

The Shanghai Declaration on Engineering and the Sustainable Future

The World Federation of Engineering Organizations

PREAMBLE

Three thousand engineers from 70 countries and regions came together for the World Engineers' Convention on November 2-6, 2004. WEC2004 was sponsored by the World Federation of Engineering Organizations (WFEO) and cosponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and organized by the Chinese Association for Science and Technology (CAST), Chinese Academy of Engineering (CAE), and Shanghai Municipal Government. The theme of WEC2004 was "Engineers Shape the Sustainable Future". Many important issues related to this theme were addressed in the plenary and five parallel sessions of the Convention and the virtual fora associated with WEC2004.

PROCLAMATION

Engineering and technology are vitally important in addressing poverty reduction, sustainable development and the other UN Millennium Development Goals, and need to be recognized as such. We, the participants at WEC2004, proclaim the following:

The Challenge

1. The Situation

While having made encouraging progress in economic and other respects, the world today is facing many severe challenges. The environment continues to deteriorate, natural and man-made disasters are more frequent, some natural resource uses approach critical points, and the gaps between the rich and the poor, between developed and developing nations, continue to widen. All these factors are a major threat to global prosperity, security, stability and sustainable development.

The Mission

1. The Engineering Community

The bounden duty of engineers is to build a better life for society. To this end, engineers should dedicate themselves to developing a better world together with the public and private sectors, non-governmental and intergovernmental organizations, through the application of knowledge to convert resources into products and services. In this process, engineers should be aware of the need to achieve a balance between resource use and the needs of future generations, maintaining the environment and ecosystems to promote sustainable development. We need to develop goals and measurable indicators towards these goals.

2. Governments

Governments need to recognize and reinforce the role of engineering in social and economic development, addressing basic human needs and poverty reduction, bridging the “knowledge divide” and promoting intercultural dialogue, cooperation and conflict resolution.

Governments also need to promote public and private support for engineering education and capacity building. This is most important in developing public understanding and the application of engineering and technology in all countries.

3. International Organizations

Non-governmental organizations, such as WFEO, and inter-government organizations, such as UNESCO, can and should play vital roles in promoting the development and application of engineering to bridge the divide between countries. They also play important role in supporting and promoting international cooperation in engineering and technology, particularly between developed and developing countries.

Responsibility and Commitment

4. Sustainability

Engineers should take greater responsibility for shaping the sustainable future. Engineers should also create and apply technology to minimize the waste of resources, reduce pollution and protect the human health and well-being and the ecological environment.

5. Ethics and Codes of Conduct

The principles of honesty, equity, freedom from bribery, corruption and fraud, on which engineering codes are based, should be emphasized. High standards in all aspects of engineering practice should be maintained worldwide, and ongoing debate about engineering ethics should be strongly fostered towards the aim of adoption of codes of conduct by all engineers and engineering bodies.

6. Interdisciplinarity

Engineers should be clearly aware of the importance of interdisciplinary cooperation. We need to promote cooperation within the profession and also with natural and social scientists and the public in the creation and application of knowledge for sustainable development.

7. Education and Capacity Building

Innovation and creation in engineering are of crucial importance. We need to promote human and institutional capacity building.

Curricular and pedagogical reform in engineering education and continuous professional development to encompass wider social and ethical concerns are needed. This will enhance the attractiveness of engineering to young people. We need to promote and support young engineers - they are our future.

8. Women and Gender Issues

Women are frequently constrained from reaching their full potential. Only when women and men realize their potential, will the development of human society realize its full potential. Hence, promoting the participation of women and addressing gender issues in engineering is crucial for the sustainability of the engineering community.

9. International Cooperation

There are excessive disparities between people and countries. This can lead to increasing insecurity and conflict. International cooperation in engineering facilitates the exchange of knowledge and promotes technological applications for health, wealth and well-being, poverty reduction and the culture of peace.

Call to Action

We, the participants at the World Engineers' Convention 2004, commit ourselves in this Shanghai Declaration on Engineering and Sustainable Future and issue a call. We call on engineers, engineering organizations, governments and international bodies to acknowledge and adopt the actions stated in this declaration. We consider that this Declaration gives practical expression and impetus to a commitment to engineering that can serve as a strategic guide for partnership between all stakeholders in engineering for our sustainable future.