

## **Council of Engineers for the Energy Transition (CEET): an independent advisory council to the United Nations Secretary-General**

### **COP 27 Statement**

The United Nations Council of Engineers for the Energy Transition (CEET) brings together a diverse and global council of engineers and energy systems experts to develop global and region-specific recommendations to accelerate the transition to low-carbon energy systems. The CEET will work with other UN agencies, policy makers, and multilaterals to ensure such recommendations are sustainable, just, and capable of supporting economic development and improved quality of life by providing access to reliable low-carbon energy systems and ensuring that positive effects on people's lives and livelihoods are created in the process, including through participatory means and the creation of new jobs in the clean energy sector<sup>1</sup>.

The world needs to move at a rapid pace and expanded scale to achieve the Sustainable Development Goals, keep the Paris Agreement targets within reach, and mitigate the detrimental impacts of climate change on all aspects of human life and the environment. At the heart of the challenge and its solution is the deployment and use of energy systems, which currently produce almost three-quarters of global greenhouse gas emissions and are the backbone of the transition to a net-zero global economy.

While clean energy technologies have expanded rapidly over the last decade, the vast majority (nearly 80%) of today's primary energy is still supplied by fossil fuels<sup>2</sup>. To meaningfully transition to low-carbon sources in the limited time remaining to meet climate goals, the world must quickly deploy a variety of commercially available clean energy technologies, accelerate the development and deployment of emerging technologies, and pursue research to develop additional innovative solutions. This must be done while also linking these technical solutions with policies that support a just and affordable energy transition that leaves no one behind.

Reports have highlighted that a significant majority of the emissions reductions required to reach net-zero can be achieved with existing technologies, including both those already commercialized and ones in advanced stages of development<sup>3</sup>. These technologies and new ones must be deployed to support emissions reductions and adaptation while also ensuring universal access to clean, affordable, and modern energy services. In this process, the world must find solutions to several technical and non-technical barriers that currently hinder progress and development.

Some challenges and opportunities are common across wide swaths of the globe while others are regional in nature (e.g., relative ability to finance the infrastructure required to accelerate the energy transition and/or to ensure energy availability at all). In turn, solutions must acknowledge these regional differences to ensure reliability and affordability of energy services and to secure public acceptance of

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<sup>1</sup> More information about the CEET can be found here: <https://www.unsdsn.org/ceet>

<sup>2</sup> IEA report "IEA's World Energy Outlook" and "IEA World Energy Balances".

<sup>3</sup> IEA report, "Net Zero by 2050 A Road Map for the Global Energy Sector."

needed changes, including by ensuring that people are both protected from any potential negative impacts of the transition to net-zero energy systems and well-placed to benefit from this transition. Nations and regions will achieve their individual milestones at different paces and adopt a mix of technologies that are situationally appropriate, with the long-term aim to create equity across regions with all contributing to global net-zero goals.

Recent world events highlight the serious and increasing impacts of the changing climate on human health, property, infrastructure, and the global economy. Furthermore, the war in Ukraine and its impact on global energy markets highlight the need to ensure energy security in the transition.

#### Availability of Clean Energy Technologies and Key Challenges to Deployment

Many clean, efficient, and smart technologies available today can be deployed on a larger scale to reduce global emissions while simultaneously supporting progress toward universal access to affordable, reliable, and sustainable modern energy. There are several key tools that communities around the world can use to support pathways toward an affordable and reliable low-carbon energy system, including:

1. Reducing the energy intensity of the economy via policies and measures that leverage technologies, data, and digitalization in order to improve energy efficiency while supporting economic growth, industrial development, and prosperity. In particular, policies that support energy efficiency (broadly defined) can reduce operating costs, improve energy security, and quickly reduce emissions.
2. Electrifying end uses that currently rely on fossil fuels (e.g., building heating, cooking, and passenger vehicles), while pursuing other decarbonization pathways (e.g., carbon management, low-carbon fuels) for end uses that are harder to electrify such as heavy industry or heavy transport.
3. Reducing the greenhouse gas emissions from energy supplies (e.g., transitioning to renewables, nuclear, and other low-carbon primary energy sources) across all sectors using multisectoral approaches.

More recently, cost declines in energy supply technologies—particularly some renewables (e.g., wind and solar) and energy storage technologies (e.g., lithium-ion batteries)—have helped to accelerate their deployment with significant capacities now in service and being added each year. Other commercially deployed low-carbon technologies (e.g., nuclear power) and renewables (e.g. hydropower) have operated in the energy system for decades. However, progress in deployment has been uneven across regions. Global supply chains are not currently equipped to supply the diverse array of technologies at the scale needed to achieve Paris Agreement targets or well distributed across regions to ensure a sustainable and just global energy transition. And many currently available technologies need further enhancement, policy support, investment and financial support, and public acceptance. Furthermore, additional investment in the world’s power grids is needed to support high degrees of electrification and renewables penetration and ensure the creation of a reliable, resilient, and affordable power sector. Less sectoral segmentation has the potential to contribute to improving energy and resource efficiency and reducing greenhouse gas emissions<sup>4</sup>.

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<sup>4</sup> For example, solid waste and wastewater management can be coupled with biogas production and nutrient recovery. This involves well-proven and cost-efficient technology that can help improve conditions in many cities, not least in growing urban areas of poor countries.

Similarly, currently available technologies can help to better manage energy demand, improve efficiency, and support both low-carbon economic growth and job creation<sup>5</sup>. But progress in the efficient deployment of these technologies faces a number of challenges, including non-technical barriers such as a lack of policy support, perceived and real project risk, lack of financial support for low- and middle-income countries, lack of access to low-cost capital, long permitting timelines, community pushback, rebound effects, and supply chain challenges. There is significant potential to both accelerate low-cost energy efficiency improvements (e.g., building and street lighting) through the adoption of existing technologies and adopt policies designed to ensure local populations can benefit from the transition to low-carbon energy.

Moreover, a significant number of technologies exist that require further effort to accelerate their progress toward full-scale commercial viability and cost reductions, including those related to electricity generation, heating and cooling, heavy transportation, aviation, steel and cement manufacturing, and carbon management. International cooperation around these technologies, as well as major investments in additional innovations, are essential to ensure they can be scaled across the world at the needed pace to achieve the objectives in the Paris Agreement.

#### Near-Term Priorities for the CEET

The CEET will focus on accelerating the implementation of the energy transition, with the following priorities:

1. Identify best engineering and technology practices and pathways to support a just energy transition, identify common opportunities and challenges for financing projects, and develop criteria for determining bankable projects, with attention to the special needs of those countries and regions that lack access to investment-grade market financing (notably the low-income countries and most of the lower-middle-income countries) while ensuring these projects respect traditional knowledge systems and have positive spill-over effects on local communities, including through job creation opportunities.
2. Leverage global expertise of the CEET to enhance regional and global collaboration and connectivity around technology pathways and accompanying finance. Establish regional knowledge networks and working groups in collaboration with UN country teams. Identify opportunities for partnership, technology transfer, cooperation, demonstration projects, research and development, and information sharing (e.g., best practices) to accelerate global progress toward net-zero energy systems.
3. Work together with other agencies (e.g., the IEA, IRENA, IDDRI, and technology/industry associations) and in-country stakeholders to identify priorities and develop impartial, technology-agnostic roadmaps that identify practical pathways forward, indicators of progress, key milestones, and policy recommendations that are specific to individual countries and regions. These roadmaps will focus not only on key supply and demand technologies but also on the role of energy efficiency, steps toward a circular economy, developing local competencies and capabilities, and adaptation to utilize existing infrastructure in supporting the energy transition.
4. Communicate technical topics in an accessible way to support informed decision making and risk management for policy makers, investors, and private sector actors in the transition to net-zero

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<sup>5</sup> “Benefits of Renewable-Powered Street Lighting, Sydney Australia” and the World Bank Report No. AUS7490, “Republic of India, Energy-Efficient Urban Street Lighting.”

energy systems. Priority will be given to topics and technologies that are not already well explored in a particular country/region and those that involve more than one sector.

5. Serve as a resource for national decision makers and multilateral institutions that need impartial views on the potential technology mix that can best support the transition to net-zero energy systems and opportunities to de-risk the development and deployment of clean energy technologies, taking into account their country's stage of development and natural resource endowments.

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### **About the Council of Engineers for the Energy Transition (CEET)**

Under the auspices of the United Nations Secretary-General, the Council of Engineers for the Energy Transition (CEET) is a global, high-level body of engineers and energy systems experts to contribute to the UN Secretary-General's goal to build a coalition to achieve net zero emissions by 2050, and to the UN generally on engineering pathways to achieve comprehensive decarbonization by mid-century. The work of the CEET will be undertaken by an independent and impartial council of recognized global experts, serving in their personal capacity and responding to requests for information by the UN System.

For more information, please contact [ceet@unsdsn.org](mailto:ceet@unsdsn.org).

*Chaired by:*

**United Nations Industrial Development Organization (UNIDO) | [www.unido.org](http://www.unido.org)**

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. UNIDO's mission is to promote and accelerate inclusive and sustainable industrial development, contributing to the achievement of the Sustainable Development Goals (SDGs).

**Sustainable Development Solutions Network (SDSN) | [www.unsdsn.org](http://www.unsdsn.org)**

The UN Sustainable Development Solutions Network mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals (SDGs) and the Paris Climate Agreement. SDSN works closely with United Nations agencies, multilateral financing institutions, the private sector, and civil society.