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INTERNATIONAL COOPERATION

China-France Seminar on Clean Development

A China-France seminar on clean development capacity building, co-sponsored by the Global Environment Office under the Ministry of Science and Technology, the National Coordination Panel for Climate Change, a part of the State Development and Reform Commission, and the French Development Agency, was held February 9-10, 2006 in Kunming. The seminar is convened to discuss the framework and activities design for clean development mechanism (CDM) capacity building in both China and France. The meeting also assessed the CDM potentials in four provinces and regions in southwest China, and possible requirements for establishing CDM technology service centers there. Speakers have given the following talks: CDM projects and backgrounds, CDM projects planning and potential CDM projects in China, successful CDM experience in demonstration provinces, and backgrounds and framework of China-France projects. In the afternoon session of February 10, participants had an in-depth discussion of the project framework and implementation, and representatives from four provinces aired their views and comments. After the meeting, the French side expressed the wish to facilitate the approval of the project in France, in an attempt to prompt a start in April this year.

The joint CDM capacity building project will last for two years, with objectives of establishing CDM technology service centers and local expertise in the four provinces, in a move to raise the local capacity for such projects. It is planned to work out one to two PDDs and 10 PINs in each province. In the meantime, it will absorb advanced technology and funds from France through the projects. The implementation of the project will help to improve the quality, quantity, and scale of CDM projects in demonstration provinces, and enhance the local CDM capacity and China's capability in dealing with global climate change. It will also create

fine conditions for facilitating international cooperation in the area between China and developed nations including France.

9th Progress Meeting for Dragon Program

The 9th progress meeting for Dragon Program, a cooperation initiative between the Chinese Ministry of Science and Technology and the European Space Agency, was held on February 20-22, 2006 at the Chinese Academy of Forestry. The meeting was co-chaired by LI Zengyuan, from the Chinese side, and Dr. Yves-Louis Desnos from the EU side. Prof. LI and Dr. Desnos briefed the meeting of data distribution, training, and the newly added application of space technology in organizing an Olympic Games, as defined by the program. 16 lead experts reported progresses achieved in their respective fields, including agricultural applications, hydraulic disasters watch and water resources management, forests mapping, paddy rice monitoring, forest fires, marine studies, topographic mapping, drought watch, air pollution watch, ozone watch, sea water color study, and application of space technology in organizing an Olympic Games. Speakers also displayed the latest research and application findings achieved since the Santorini meeting held in 2005, including retrieval applications of polarimetric SAR data tree, validating polarimetric SAR classification methods using AIRSAR data, regional forest mapping using multiple temporal ASAR data, application of Doppler radar in sea wind sounding, ASAR data based fast acquisition of flood disaster information and water resources management technology, InSAR data based ground sediment watch, SCIAMACHY data based trace gas extracting algorithms and simulating calculation of radiation transmission model, MERIS data based marine and atmospheric parameter retrieval, landslide watch for the Three Gorge area using permanent SAR scattering measuring, paddy rice monitoring using both remote sensing data and crop growth models, and application of ground observational data in urban sports venues management and planning, and in offshore sea surface

and winds watch for water sports. These findings have been applied in resources surveys, and environment and disasters watches, with fine results.

So far, the European Space Agency has provided 6468 frames of ENVISAT and ERS SAR data to Chinese side free of charge, of which 4291 frames of ASAR data, 726 MERIS data, and 1451 ERS SAR data. During the meeting, both sides had discussions of individual research topics, problems in applications, possible solutions and future study orientations.

RESEARCH AND DEVELOPMENT

First Superconductor Energy Storing System

A superconductor system for energy storing, the first of its kind in the world, was recently rolled out at the Institute of Electric Engineering, a part of the Chinese Academy of Sciences. Tests show that the prototype system can effectively limit the short circuit current, while working on power compensation and instant failures. Financed by the Ministry of Science and Technology, the Chinese Academy of Sciences and the National Natural Science Foundation, the project is proud of a number of firsts in the world, including working principle, design, and technical realization.

China started to work on superconductor technology in electric power applications from the end of the 1990s. With the support of favored national policies and the support from the local government, Chinese scientists built up its proprietary innovation capacity in the area in the 10th Five-year period(2001-2005), through collective efforts of numerous research institutes and industrial sectors. The efforts has made China part of the advanced rank in the world concerning superconductor technology in electric power applications.

Since December 2004, a three-phase ac superconductor cable of a length of 75m and 10

kilovolts was put into trial grid operation in the Baiyin City of Gansu Province, with other two, including a 10-kilovolt three-phase superconductor current limiter, and a 10-kilovolt three-phase high temperature superconductor transformer were also placed on a trial grid run in the Loudi City of Hunan Province, and the Jichang City of Xinjiang Autonomous Region.

Progresses for Functional Rice Genomics

The Huazhong Agricultural University announced on February 21, 2006 that a study of functional rice genomics under a national special project, headed by ZHANG Qifa, academician of the Chinese Academy of Sciences and professor with the University, achieved substantive progresses.

Created in 2002, the special project has established a T-DNA mutation bank made up of 270,000 independent transformers in 2005. Calculating on two modified genes for each transformer, the probability of all rice gene marking approaches 99%. The efforts provide the materials needed for massive separation of functional genes using adverse genetic strategies. The project also established a platform for analyzing rice genomic expressions, in addition to a line of special chips for diverse purposes, including full growth cDNA, full genome gRNA, imbricate arrays, and No. 4 chromosome specificity. Researchers also collected rich data on major growing periods, and gene expressions under the constraints of low nitrogen and phosphor levels, which are used to tap up new genes and study the gene regulated metabolism network. Researchers have so far analyzed the full-length cDNAs of some 30,00 Chinese rice specimens, and developed a database and associated analyzing technology for bioinformatics. The information and data derived from the project have been shared among both domestic and overseas experts.

Aiming at the improvement of Chinese paddy rice species, the project has cloned 107 new genes of clearly defined functions and potential application

values, of which 18 have proved major application perspectives for improved yield, quality, disease resistance, adversity resistance, and nutrition. It also discovered and identified more than 1100 new genes and modulators. These efforts are important for stemming out China's reliance on imported genes for its crop biotechnology development.

The project produced 79 patent applications, with some ten papers published in the journals of *Nature*, *Science*, *Plant Genetics*, and *Plant Cytology*, and more than 130 papers in other major international journals.

Pre-Clinical Pharmacodynamics Advanced

Chinese scientists have achieved major progresses in mastering new technologies for pre-clinical pharmacodynamics, especially on malignant tumors and cardiocerebrovascular diseases, using modern biotechnology including genomics. They also created a line of pharmacodynamics models for tumor and cardiocerebrovascular drugs, in line with international norms and having China's touches.

In the course of developing key technologies for anti-tumor pharmacodynamics, researchers established a number of pharmacodynamic models in line with international standards, including 60 human tumor modules and corresponding 30 others with human tumors in rats. They developed rat models for drug resistant strains of K562/STI571 and for cells resistant to drugs, and highly effective models with human tumors in rats. Researchers also rolled out pharmacodynamic assessment models and standards for systematic inhibitors that restrict the growth of tumor blood vessels and protein tyrosine kinase, inducers for cell cyclic modulation and decaying, and for monoclonal antibody precursors. They have completed pre-clinical pharmacodynamic assessment of three class one anti-tumor drug candidates, using these technical platforms. Of them one has entered clinical trials.

In establishing the similar platforms for

cardiocerebrovascular diseases, researchers created a number of pharmacodynamic models, including automatic artery pressure response in rats, ischemic brain in rats, atherosclerosis in domestic rabbit, a new model for subarachnoid hemorrhage, and brain artery hemorrhage in rats. They also developed computer software for managing pharmacology labs' information system. These models have screened some 60 new drugs, and played a positive role in evaluating traditional Chinese medicines. The process produced one certificate for new drug production, three permits for clinical trials, and three others for findings spin-off. The efforts also resulted in 27 national invention patents, of which one is an international patent, and 37 papers.

Major Technology Standards Approved

A major special project for technology standards, jointly initiated by the Ministry of Science and Technology, the General Administration of Quality Supervision, Inspection and Quarantine, and the Standardization Administration of China, won applause on February 26, 2006. Thanks to more than three-year efforts, the special project has produced 31 international standards, 816 national standards, 175 testing methods, 538 reports, 51 monographs, 1113 papers, 406 patent applications (312 grants), 72 new products, 80 new technologies and techniques, and 13 new materials. It also developed some 20 standardization information service systems, and nearly a hundred demonstration bases. The efforts produced a standardization contingent working at different levels.

In an effort to address major strategic issues concerning China's standardizations, the special project defined objectives and steps for such development, and worked out solutions for establishing a new national technology standard system. It also laid out future orientations for developing China's standardizations. These efforts have spurred up China's reform and improvement in

the area.

In the high-tech area, proprietary innovation is encouraged to have China's own research and technology standards, in an attempt to safeguard the national interests. It also stresses to establish China's own development initiatives in selected industries, so as to promote the optimized restructuring of China's industries, and uplift their proprietary innovations capacity.

In the area of agriculture, technology standards is taken as a tie to make township enterprises turn agricultural production into an intensive and industrial process, transferring the traditional agriculture into an ecological friendly and highly efficient process, promoting the transformation of growth modes in agriculture, and raising the comprehensive competitiveness of rural areas. In other areas involving new energy, energy efficiency, environmental protection, and health, new technical standards also play a positive role in building a harmonized society.

National Standards for Digital Audio-Video

Video component of the advanced audio-video coding, a national standard for digital TV and audio-video industries, was recently approved by the Standardization Administration of China for coming into effect on March 1, 2006.

With the support of the Chinese Ministry of Information Industry, a working group for digital audio-video standards was established in 2002. The AVS working group has also won the support by the Ministry of Science and Technology for its R&D efforts. In 2003, the State Development and Reform Commission made the standardization process for digital audio-video coding a major special project, with the participation of more than a hundred enterprises and research institutes. The project have been running smoothly, and the standard for video coding, a most important component, passed the tests in 2005 at the State Administration of Radio, Film and Television. The video

coding standard was later approved by the Ministry of Information Industry in January 2006, and was enacted by the Standardization Administration of China in February for its expected enforcement on March 1, 2006.

GE Vaccines for Foot-and-Mouth Disease

On February 22, 2006, an O-type GE vaccine, jointly developed by Fudan University, Shanghai Academy of Agricultural Sciences, Zhejiang Academy of Agricultural Sciences, and Lanzhou Veterinary Institute, a part of the Chinese Academy of Sciences, called a success at a review meeting co-sponsored by the Ministry of Science and Technology and Ministry of Education. It makes the first genetic engineering vaccine for foot-and-mouth disease allowing for commercial applications in the world.

The new vaccine is able to produce a highly effective prevention with an absolute safety, as it is made not through cultivating massive highly pathogenic strains of foot-and-mouth viruses, and carries no pathogenic elements in its GE products. The project has listed as a special project by the State Development and Reform Commission, under the national efforts for agricultural modernization in 2005. It plans to materialize its commercial applications at Inner Mongolia Biopharmaceuticals.

Comments or inquiries on editorial matters or Newsletter content should be directed to:

Mr. Mao Zhongying, Department of International Cooperation, MOST 15B, Fuxing Road Beijing 100862, PR China Tel: (8610)58881360 Fax: (8610) 58881364

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