

# **Proposal for hosting the Technical Standing Committee on Engineering and the Environment (CEE) Four years Strategic Plan (2023-2027)**

## **I. Introduction**

### **A. CEE Vision**

In collaboration with WFEO members and partners, the World Federation of Engineering Organizations-Committee on Engineering and the Environment (WFEO-CEE) aims to contribute to the achievement of the United Nations Sustainable Development Goals (SDGs) by:

1. Harness the leading role of “environmental engineering technology, application, and demonstration” in promoting sustainable development, with a particular focus on SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production), and support SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land). Demonstrate WFEO-CEE's responsibility and contribution to global sustainable development in the field of engineering and the environment.
2. Establish a professional platform to facilitate effective communication among WFEO members and to promote technical research findings and engineering practices that contribute to environmental sustainability on a global scale.
3. Provide extensive opportunities for global engineers, technical professionals, governments, and civil societies to engage in idea exchanges, collaboration, research, and

capacity building. Foster the advancement of theories, technological innovation, and engineering practices in the field of engineering and the environment.

## **B. CEE Mission**

1. Fulfil the responsibilities entrusted to WFEO-CEE by the WFEO, such as supporting significant initiatives (e.g., the World Engineering Day (WED) and the World Engineers' Convention (WEC)) and providing assistance to other WFEO committees and activities focused on engineering and the environment.
2. Represent WFEO in important global conferences in the fields of engineering and the environment, such as, the United Nations Environment Assembly, the Conference of the Parties to the Convention on Biological Diversity, and the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC).
3. Maintain close communication with important international organizations such as the United Nations Environment Programme (UNEP). Actively engage in collaborative efforts and facilitate the advancement of initiatives related to engineering and environmental on the international stage.
4. Organize regular or ad hoc exchange events for engineers from member countries to facilitate the sharing of technological innovations and engineering practices. Promote the dissemination and application of environmentally-friendly and cutting-edge engineering technologies in the realms of environment and sustainable development. Specifically, we plan

to host a Biennial Summit (in China in 2025, and subsequently every two years) and Roundtable Meetings (intermittently).

5. In cooperation with the WFEO Committee on Young Engineers/Future Leaders (YEFL) and other STCs, launch an "Education Initiative" targeting young university students and children worldwide. Attract promising individuals to engage in the field of environment and sustainable development, exemplified by a CEE Summer Training Camp and a Global Youth "Sustainable Development" Creative Challenge (winning projects will be recommended to participate in the WED Hackathon).

6. Summarize practical experience gained from environmental engineering projects in urban, community, and industrial settings. Compile a comprehensive collection of best practices showcasing how environmental engineering technologies can foster sustainable cities and communities, as well as sustainable consumption and production.

## **II. Focus on and support of SDGs**

WFEO-CEE will focus on SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production), while also providing support for SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land).

Focus:

1. SDG11-Integrate initiatives to build sustainable cities and communities into national and regional strategies and plans

- In the field of architecture, comprehensively promote the engineering application of advanced green building technologies and the construction of demonstration communities and parks such as prefabricated building, green energy-saving building, photovoltaic building integration, low carbon and zero carbon building technology, intelligent building management.
- Actively promote advanced concepts and engineering technologies of smart transportation; promote green, intelligent and shared future transportation; realize green and low-carbon urban transportation throughout its full life cycle.

## 2. SDG12-Responsible Consumption and Production

- Popularize the technologies and practical cases of waste pollution and reduction in the industrial field, improve the recycling rates of different resources, enhance the environmental and social governance (ESG) ability of all enterprises, and promote sustainable industrial production.
- Encourage waste reduction and separation at source, initiate demonstration projects for regional waste recycling and reuse network, improve resource utilization efficiency, and promote sustainable household consumption.
- Reduce the total plastic waste generated in the whole society, improve the recycling rate and regeneration processes of plastic waste, popularize the plastic degradable technologies, and build a sustainable mode of plastic production and consumption.

Support

### 3. SDG13-Climate Action

- Promote the application of carbon dioxide (CO<sub>2</sub>) capture, utilization, and storage (CCUS) projects to develop reproducible, scalable, and sustainable CCUS technology routes;
- Improve the technology system for monitoring carbon sinks in terrestrial and marine ecosystems; advance the application and diffusion of carbon sequestration and sink technologies for terrestrial and marine ecosystems;
- Promote the R&D and engineering demonstration of non-CO<sub>2</sub> greenhouse gas mitigation technologies, including methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

### 4. SDG14-Life Below Water

- Reduce various forms of marine pollution and encourage the application of advanced marine technologies. Promote comprehensive solutions for mitigating ocean acidification.
- Foster engineering practices that contribute to the protection of marine biodiversity, ensuring the sustainable development of fisheries, aquaculture, shipping, and tourism industries.
- Facilitate the development of the blue economy, harnessing the full potential of marine resources while safeguarding and maintaining the health and sustainability of marine ecosystems. Modernize marine governance and promote the sustainable utilization of marine resources.
- Protect coastal and marine areas, develop and support blue

carbon sinks, enhance the contribution and capacity of oceans in combating and adapting to climate change, and safeguard the health of marine ecosystems.

## 5. SDG15-Life on Land

- Facilitate global efforts in preventing and controlling desertification and land degradation by enhancing the efficacy of ecosystem restoration and reconstruction. This can be achieved through initiatives like land degradation restoration, the promotion of grassland ecology, the construction of efficient animal husbandry systems, and the demonstration of technologies for optimizing the utilization of water resources in arid regions.
- Facilitate the implementation of engineering practices, including strategies such as reducing pollution from lake sources, implementing process resistance control, and implementing effective end-of-pipe treatment measures. These initiatives aim to minimize non-point source pollution from agricultural activities, effectively manage eutrophication, and establish comprehensive pollution control systems for freshwater lakes.

## III. Outputs

1. Facilitate the achievement of key sustainable development goals by:

- Actively promoting the development of sustainable cities and communities, fostering green, energy-efficient, and sustainable practices throughout the urbanization process.
- Encouraging responsible consumption and production

patterns, advocating for sustainable production and consumption behaviors, and promoting the efficient utilization of resources throughout the entire life cycle to achieve harmonious development among the economy, society, and ecosystems.

- Taking proactive measures to address climate change, mitigating its effects, and enhancing the adaptive capacity of marine and terrestrial systems to cope with climate change-related challenges.
- Strengthening the protection and sustainable utilization of marine ecosystems, ensuring the health and biodiversity of oceans and marine resources, and fostering sustainable development in the maritime economy.
- Enhancing the conservation and sustainable utilization of terrestrial biodiversity, promoting sustainable land and lake management, protecting ecosystem functionality and biodiversity, and fostering harmonious coexistence between humanity and nature.

2. Compile a collection of best practices that highlight the role of environmental engineering technologies in promoting sustainable cities and communities, as well as sustainable consumption and production.

3. Build a communication and exhibition platform by:

- Ensuring timely updates of CEE webpages to provide accurate, comprehensive, and up-to-date information on activities organized by WFEO and WFEO-CEE.

- Providing an effective means of promotion and showcasing for the work and mission of WFEO and WFEO-CEE, offering timely and accurate information to stakeholders from various sectors.

4. Establish communication and exchange mechanisms by:

- Establishing regular channels of communication with relevant international organizations such as UNEP and expanding the influence of WFEO in the environmental domain through joint activities and project collaborations.
- Establishing mechanisms for partnership with reputable journals, selecting renowned journals for collaboration to facilitate the publication and dissemination of outstanding achievements in the fields of engineering and the environment.
- Expanding the scale and influence of hosting forums and international conferences, providing a platform for experts, scholars, and practitioners in the fields of engineering and sustainable development to share the latest research findings, experiences, and best practices.

5. Expand the coverage to benefit more countries by:

- Utilizing CEE as a nexus to promote the inclusion of countries that have not yet joined WFEO or CEE as member countries, encouraging them to become members of WFEO.
- Promoting technology transfer and knowledge sharing to ensure the widespread dissemination and demonstration of sustainable development engineering technologies to a broader range of countries and regions, particularly focusing

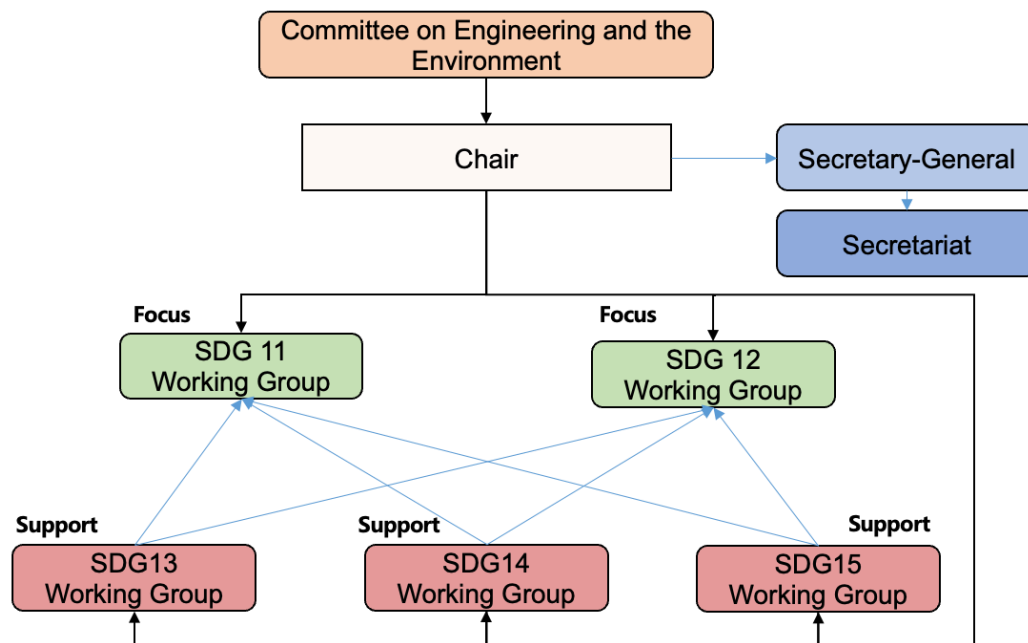
on developing nations.

- Establishing training platforms to assist member countries with specific needs in training professionals, enhancing the inclusivity and accessibility of technical expertise.

#### **IV. Structure and Membership**

WFEO-CEE will be hosted by the China Association for Science and Technology (CAST) and chaired by Dr. Ling Wen, an academician of the Chinese Academy of Engineering and a Chair professor at Shanghai Jiao Tong University. The Secretariat will be located at Shanghai Jiao Tong University. According to the relevant procedures of WFEO, the Chair appoints the Secretary-General to oversee the work of the Secretariat. The Chair presides over the daily work of CEE. The Secretary-General leads the Secretariat, implements CEE's decisions, and reports to the Chair regularly.

For the committee, five outstanding representatives from different countries/regions across five continents will be selected, one for each SDG working group, i.e., SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production), as well as three supporting areas, which are SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land). Each working group will include young scholars collaborating with the representatives.



The committee members are comprised of individual representatives, categorized into two types: full members and observers. Full members are appointed by engineering organizations from member countries, representing both their respective national engineering organizations and their respective countries. The term of office is determined by the authorization of the national engineering organization, with a recommended term of 2 to 4 years. Full members have voting rights. Observers, on the other hand, are nominated by member countries or young engineers who have an interest in environmental and sustainable development. They can participate in committee activities but do not have voting rights. Each country may have more than one observer.

The Chair and Secretary-General will diligently carry out their responsibilities. The responsibilities of the Chair include those outlined in Article 2.2 of Annex C of the "Rules of Procedure"

approved by the WFEO Executive Council.

## **V. Work Plan for Secretariat**

The secretariat of WFEO-CEE will be located at Shanghai Jiao Tong University. The Secretariat, along with the Secretary-General, is responsible for overseeing administrative support, financial support, and activity support for the committee. They are responsible to ensure that the Committee delivers outcomes that are relevant to the WFEO and the satisfactory performance of the Committee that aligns with the strategic objectives of the WFEO. The secretariat will primarily undertake the following tasks:

### **1. Liaison**

Develop annual work plans, work calendars, and monthly work reports. Provide monthly reports to the China Association for Science and Technology (CAST), the WFEO Executive Council, the WFEO China Committee, with copies to the WFEO Secretariat. Maintain close communication with other relevant international organizations, ensuring timely exchanges of work progress and coordinated efforts in advancing engineering and environmental affairs.

### **2. Communication**

Introduce CEE and provide updates on the latest information, supporting WFEO in continually providing open and collaborative platforms for professional showcasing and communication, fostering seamless connectivity among engineering institutions and engineers worldwide based on the CEE platform. Provide WFEO with timely information, activity updates, and relevant data, responsible for updating and maintaining CEE-related content on the WFEO websites

to ensure accuracy and timeliness. Foster close collaboration with internationally renowned journals in the field of engineering and the environment, establishing a partnership journal system.

### 3. Service

The Secretariat is responsible for providing comprehensive services to the CEE committee members and actively seeking potential member countries for participation.

### 4. Support

The Secretariat is responsible for supporting regular meetings and communication activities organized by CEE, facilitating information sharing, experience exchanges, and collaborative work among committee members.

### 5. Management

The secretariat is responsible for preparing the annual activity budget for CEE and handling various administrative affairs of the committee, including developing detailed financial plans and overseeing the execution of administrative support, financial support, and activity support.

The above-mentioned tasks will be carried out by the Secretariat staff under the leadership of the Chair and Secretary-General, adhering to professional work principles to ensure efficient operations and compliance with WFEO rules of procedure.

## **VI. Communication Plan**

Enhance communication with WFEO headquarters, WFEO members, other WFEO STCs, and working groups. Provide timely updates on CEE activities, actively seek their cooperation and support,

and provide assistance for their activities.

Represent WFEO in close contact with international organizations such as the United Nations Environment Programme (UNEP), strengthening information exchanges and communication, and collaborating to advance international affairs in the field of engineering and the environment.

Engage in close collaboration with environmental engineering-related NGOs, universities, research institutions, companies, think tanks, and high-level academic journals, fostering information exchange and synergy to collectively promote the advancement of sustainable development initiatives.

Strengthen communication with CEE members and other participants through email.

## **VII. Budget**

The China Association for Science and Technology (CAST) provides financial support for carrying out the Chair's duties, the operations of the Secretariat, and CEE-hosted activities, with an annual amount of 500,000 RMB.

Shanghai Jiao Tong University contributes an additional funding of 500,000 RMB, assigns five dedicated staff members, and provides an office space spanning 200 square meters for the Chair, Secretary-General, and the supporting team. Shanghai Jiao Tong University commits to provide full access to all teaching, research and other facilities within the university to be shared with the CEE Secretariat free of charge. The specific budget is as follows:

NO.	Content	Budget Amount
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		(Yuan)
1	Chair and Secretary-General's expenses for attending WFEO meetings (travel expenses)	300,000.00
2	Maintenance of the secretariat	400,000.00
	(1) Secretariat personnel	200,000.00
	(2) Office operation	200,000.00
3	Expenses for organizing CEE work meetings and academic activities	300,000.00

Total: 1,000,000 (Yuan)

## **VIII. Confirmation of Compliance with WFEO Rules of Procedure**

This strategy document aligns with relevant clauses (3.2, 2.4 and Annex C Clauses 2.1 to 2.4) of the WFEO Rules of Procedure that were approved by the WFEO Executive Council on 1, March, 2023 in Madrid, Spain.

China Association for Science and Technology  
May 2023