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The Brasilia Declaration: Engineering and Innovation for Development with Social Responsibility

World Engineers' Convention, Brasilia, 5 December 2008

PREAMBLE

The 2008 World Engineers' Convention was held in Brasilia on 3-5 December 2008, and brought together five thousand two hundred engineers from 39 countries. WEC2008 was supported by President Luís Inácio Lula da Silva, organized and sponsored by the Brazilian Federal Council of Engineering, Architecture and Agronomy (CONFEA), the Brazilian Federation of Engineers' Associations (FEBRAE) and World Federation of Engineering Organisations (WFEO), and co-sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The main theme of WEC2008 was "Engineering: Innovation with Social Responsibility". Sub-themes focused on engineering beyond boundaries, ethics and social responsibility, innovation without degradation, ICT for inclusion and advanced technologies with strategic vision. There were also a "Women's Forum" and "Young Engineers' Forum", and six panel discussions on engineering education and capacity building, biodiversity and the environment, disaster risk management, engineering for development, energy for sustainable development and great challenges for engineering. More than 100 papers were presented on these topics, and related issues were discussed. WEC 2008 was accompanied by ExpoWEC2008 on the theme "Energy for the Future". This was the third WEC, follows WEC2004 in Shanghai and WEC2000 in Hanover, and precedes the forth WEC, to be held in Geneva in 2011.

The purpose of this Declaration is to present these discussions to the engineering and related communities, governments and national authorities, national, regional and international organizations, outlining these issues and calling for action on the challenges facing engineering. There is an important need for the development of national, regional and international engineering initiatives and programmes. This is also reflected in the production of the UNESCO Report, "Engineering: Issues and Challenges for Development" – the first ever international report on engineering, launched at this Convention.

DECLARATION

We, the participants at WEC2008, emphasise engineering as the driver of technological innovation and of vital importance in sustainable human, social and economic development.

In the current economic crisis we believe that engineering and innovation with social responsibility will be essential for our survival and progress. It is in this context that we make this declaration.

Issues and Challenges

At the global level, issues facing the world focus on the need to reduce poverty, promote sustainable social and economic development and address the other UN Millennium Development Goals, provide solutions for climate change mitigation and adaptation and facilitate the move into a low-carbon future. These issues also include challenges and opportunities presented by globalisation, the digital and broader technological and knowledge divides. At the local level, many countries are concerned that young people are turning away from science, engineering and technical education, and the effect a declining interest and enrolment in engineering will have on capacity and development around the world, which is compounded for poorer countries by the brain-drain of engineers. These issues and challenges are being further compounded by the recent financial and economic crisis, at a time when we need increased investment in engineering capacity building, R&D and infrastructure. The engineering and scientific communities need to work more closely together on these issues. It is also important to note that the issues and challenges facing engineering change over space and time, due particularly to new needs and new knowledge, and engineering needs to change to face these changing issues and challenges.

The main challenges for engineering are to promote capacity building and access to technology to address these issues through:

- promoting awareness of engineering to the public and young people,
- the development of technologies, including advanced technologies,
- the application and innovation of technologies,
- promoting inclusion, especially of women and young engineers of the future,
- global cooperation to reduce knowledge divisions.

These issues need to be addressed in the context of strategic vision, ethical and social responsibility.

Calls for Action

Engineering is the essential building block and driver of technological innovation, sustainable social and economic development, and engineers need to emphasise this to policy makers and the wider public. An emphasis on innovation and applications also helps attract young people to engineering. Engineering education needs to emphasise the relevance of engineering to the global issues and problems we face - the problem-solving profession needs to revitalise itself through such approaches as problem-based learning.

To address these issues, we make the following calls for action to the engineering and related communities, governments and national authorities, regional and international organizations.

The engineering and related communities

We call upon the engineering and related communities, at national and international levels, through WFEO, its members and related organisations, to:

- emphasise the importance of engineering as the main driver of innovation, sustainable social and economic development,
- develop a better understanding of the public perception of engineering, and the promotion of engineering studies and policy,
- promote curricula and teaching methods in engineering education that emphasise relevance, applications and the problem-solving approach of engineering,
- strengthen linkages between elementary school and engineering by enhancing partnerships between engineers, schools, government and the private sector,
- develop, apply and innovate of technologies, including advanced technologies, to global issues and challenges, to engineer a better world, promote inclusion and reduce divisions, with strategic vision, ethical and social responsibility

National, regional and international organizations

We call upon WFEO, WFEO members, UNESCO and other national, regional and international organisations (such as the OAS in the Americas), to facilitate and promote the above activities through international networking, cooperation and the sharing of good practice. In particular, we call upon WFEO members and UNESCO to develop an International Engineering Programme to promote engineering education, capacity building and applications for poverty eradication, sustainable human, social and economic development, and to continue the UNESCO engineering report into a second edition to be launched at the World Engineers' Convention in 2011.

Governments and national authorities

We call upon governments and national authorities to create enabling environments and support the above activities in engineering education, research and development, capacity building and application of engineering to the Millennium Development Goals and related international development objectives.