

Sustainable Development Needs Connected and Integrated Sciences

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I thank the Government of China and the Chinese Academy of Engineering for this initiative. I can hardly think of a better country to explore the power of engineering, science and technology. Throughout a millennial history, China has given revolutionary innovations to humanity, changing the course of development of all societies.

On 27 March, I had the honor to welcome His Excellency President XI to UNESCO. Speaking before Member States, President XI said, “Chinese civilization, though born on the soil of China, has come to its present form through constant exchanges and mutual learning with other civilizations.” President XI highlighted such exchanges as a force for peace—“to spread the seeds of peace so that they will take root in the hearts and minds of the world’s people.”

These words echo those of the UNESCO Constitution: Since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed. This idea has never been so relevant.

We meet at a time of rising pressure on the planet, a time when all societies are transforming. We all recognize the deepening interdependence of the world. The question is whether we can make this interdependence a source of strength. This question stands at the heart of efforts to reach the Millennium Development Goals by 2015 and shape a new global development agenda to follow. All societies are seeking new sources of dynamism, to eradicate poverty, to build sustainable and lasting peace development. This is why engineering, science and technology are important and this International Conference is so timely.

UNESCO was born in 1945 at the Institute of Civil Engineers in London. The world has changed, but the need for engineering, science and technology has only deepened. And so have the aspirations of all societies to benefit from progress. I believe we need today a new vision of human development, where all participate in creating and sharing knowledge and innovation.

For this, we need new approaches to engineering and the sciences. We need more integrated sciences—transdisciplinary, drawing on scientific, traditional and indigenous knowledge. We need greater investment in the sciences, in countries across the world. We need more connected sciences-linked to policy-making, responding to actual needs.

In 2010, UNESCO published the first global study of engineering, which highlighted its importance. From agriculture to medicine, chemistry to the environment, engineering has the power to respond to the challenges of climate change, to craft solutions that reach the unreachable.

The Report was equally clear on challenges. Sub-Saharan Africa needs 2.5 million new engineers and technicians to reach the Millennium Development Goal of improved access to clean water and sanitation. Least Developed countries still contribute marginally to global engineering and sciences, and derive marginal benefits from its development. The Report showed a profession under pressure-facing difficulties in attracting and retaining young men and especially women.

This is the paradox we face-innovation has never been so essential, yet engineering faces steep challenges.

UNESCO launched the Engineering Initiative to address this paradox. This seeks to raise the profile of engineering, notably with renewable and alternative technologies. It focuses on engineering education, especially for women to reverse the enrollment decline.

We are working across the world, with Governments, professional societies, the private sector and civil society. UNESCO centers play a leading role—including the International Knowledge Center for Engineering Sciences and

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Technology in China, the International Center for South-South Cooperation for Science, Technology and Innovation, in Malaysia, and the Avicenna Virtual Campus—supporting engineering education in Africa and the Arab World.

All this is guided by a single message. Engineering is indispensable for transforming research into new products and services for the benefit of all.

To move forward, we must better understand needs. UNESCO has embarked on a new publication on Global Engineering Statistics, drawing on the UNESCO Institute of Statistics—to know how many young women and men are studying engineering, how many graduate, how many pursue careers—because good data is essential for good policy. We must also transform what young people are learning.

Challenges are complex and global. Engineering education must be equally cross-cutting. It must respond to local and national needs—bridging learning and innovation, facilitating entrepreneurship, supporting entry into the workforce. This calls for stronger ties with the private sector. It calls for a shift towards “problem-based learning” and student-centered teaching. We need engineering education for the 21st century.

The complexity of challenges calls for new approaches to

the sciences as a whole, to support States in shaping a new global development agenda to follow 2015. In all this, China plays a leading role.

We see this leadership in the science—we see it in education. China is a Champion Country of the United Nations Secretary-General’s Global Education First Initiative, which UNESCO is steering forward.

Last September, on the 1st anniversary of the Initiative, held in NY, President XI sent a video message, where he stated, “Education is the fundamental way to pass on civilizations and knowledge, bring up new generations, and create a better life.” This is a vision we share.

The history of humanity is the history of ideas, that fire up the imagination, that give shape to reality. It is the history of women and men crafting solutions for the benefit of all. It is, fundamentally, the history of engineering.

Today, more than ever, we need engineering to be collaborative, inclusive, and creative, to adapt to changing needs. This reminds me of the thoughts of Confucius: They must often change, who would be constant in happiness or wisdom.

The world is changing—I believe we must embrace change, to shape it in positive directions.