Committee on Energy

MISSION & UN SUSTAINABLE DEVELOPMENT GOALS

The Committee on Energy's objective is to be the engineering reference for assessing the current and future energy technologies for sustainable development based on engineering criteria and actively participate in sustainable energy programs around the world by providing subject matter experts

The Energy Committee work is directly linked to 2 following UN Sustainable Development Goals :

- **SDG 7 Affordable and clean energy :** This SDG directly linked to energy issues and its goals, an access to affordable, reliable, sustainable, and modern energy for all.
- **SDG 13 Climate Action :** One of the major causes of global warming is the use of fossil fuels, which highlights the major relationship between energy and SDG 13. It is essential to promote energy efficiency, decarbonization of industrial process and uses and development of low carbon energies (renewable and nuclear) or technologies that make the use of fossil fuels acceptable like CCUS. Adaptation of energy systems to the consequences of climate change, including energy-water nexus is also a major challenge.

STRATEGIC PRIORITIES

The global energy challenges of the next 15 years are huge, perhaps the greatest we have ever faced and engineers are at the heart of these challenges to ensure a just energy transition :

1. to **design the best technological solutions**, on both supply and demand sides for all the energy and uses; solutions that must integrate and balance the dimensions of the energy trilemma: energy security, energy equity and environmental sustainability.
2. to **speed up the implementation of these solutions while managing social acceptability**. This is essential because the energy transition concerns the whole of society and everyone has to be involved.
3. to **guarantee the resilience of global energy systems in face of crises**, particularly climate crises with the challenge of adapting infrastructures to the consequences of global warming (water scarcity, floods, temperatures, etc.).

By sharing best practices, technology knowledge, innovations and effective policy measures in energy, the World Federation of Engineering Organizations community and its Energy Committee could contribute to meet these challenges and SDG 7 SDG 13 objectives.

ORGANISATION

Chair : Marie-Line Vaiani
Vice-Chair :

- **Africa –** Prof. Abubakar Sambo, Nigeria
- **Asia/Pacific –** Prof. Sun Hongbin, China
- **Europe/Russia –** Dr. Daniel Favrat, Switzerland
- **Latin America –** Mag. Ing. Miguel Fierro, Uruguay
- **Middle East/South Central Asia –** Mr. Pradeep Chaturvedi, India

Members : 45 members from 28 different engineering institutions

Asociación de Ingenieros del Uruguay	Ingénieurs et Scientifiques de France	Myanmar Engineering Society
Bahrain Society of Engineers	Institution of Civil Engineers, UK	Nigerian Society of Engineers
China Association for Science and Technology	Institution of Engineers of Kenya	Ordem dos Engenheiros Tecnicos
Consiglio Nazionale Degli Ingegneri	Institution of Engineers Rwanda	Order of Engineers and architects of Beyrouth
Engineering Council of Zimbabwe	Institution of Engineers, India	Order of Engineers of Angola
Engineers Australia	Institution of Engineers, Mauritius	Swiss National Committee for FEANI-WFEO
Ethiopian Association of Civil Engineer	Instituto de la Ingeniería de España	Union National des Ingénieurs du Maroc
Ghana Institution of Engineering	Jordan Engineers Association	University of Applied Sciences Jade-Hochschule
HK Institution of Engineers	Macau Institute Of Engineers	

WORK PROGAM

1/ Task groups on topics proposed by members

2/ New activities

- Webinars with different focuses :
  - WFEO Task group report
  - Sharing knowledge about energy policies (global, regional, national)
  - Sharing knowledge about technological energy solutions and innovations
- Publications: Task Groups reports but also other specific publications
- Exploring initiatives such as WFEO "Energy Ambassadors" Portraits and introduction of WFEO Energy Awards.

PAST EVENT / ACTIVITIES

- Participation to **UNESCO Closing the Gender Gap in Science: Accelerating Action** event and call to action in Paris
  - Call to action : https://unesdoc.unesco.org/ark:/48223/pf0000388641.locale=fr

- Participation to **World Engineering Day for a sustainable word**, hosted by Ordem dos Engenheiros, in Lisbon
  - Delivered a keynote speech on "*The reinforcement of interconnexions and optimisation of energy market in Europe*"

- Participation to the **26th World Energy Congress** organized by World Energy Council on the theme *Redesigning Energy for People and Planet* in Rotterdam
  - Co-organized 2 side event :
    - *Alliance for nuclear: accelerating to reach net zero by 2050* with IEAE, EPRI, World Energy Council, European Commission, World Nuclear Association
    - *Mastering and reducing energy consumption: the #1 challenge ?*

- Dialog on energy between Portugal and France WFEO / IESF / Ordem dos Engenheiros

- Bilateral meetings with task group chairs of CE
- **Plenary meeting of Energy Committee** with re-launch the following task groups :
  - Electrification – Prof. Abubakar Sambo, Nigeria
  - Energy Efficiency – Dr. Ruomei Li, China
  - Energy Internet – Prof. Sun Hongbin, China
  - Energy storage – Philip Pascall, UK
  - Hydrogen – Prof. Massimiliano Capezzali, Switzerland
  - Sustainable Energy – Prof. Pradeep Chaturvedi, India
  - Solar – Dr. Carsten Ahrens, Germany

- **Plenary meetings CEET** (Council of Engineers for the Energy Transition) in preparation to COP 29

- **COP 29 :** Application submitted with the Chair of WG on Climate for an official side event lead by WFEO with the collaboration of IEEE, ICE

- Remote participation in the **Global Engineering Conference (GECO)** as part of a panel on SDG7 (Affordable and Clean Energy).

- **Call for Experts** launched for the following Task Groups : Electrification, Energy efficiency, Hydrogen, Solar (see Annex)

Task Group Electrification

ENERGY Committee on Energy WFEO / FMOI

- **Chair of the Task Group : Prof. Abubakar Sambo, Nigeria**

- **Task group objectives**
  - The TG will regularly monitor the electrification situations of all regions of the World.
  - The TG will also keep track of developments from all over the World on electrification success stories especially related to Sustainable Development Goal No.7.
  - Policy, legal, technical and regulatory frameworks pertaining to electrification will be regularly identified, monitored and reviewed.
  - The TG will adopt and recommend instruments for bridging electrification gaps in regions of the World with electricity access deficits.
- **Work modalities**
  - Participation through online work sessions of the Task Group, with progress shared during plenary sessions of the committee on energy and, if possible, once a year in-person meeting.
- **Visibility of the results**
  - Increased visibility through publication and webinar, showcasing the work and impact within the international engineering community

Task Group Energy Efficiency

ENERGY Committee on Energy WFEO / FMOI

- **Chair of the Task Group : Dr. Ruomei Li, China**

- **Task group objectives**

  Through data collection and analysis, we are to conduct a global survey of existing energy efficiency, and its impact on CO_2 emissions, with focus on energy consumption side, to provide forecasts and recommendations for future greenhouse gas emission reductions.

- **Work modalities**
  - Participation through online work sessions of the Task Group, with progress shared during plenary sessions of the committee on energy and, if possible, once a year in-person meeting.
- **Visibility of the results**
  - Increased visibility through publication and webinar, showcasing the work and impact within the international engineering community

ENERGY Committee on Energy WFEO / FMOI

Task Group Hydrogen

ENERGY Committee on Energy WFEO / FMOI

- **Chair of the Task Group : Massimiliano Capezzali, Switzerland**

- **Task group objectives**
  The task group « Hydrogen » aims at being able to provide both a technology review, as well as proactively proposing strategies for different stakeholders on the following issues :
  - Centralized and decentralized production of low-carbon hydrogen
  - Hydrogen infrastructure (transport, storage, distribution) and critical components (compressors, liquefactors)
  - Hydrogen as a substitution vector in the transport, heating and industry sectors
  - Hydrogen as a low-carbon chemical basic compound for industry (e.g. refineries and steel mills)
  - Hydrogen for fostering cogeneration and heating networks in urban zones and in industrial parks
  - Comparative environmental impacts of hydrogen production and usage with respect to both present situation and alternatives (e.g. electrification of transport)

- **Work modalities**
  - Participation through online work sessions of the Task Group, with progress shared during plenary sessions of the committee on energy and, if possible, once a year in-person meeting.

- **Visibility of the results**
  - Increased visibility through publication and webinar, showcasing the work and impact within the international engineering community

Task Group Solar

ENERGY Committee on Energy WFEO / FMOI

- **Chair of the Task Group : Dr. Carsten Ahrens, Germany**

- **Description of the Task group objectives**
  According to the trends as described in the IEA Solar PV value chain the group will work on these topics:
  - Materials and module manufacturing type of modules, rare and toxic materials, development of industrial production
  - Applications utility scale, mixed applications (roof, agro, lake, etc.), remote pv, integrated building pv, production of hydrogen
  - Operation and maintenance grid connection, cleaning of module surface
  - Decommissioning and End-of-Life Management re-use and re-cycling, building-up of a circular economy and also on matters in fields of HCPV, CSP and Solar Heat

- **Work modalities**
  - Participation through online work sessions of the Task Group, with progress shared during plenary sessions of the committee on energy and, if possible, once a year in-person meeting.

- **Visibility of the results**
  - Increased visibility through publication and webinar, showcasing the work and impact within the international engineering community