Climate Change: Scientific & Technological Challenges Faced by China

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Thank you, Mr. Chairman!

Dear guests, ladies and gentlemen!

Good morning! Being together with you all in Copenhagen, I feel honored to attend this grand scientific conference on Climate Change: Global Risks, Challenges and Decisions, to share recent research findings, and to discuss both current and future development. I wish to avail myself of this opportunity to express my gratitude to the cosponsors and local organizers of this important event.

Climate change has already become a major focus of global concern by the international community. It is to the common interest of the mankind as a whole, and it is the common responsibility of the international community to take active measures and to collaborate in responding to climate change.

The topic of my remark today is “Climate Change: Scientific & Technological Challenges Faced by China”. On this occasion, I simply wish to share with you some thoughts and ideas from the China’s prospective. To begin with, I shall briefly talk about the impacts of climate change on China’s sustainable development; then the major efforts made by China in response to climate change; followed by the scientific & technological requirements and challenges encountered by China, finally some suggestions will be proposed.

The global warming is an unequivocal reality, and it has significant impacts on natural and ecological systems, human living environment, economic growth and social development. Like others, China is one of the countries that meet serious impacts of climate change. In the past 100 years, the annual average temperature over China was increased by 0.5-0.8°C across, slighter higher than the global average in the same period. Since 1990s, in annual average, up to 400 million people in China have been affected by meteorological disasters and secondary hazards associated with them, with a death toll exceeding 4000, and a direct economic loss beyond 30 billion USD. In the context of climate warning, the instability of Chinese agriculture is increased; the inland glaciers are retreating; the issue of water resources is becoming increasingly serious; the major constructed projects and their safe operation are exposed to higher risks; and the more developed areas along the coastal regions are under greater threats of sea level rise, just to mention a few. In the same time, due to the fact that generally the economic development level remains lower and uneven, 43 million people in China are still under the poverty line, based on China's poverty criteria, or 150 million people fall into the poverty category according to the criteria of the United Nations. Therefore, China is facing the dual tasks of responding to climate change on the one hand, eradicating poverty and achieving sustainable development on the other.

The Chinese Government has always attached great importance to addressing climate change. The National Leading Group to Address Climate Change headed by the Premier of the State Council was established, *the China's National Climate Change Programme* was formulated, and

the National Expert Panel on Climate Change was set up. It is emphasized the climate change should be addressed by relying on scientific and technological advances. In recent years, China has enhanced the following activities in the field of climate change science and technology.

First, the overall arrangements on climate change related science and technology have been strengthened. In 2006, *the National Plan for Medium to Long-term Scientific and Technological Development* was promulgated, which identifies energy and environment as key areas of China's scientific and technological development, and global environment change monitoring is one of priority environmental themes. In 2007, *the China's Scientific and Technological Actions on Climate Change* has been prepared, putting forward the specific goals during the "11th Five-year Plan" period and the long-term objectives by 2020 to address climate change by relying on science and technology.

Secondly, focusing on energy conservation, emission reduction in response to climate change, the relevant scientific research and technological development have been strengthened. In 2006-2008, the total investment into the aforementioned areas was up to one billion US dollars, leading to a number of important research findings that are being transferred into applications.

Thirdly, international scientific and technological cooperation in response to climate change has become more active. At present, the Chinese Government has signed 103 agreements on scientific and technological cooperation with 97 countries, with extensive participation in major international scientific activities and programmes, such as IPCC, WCRP and IGBP.

Finally, more emphasis is given to the outreach of climate change science to enhance public awareness of climate change and encourage all people to get involved in climate change related initiatives and activities. For example, the State has developed the Scientific & Technological Action Plan on Energy Conservation and Emission Reduction, with a series of video films entitled Climate Change - China in Action having been produced.

However, an effective response to climate change calls for a stronger scientific and technological support. We need to further increase understanding of climate change and to define the interactions between climate change, nature and human activities, to enhance the reliability of climate models, to further identify the trends of regional climate change and their impacts on related sectors, local ecology and environment, and major construction projects, and to reduce uncertainties so that research findings serve policy making more effectively.

Like other developing countries, China also faces many bottlenecks in key technologies for addressing climate change, and it badly needs high energy efficiency technologies in such fields as industrial processes, equipment manufacturing, construction and transportation, etc., including renewable energy, nuclear power and clean coal development technologies. However, due to obstacles in technical costs, intellectual property protection and technology transfer mechanisms within the framework of UNFCCC, there are difficulties in transferring climate-friendly technologies to China and other developing counties.

Ladies and gentlemen!

As a developing country, while actively pursuing sustainable development, China has incorporated the responses to climate change and the low-carbon economy into the national overall development strategy. In collaboration with international community, China also wishes to actively promote scientific and technological innovations in addressing climate change, which may include:

Firstly, joint scientific research on climate change will be continued, especially to advance joint

climate system observations, and to initiate joint climate system observing programmes at global and regional levels. Joint research and development of climate system models will be made, to improve the model's performance. Climate change detection and attribution analysis should be further conducted, to make more progresses in better understanding the correlations of climate change with Asian monsoon, and with extreme weather/climate events.

Secondly, the climate-friendly technologies are jointly developed, including energy-conservation and energy-efficient technologies for energy-intensive sectors like electricity, metallurgy, petrochemicals, chemicals, building materials, transport and buildings, renewable energy technology, clean coal technologies. Analysis is made on the possible application of these technologies in low cost and large scale.

Thirdly, studies are made on technologies and measures in adaptation to climate change, including the development of regional climate models and integrated impact assessment models, comprehensive analysis of its impact on China's major vulnerable sectors and the adaptation technologies and measures, impact on extreme weather/climate events and hazards, and their adaptation technologies and measures, etc.;

On this occasion, we would like to appeal the international community for further enhancing scientific and technological innovations in response to climate change, for cooperation and applications in these fields.

Firstly, innovations in science and technology should be strengthened to enhance global scientific and technological capacities in response to climate change. These innovations are the core means to address climate change globally. The innovative research and development will enable us to better understand the causes of climate change, to more accurately assess its impacts and trends, to reduce uncertainties, to more efficiently develop key technologies, and to formulate economically viable plans, mechanisms, policies and strategies.

Secondly, the international scientific and technological cooperation and technology transfers should be strengthened, so as to improve the capability of developing countries to address climate change. The necessary path for international community to meet challenges of climate change is to open the international cooperation in science and technology, and to share research findings. The enhancement of scientific and technological capacities in the developing countries is a fundamental approach to address climate change within the framework of sustainable development. The international community should actively overcome the various obstacles by creating a technology transfer mechanism led by governments, which allows market to play a role and encourages participation of enterprises, and promotes the transfer of climate-friendly technologies to the developing countries in favorable terms.

Thirdly, greater importance should be attached to strengthening outreach of scientific knowledge, to enhance awareness of climate change by the international community. With joint efforts of scientists and media, the scientific conclusions on the facts and impacts of climate change, the scientific measures on adaptation and mitigation, and its uncertainties should be communicated to general public and policy makers by using acceptable modalities and easy-to-understand language, for better outreach of basic scientific knowledge of climate and climate change.

Ladies and gentlemen!

I believe that all participants will make full use of this forum as a good opportunity to strengthen exchanges and cooperation, to make new contributions in response to global climate change, and to contribute to COP-15 to be held in this city by the end of the year with as much expected

results as possible.

Thank you for your attention.