

China's Scientific and Technological Actions On Climate Change

Introductory Information

(June, 2007)

Ministry of Science and Technology of P. R. China

Climate change has an increasingly significant and far-reaching impact on all countries in the world. It therefore becomes a focus of attention by international communities. For the first time, the issue of climate change and national securities was discussed in the Security Council of the United Nations in April 2007. The G8+5 Summit 2007, which was closed a week ago in Germany, put the climate change at the top of its agenda once again as it did in 2005. The Chinese leaders have always been attaching great importance to the climate change issue and have made a series of important instructions on this issue. On May 30, 2007, the State Council discussed and approved the China's National Climate Change Program (hereafter referred to as CNCCP Program).

Science & technology is one of the basic and fundamental approaches to effectively address climate change. The Outline of the National Program for Medium- and Long-term Science and Technology Development (2006-2020) (hereafter referred to as the Outline for S&T Development) issued in early 2006 identifies energy and environment as key areas of S&T development and lists the monitoring of global environment changes and response measures as one of the priority themes. The CNCCP Program has clearly indicated that China's response to climate change shall rely on S&T advances and innovations, and that strengthening S&T is a major initiative in response to climate change. To effectively implement the key tasks spelt out in the Guidelines for S&T Development, to provide S&T support to the implementation of the CNCCP Program, and to enhance China's S&T capabilities in response to climate change, the Ministry of Science and Technology of P. R. China (MOST) officially initiated the formulation of the China's Scientific & Technological Actions on Climate Change (hereafter referred to as the China's S&T Actions) together with other 13 governmental agencies in March 2007. In order to formulate and issue the China's S&T Actions, MOST organized a series of workshops and meetings, and had in-depth discussions together with more than 20 governmental agencies, including the National Development and Reform Commission, the Ministry of Foreign Affairs and the Ministry of Finance. Before the document was finalized, the draft of the China's S&T Actions was reviewed and revised for 5 times.

The China's S&T Actions takes the Scientific Outlook on Development as its guiding principle and aims to actively implement the Outline for S&T Development and CNCCP Program, to let the S&T play a basic and leading role in responding to climate change, to promote independent S&T innovations and advances in the field of climate change, to control emissions of green-house gasses (GHG) through S&T solutions, to build up China's capacities in adaptation to climate change, and to provide strong S&T supports to ensuring sustainable socio-economic development, safeguarding the national interests and fulfilling the international commitments.

Since early 1990s, through great efforts in implementation of the national S&T programs, and through international cooperation, etc., China has achieved a full range of results and progresses in the basic scientific research on climate change, impacts of climate change and response measures, technological developments and applications for controlling GHG emissions and for mitigating climate change, analysis of social and economic impacts of climate change, and in formulation of mitigation strategies. Moreover, the National Assessment Report on Climate Change has been issued in 2006. As for the scientific research infrastructures, the monitoring networks, state key laboratories and sectoral key laboratories for research on climate change were set up. A bunch of scientific instruments and facilities for climate change studies have been developed independently or introduced from other countries. In the last two decades, China established a core team of experts specializing in economic & social sciences, energy, meteorology, climatology, ecology, environment and other

cross-cutting disciplines, and trained over a thousand research scientists focusing on basic studies and application-oriented research on climate change.

The implementation of the China's S&T Actions will follow the principle of "four combinations", which are, combination of leading role of the government with participation of enterprises, combination of technological breakthroughs with response measure studies, combination of near term demands with long term objectives, and combination of overall layout with separate implementations, with an emphasis on the following four aspects:

- 1. Scientific aspect of climate change.** The priorities include new generation climate system models, detection and attribution of climate change, climate change monitoring, prediction and warning techniques & methodologies, the mechanisms of Asia Monsoon, and climate change, extreme weather/climate events and associated disasters in China, evolving process and trend of cryosphere, etc.
- 2. GHG emissions control and climate change mitigation.** The priorities include energy saving and energy efficiency improvement technologies, new and renewable energy technologies, clean and efficient coal exploitation and utilization technologies, clean and efficient natural gas & petrol resource as well as coal-bed/coal-mine methane exploitation, development and application technologies, advanced nuclear energy technologies, CO₂ capture and storage technologies, biological carbon sequestration and engineering technologies and GHG emission control technologies by adopting good agricultural and land-use practices, and etc...
- 3. Climate change adaptation technologies and measures.** The priorities include development of the climate change impact assessment models, adaptation technologies & measures to address the impacts of climate change on major vulnerable sectors in China, the impacts of extreme weather/climate events and related disasters, development of the risk management system for climate change impacts in vulnerable regions, climate change impacts on major construction projects and adaptation measures, interactions of climate change with other global environmental issues and response measures, dangerous levels of climate change impacts and adaptation capabilities, and case studies on adaptation to climate change, etc.
- 4. Key strategies and policies on climate change.** The priorities include climate change and China's energy security strategies, international regime on climate change in the future, China's future energy development and GHG emission scenarios, clean development mechanism and carbon trading system, addressing climate change in relationship with low-carbon economic development, international commodity trade and GHG emissions, and S&T strategies in response to climate change, etc.

Meanwhile, the China's S&T Actions proposes six supportive measures as follows:

- 1. Strengthening leadership and coordination for jointly promoting S&T research on climate change.** A full play should be given to the Leading Coordination Committee on Global Environmental S&T in leading, supervising and coordinating the national S&T program on climate change, in strengthening an Expert Committees, Expert Groups and the Office of the Leading Coordination Committee under the Leading Coordination Committee and in intensifying the communication and coordination functions of the Office. All national S&T programs, funds, and other S&T resources from research institutions, universities and enterprises should be closely coordinated, so as to integrate local, institutional and sectoral S&T resources for jointly

promoting S&T progress on climate change in China.

- 2. Increasing inputs from diverse channels to increase financial support to scientific research and technological development on climate change.** The governments should be the main source of financial resources for S&T research on climate change, and all national S&T programs should strengthen their supports to S&T research on climate change and technological development. Meanwhile, all agencies, sector associations, local governments and business sectors should increase their supports to the S&T research on climate change. The financial and capital markets should be effectively utilized, and all social circles should be encouraged to provide financial support to research on climate change; international funding mechanisms should be further explored and funding mechanisms under international treaties should be fully utilized.
- 3. Strengthening human resource development and its introduction from overseas and enhancing disciplinary build-up in the field of climate change.** These efforts should be strengthened, especially for the availability of qualified academic team leaders and middle-aged and young talents with an international vision, to train and build up required research teams that have strong innovative capabilities, outstanding professional knowledge, and international reputations in the field of climate change studies. The disciplinary capacity building should be strengthened, interdisciplinary research and cross-cutting with social sciences should be advocated, so as to establish a multidisciplinary and well-structured framework for studies on climate change.
- 4. Strengthening S&T basic infrastructures and platforms in support to research on climate change.** A bunch of interdisciplinary, comprehensive and innovative research bases on climate change should be established, improved and integrated at the national level, to put in place a well distributed national climate change research network. All available conditions should be fully utilized to strongly strengthen such S&T infrastructures as the climate monitoring system, observation networks of agriculture, water resource, sea level rise and ecological system. The construction of platforms and mechanisms for sharing the climate change data and scientific instruments and facilities should be strengthened. And the construction of the technical service system in response to climate change should be promoted.
- 5. Strengthening popularization of scientific knowledge, and increasing public awareness of climate change.** Mass media should be used to disseminate scientific knowledge of climate change, response measures, current status and research findings on climate change both in China and around the world. A series of scientific readings on climate change should be publicized, and dissemination of scientific information and related education should be conducted at primary & high schools and colleges and universities. The topic of climate change should be an important component in the National Science Week, and the centralized training and awareness-increasing on climate change should be enhanced.
- 6. Fully making use of global resources, strengthening international S&T cooperation, and promoting international technology transfer.** S&T cooperation on climate change should be incorporated into bilateral and multilateral intergovernmental S&T cooperation agreements. The national, local, institutional and sectoral S&T programs can be further open to the outside world, according to the principle of "taking the initiative of our own, being mutually beneficial and win-win, as well as promoting independent innovations", while taking the lead in launching international cooperative programs in a given field of climate change as appropriate. Greater

efforts should be made to promote and participate in establishment of effective international technology transfer mechanism for the affordable, applicable, advanced and environment-friendly technologies to address climate change, and to encourage introduction, assimilation and re-innovation of the foreign technologies on mitigating climate change. The Chinese scientists, research institutions and enterprises should be encouraged and supported to initiate and participate in international and regional scientific research and technological development programs on climate change. The Chinese scientists and officials should also be encouraged to compete for senior posts of international organizations. Foreign institutions and international organizations should be encouraged and welcome to organize important international symposiums and workshops on climate change in China. The efforts should be made to attract important international science and technology organizations to locate their headquarters or branches in China. A "Forum on Climate Change and Science and Technology" will be launched in China.

The China's S&T Actions sets the following targets by 2020: the independent innovation capability in the field of climate change will be greatly enhanced; breakthroughs will be achieved in a wider range of the key technologies with China's own intellectual properties used for GHG emission control and mitigation, which will be extensively applied to the social and economic developments; adaptation capabilities of major sectors and typically vulnerable regions will be notably enhanced; the capability to provide S&T supports to international engagement and formulation of key national strategies and policies will be significantly increased; the major progresses will be made in building up disciplines of climate change, with remarkable improvements of research infrastructures and S&T human resource development; public awareness on climate change will be noticeably increased. The China's S&T Actions also propose the near term objectives during the 11th Five-year Plan period (2006-2010).

As an important initiative for implementing the China's S&T Actions in the near term, MOST will launch the key project entitled Study on Global Climate Change Impacts and Mitigations, which will integrate the available resources from relevant national S&T programs, including National Basic Research Program (973 Program), Hi-tech R&D Program (863 Program), Key Technologies R&D Program and other programs. At the same time, the "Forum on Climate Change and Science and Technology" will be initiated by MOST and other relevant agencies to promote international dialogues and exchanges of views on climate change.