Networks (3DEN) initiative of the International Energy Agency (IEA).

### **Green fuels and the transition to the green economy**

The accelerated transition to green technology is important to attain the targets of 2050. Some of the transition policies taken by G20 economies are briefly outlined here.

Brazil's transition policies to green fuels are marked by the increase in use of wind energy and hydropower. The country ranks as one of the top emitters of GHG and committed during the Paris Agreement to reduce its emissions by 37 percent by 2025. The country has also rolled out an ambitious 10-year energy expansion plan, with renewable energy to account for 42.5 percent of installed power capacity in 2023, and large hydro plants taking up 86.1 percent of





generation capacity.<sup>7</sup> Energy auctions and bids are the chief tools used by the Brazilian government to advance green fuel use. Preferential financing schemes for renewable energies, such as the launch of the Innova Energia programme to provide subsidies of up to 90 percent on green fuel research and development (R&D) projects, grid policies with 50 percent reduced tariffs for renewable energy inclusion, and fiscal incentives such as tax exemption are some of the key policies taken up by the government to help promote the transition.<sup>8,9</sup> China, the world's largest energy consumer and carbon emitter, has pledged to achieve carbon neutrality on or before 2060. With the 14<sup>th</sup> Fifth Year Plan, China intends to reach 1,000 Mtce<sup>c</sup> of renewable energy output by 2025.<sup>10,11</sup> Separate fiscal and tax policies to support carbon neutrality are implemented, and China continues to shut down old fossil fuel-based power plants. In the case of the European Union (EU), the energy sector accounts for more than 75 percent of GHG emissions. The EU has pledged to make the continent climate neutral by 2050 and has established the goal for 32 percent or upwards

in renewable energy by 2030. Energy financing schemes, cross border financing cooperation, and funding for offshore renewables are some of the chief schemes taken up by the EU to promote use of green fuels.<sup>12,13</sup>


Some common policy features have emerged such as new and distinct tariffs and pricing policies for green fuels, lucrative market schemes, a thrust towards R&D, opening of beneficial schemes, and auctions with longer frames of compensation.

### The path ahead

There must be an accelerated deployment of green fuels and green technologies, especially in G20 countries within the next decade to spur the green economy. This should include improved and incentivised schemes and tariffs for green fuels, improved efficiency of renewable energy sources through accelerated R&D, and distributed development of green fuels to generate more career opportunities. The introduction of digital technologies to the energy market, operation of inter country and transcontinental dedicated renewable energy corridors,

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c Mega Tonnes of Coal Equivalent




and creation of awareness about its objectives amongst organisations and people can be further additions to the process.<sup>14</sup> Standards can help provide consolidated viewpoints from experts studying green technology, economy, and zero emissions. One can refer, for instance, to some of the IEC white papers published on the zero-carbon system,<sup>15</sup> the problems and difficulties in integration of large renewable energies into power systems,<sup>16</sup> and the role of IEC in coping with the energy challenge.<sup>17</sup>

With India holding the G20 presidency for 2023, the key areas of focus remain inclusive growth, representative multilateral institutions, and advancement of the SDGs. Home to the world's largest population, India has laid out a plan for net zero emissions by 2070. Halting coal imports by 2024, creation of a 500 MW solar park in Gujarat, and a national hydrogen mission in 2021 are some of the initiatives taken in this direction. At the same time, India also has to address the concerns of improving electrification

rates, combating the fuel and electricity shortages, rises in energy costs, and its commitment to the SDGs.


Areas where India can lead by example include the adaption of domestic schemes such as the production linked incentive scheme, which pertains to raw materials for green fuels, and the PM-KUSUM (Pradhan Mantri-Kisan Urja Suraksha Evam Utthaan Mahabhiyan) that provides energy and water security to farmers through solar plants. The establishment of Akshay Urja Portal and India Renewable Idea Exchange Portal has enabled exchange of ideas between green transition conscious citizens and the government. The Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya Scheme), which provided rural electrification, and establishment of Green Energy Corridors for intra-state transmission can be made inter-country, with high renewable energy integration.<sup>18</sup> The development of a National Electric Mobility Mission Plan to provide incentives to the users of EV's has seen a resounding public response.



# **Recommendations to the G20**

# **3**






**T**he prime objective of the G20 must be to promote and spur rural electrification projects worldwide, especially in desert zones and mountainous regions with little or no electricity. Secondly, the G20 must recognise the importance of climate finance, and how developing countries can work favourably towards achieving this without stalling their growth. International standards can help overcome technical barriers to trade and thereby open domestic energy markets to international players. This can also help in strengthening the national and South Asian grid. The focus on the development of dedicated renewable energy corridors can also spur this movement. A fundamental transformation of power systems includes much higher levels of digitalisation at scale across all grid domains, from generation to transmission and distribution to end-use. Attention to strong policies is required to scale up investments in smarter and more resilient grids in emerging and developing economies where electricity consumption is set to grow at a rapid rate while also providing greater levels of electricity access. Investments in smarter and more resilient grids will be necessary to accommodate the greater

deployment of renewable energy and enhance energy security. The IEA's 3DEN initiative is of importance here.<sup>19</sup>

With the transition to green technologies, India must also understand and recognise the role of international standards in helping to attain this. To make the transition smooth, fast, and sustainable, development and compliance to international standards are a must. As an example, ISO 17225<sup>20</sup> and its series refer to the use of solid biofuels, IEC 62282-2-100<sup>21</sup> and its parts refer to fuel cells, IEC 62282-3-200:2015<sup>22</sup> gives the procedure for performance test methods on stationary fuel cell power systems. Referring to multiple standards—not only limited to IEC or ISO—can help in wider understanding of the available methods and techniques to help in the green fuel transition. While investing more in the IEC and ISO, the Government of India can as well invest in the national standards body to develop nationwide standards catering to this specific task. Some possible areas can include guidelines on lithium mining, quality assessment tools, establishment of a separate task force for renewable energies, and so on. On similar lines, different governments can identify



key sectors or areas in the respective countries that have a potential to make an impact in this key transition.


### **Role of international standards**

Substantial resources will be needed to meet the SDGs and the goals of the Paris Agreement. The transition to a low-carbon economy will be extremely capital-intensive, especially in emerging and developing economies where the cost of capital is the highest. Impactful action requires being able to replicate effective projects at scale, and scalability requires standardisation to achieve replicability and efficiency. This is of particular importance to an all-electric and connected society, which is the most concrete and fastest way to achieve a low-carbon economy.

To attract the necessary funding there needs to be a consistent way of measuring the impact of activities, robust verification processes, and standardisation to enable replication of successful activities. International standards can fulfil this role and are therefore essential tools in tackling the climate challenge. One example is the IEC's carbon footprint verification scheme that provides independent


verification of companies using the correct process, methodology, and registers to calculate the carbon footprint of a given product. Work is also underway on a process for measuring and certifying the carbon footprint of both systems and equipment for their entire lifespan.

The World Bank has outlined the need for standards and robust verification mechanisms and techniques to enable the development of a dynamic, investable asset class for quality sustainable infrastructure in developing countries that provides geographic and sectoral diversification. This includes climate infrastructure, electricity transmission assets, and electricity distribution. A good allocation of capital depends primarily on the availability of accurate and trustable information. Better data helps investors assess risk and better labelling and certifying can help to measure the mitigation or adaptation impact of specific projects, technologies, or equipment. Standards and conformity assessment provide investors with the insurance that their investment is durable, that infrastructure can be maintained, repaired, and upgraded, is interoperable, and has a much broader supply base.




The requirements expressed by the World Bank and others for quality sustainable infrastructure and accurate and trustable information are inherent to the IEC. The Global Infrastructure Hub should work with international standard development organisations to move this forward in a collaborative manner under the remit of the G20. The G20 International Standards Summit 2023 should be the forum where such collaborations are forged.


By adopting standards and conformity assessment practices, countries can enhance their national quality infrastructure, leading to increased efficiencies and improved safety across various aspects such as products, workers, people and the environment.



# **Recommendations to the G20**



# **4**



**T**he use and extrapolation of the tried-and-tested Indian electrification policies to the rural electrification of the G20 countries can be a pivotal step. In addition, the use and implementation of incentivised schemes promoting the use of green energy and implementing transcontinental green corridors for intercontinental power transfer should be a G20 priority. In the coming years, and to facilitate the transition, more

thrust and impetus is to be provided for R&D in green energies. The tapping of new green energy fuels sources to supplement the existing ones is also proposed here. The role of international standards and conformity assessment in reducing the technical barriers to trade and providing a more robust verification system will also help in enabling the transition to green energies.


Attribution: Matthew Doherty and Ashitha Parambalath Narendran, "Standards and Conformity Assessment as a Global Institutional Framework to Promote Consensus, Transparency, and Diversity," *T20 Policy Brief*, July 2023.



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