“十二五”科技发展规划选编

科技外事翻译文集

中国科学技术交流中心

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前　言

2006年的春天，党中央、国务院隆重召开全国科学技术大会，发布了《国家中长期科学和技术发展规划纲要（2006—2020年）》（以下简称《规划纲要》），明确提出实施自主创新战略，建设创新型国家的战略目标。

“十二五”是落实《规划纲要》承上启下的关键五年，是提高自主创新能力、建设创新型国家的攻坚阶段。为加快推进国家创新体系建设，全面落实《规划纲要》，充分发挥科技对经济社会发展的支撑引领作用，科技部会同有关单位，研究制定了《国家“十二五”科学和技术发展规划》，对“十二五”期间国家科技发展做出了全面部署，明确了总体思路、发展目标和战略任务。以“十二五”科技发展规划为总纲，科技部随后陆续出台了42个专项规划，这些专项规划和“十二五”科技发展规划共同构成了“十二五”期间国家科技发展的总体脉络，是对《规划纲要》、2012年全国科技创新大会精神和《关于深化科技体制改革加快国家创新体系建设的意见》的深入贯彻落实。

为更好地对外宣传国家科技发展战略，展示科技大国形象，扩大科技对外影响，推动国际科技合作，我中心组织翻译了《规划纲要》、《关于深化科技体制改革加快国家创新体系建设的意见》、“十二五”科技发展规划和部分“十二五”专项规划，以中英对照形式汇编成书。

本书也可为广大科技工作者研究科技外事、学习科技英语提供参考。

由于本书涉及内容广泛，加之译者水平所限，书中难免存在疏漏甚至错误，敬请读者不吝赐教。

编　者

2014 年 8 月

目　录

科技是国家强盛之基，创新是民族进步之魂。
我国科技发展的方向就是创新、创新、再创新。

——习近平

国家中长期科学和技术发展规划纲要

党的十六大从全面建设小康社会、加快推进社会主义现代化建设的全局出发，要求制定国家科学和技术长远发展规划，国务院据此制定本纲要。

一、序言

新中国成立特别是改革开放以来，我国社会主义现代化建设取得了举世瞩目的伟大成就。同时，必须清醒地看到，我国正处于并将长期处于社会主义初级阶段。全面建设小康社会，既面临难得的历史机遇，又面临一系列严峻的挑战。经济增长过度依赖能源资源消耗，环境污染严重；经济结构不合理，农业基础薄弱，高技术产业和现代服务业发展滞后；自主创新能力较弱，企业核心竞争力不强，经济效益有待提高。在扩大劳动就业、理顺分配关系、提供健康保障和确保国家安全等方面，有诸多困难和问题亟待解决。从国际上看，我国也将长期面临发达国家在经济、科技等方面占有优势的巨大压力。为了抓住机遇、迎接挑战，我们需要进行多方面的努力，包括统筹全局发展，深化体制改革，健全民主法制，加强社会管理等。与此同时，我们比以往任何时候都更加需要紧紧依靠科技进步和创新，带动生产力质的飞跃，推动经济社会的全面、协调、可持续发展。

The National Medium- and Long-Term Program for Scientific and Technological Development

As required by the 16th National Congress of the Chinese Communist Party (CPC), the State Council has formulated the *National Medium- and Long-Term Program for Scientific and Technological Development* (MLP) to support the full-fledged development of a well-off society and accelerate the socialist modernization drive.

I. Preface

Since the founding of the People's Republic of China, and especially since the adoption of the reform and opening-up policy in the late 1970s, China has made outstanding achievements in its modernization drive. However, China is in the primary stage of socialism and will remain so for a long time to come. The country faces both rare historic opportunities and pressing challenges in its strive to build a well-off society. The economic growth is excessively dependent on the consumption of energy and resources, with high environmental costs. The economic structure is irrational, characterized by a frail agricultural base and lagging high-tech and modern service sectors. Enterprises lack core competitiveness and their economic returns cannot be improved due to weak innovation capability. There are a whole range of problems concerning employment, distribution, health care and national security that need prompt solution. Developed nations will, for a long time, possess superiority in economic and scientific arena, imposing enormous pressure on China. In order to grasp opportunities and address challenges, we must make all-round efforts, including coordinated development, deepened system reform, improved democracy based on the rule of law, and reinforcement of social management. At the same time, we need to depend on S&T progress and innovation in order to achieve substantial gains in productivity and drive economic and social progress in a coordinated and sustainable manner.

科学技术是第一生产力，是先进生产力的集中体现和主要标志。进入21世纪，新科技革命迅猛发展，正孕育着新的重大突破，将深刻地改变经济和社会的面貌。信息科学和技术发展方兴未艾，依然是经济持续增长的主导力量；生命科学和生物技术迅猛发展，将为改善和提高人类生活质量发挥关键作用；能源科学和技术重新升温，为解决世界性的能源与环境问题开辟新的途径；纳米科学和技术新突破接踵而至，将带来深刻的技术革命。基础研究的重大突破，为技术和经济发展展现了新的前景。科学技术应用转化的速度不断加快，造就新的追赶和跨越机会。因此，我们要站在时代的前列，以世界眼光，迎接新科技革命带来的机遇和挑战。纵观全球，许多国家都把强化科技创新作为国家战略，把科技投资作为战略性投资，大幅度增加科技投入，并超前部署和发展前沿技术及战略产业，实施重大科技计划，着力增强国家创新能力和国际竞争力。面对国际新形势，我们必须增强责任感和紧迫感，更加自觉、更加坚定地把科技进步作为经济社会发展的首要推动力量，把提高自主创新能力作为调整经济结构、转变增长方式、提高国家竞争力的中心环节，把建设创新型国家作为面向未来的重大战略选择。

新中国成立50多年来，经过几代人艰苦卓绝的持续奋斗，我国科技事业取得了令人鼓舞的巨大成就。以“两弹一星”、载人航天、杂交水稻、陆相成油理论与应用、高性能计算机等为标志的一大批重大科技成就，极大地增强了我国的综合国力，提高了我国的国际地位，振奋了我们的民族精神。同时，还必须认识到，同发达国家相比，我国科学技术总体水平还有较大差距，主要表现为：关键技术自给率低，发明专利数量少；在一些地区特别是中西部农村，技术水平仍比较落后；科学研究质量不够高，优秀拔尖人才比较匮乏；同时，科技投入不足，体制机制还存在不少弊端。目前，我国虽然是一个经济大国，但还不是一个经济强国，一个根本原因就在于创新能力薄弱。

As a primary productive force, science and technology are a reflection and a major hallmark of advanced productivity. In the 21st century, a new scientific revolution is rapidly unfolding, which will profoundly change the economic and social landscape. Advances in information technology will continue to be the dominant driver of economic growth; rapid advances in life science and biotechnology will play a key role in improving the quality of life; renewed efforts in energy science and technology will offer new solutions to global energy and environmental issues; and new breakthroughs in nanoscience and nanotechnology will usher in a profound technology revolution. Advances in basic research will create new horizons for scientific and technological development and economic growth. Application of research findings will occur at an ever faster pace, thus creating new opportunity for catching up and moving ahead in the global competition. Therefore, we must embrace the new era, meeting both opportunities and challenges brought about by the scientific revolution with a global vision. Many countries have launched national strategies on S&T innovation and drastically increased R&D expenditure. They lead the world in deploying and developing frontier technologies and strategic industries and implement important S&T programs to enhance their national innovative capability and international competitiveness. Under new circumstances, we must have a greater sense of responsibility and urgency, dedicated to driving economic and social progress through science and technology. We must place innovation high on our agenda to restructure the economy, change the growth pattern and enhance the national competitiveness. Building an innovative country is China's strategic choice for future development.

Over the past five decades, the consistent and painstaking efforts of several generations have led to outstanding achievements in the fields of science and technology. Major S&T accomplishments, such as "missile, nuclear power and satellite technology", manned space flights, hybrid rice, theory of oil formation from continental moist depression and associated application, and high performance computers, have greatly enhanced the nation's comprehensive strength, raised its international position and inspired the whole nation. However, there is still a big gap between China and developed countries in terms of science and technology advances. This is mainly reflected in the following areas: lack of key technology supply and invention patents; low technological level in

进入21世纪，我国作为一个发展中大国，加快科学技术发展、缩小与发达国家的差距，还需要较长时期的艰苦努力，同时也有着诸多有利条件。一是我国经济持续快速增长和社会进步，对科技发展提出巨大需求，也为科技发展奠定了坚实基础。二是我国已经建立起比较完备的学科体系，拥有丰富的人才资源，部分重要领域的研究开发能力已跻身世界先进行列，具备科学技术大发展的基础和能力。三是坚持对外开放，日趋活跃的国际科技交流与合作，使我们能分享新科技革命成果。四是坚持社会主义制度，能够把集中力量办大事的政治优势和发挥市场机制有效配置资源的基础性作用结合起来，为科技事业的繁荣发展提供重要的制度保证。五是中华民族拥有5000年的文明史，中华文化博大精深、兼容并蓄，更有利于形成独特的创新文化。只要我们增强民族自信心，贯彻落实科学发展观，深入实施科教兴国战略和人才强国战略，奋起直追、迎头赶上，经过15年乃至更长时间坚韧不拔的艰苦奋斗，就一定能够创造出无愧于时代的辉煌科技成就。

二、指导方针、发展目标和总体部署

1. 指导方针

本世纪头20年，是我国经济社会发展的重要战略机遇期，也是科学技术发展的重要战略机遇期。要以邓小平理论、“三个代表”重要思想为指导，贯彻落实科学发展观，全面实施科教兴国战略和人才强国战略，立足国情，以人为本，深化改革，扩大开放，推动我国科技事业的蓬勃发展，为实现全面建设小康社会目标、构建社会主义和谐社会提供强有力的科技支撑。

some regions, particularly in rural areas of the central and western regions; the quality of scientific research still calling for significant improvement due to the shortage of top-notch S&T talent; investments in science and technology still insufficient; and numerous loopholes in the existing S&T system. Despite the size of its economy, China is not yet an economic power, primarily due to the weak innovative capacity.

In the 21st century, as a large developing nation, China has to accelerate its S&T development and narrow the gap with developed nations. To this end, it must make unremitting efforts over a long period by taking advantage of numerous favorable conditions. First, China's sustained fast economic growth and social development creates huge demand for S&T development. Second, the nation has a fairly complete system of academic disciplines, with a huge talent pool. It has developed world-class R&D capability in a number of major fields, thus positioning itself for tremendous future S&T developments. Third, the opening-up policy has enhanced S&T cooperation and exchanges with the rest of the world, allowing the country to share the fruits of the new scientific revolution. Fourth, by adhering to the socialist system, China is able to mobilize efforts for major tasks and give full play to the basic role of the market mechanism in effectively allocating resources. This system is an important guarantee for S&T development. Fifth, China, as a country with a 5,000-year history of civilization and a splendid culture, is capable of incorporating things of diverse nature that favors creation of a uniquely innovative culture. As long as we strengthen our national confidence, promote balanced development, implement the strategy of rejuvenating the nation through science and education, and work hard over the next 15 years or so, we will be able to make brilliant S&T achievements that live up to the expectations of our people.

Ⅱ. Guiding Principle, Development Goals, and Overall Deployment

1. Guiding Principle

The first 20 years of the century is a period of important opportunities for China's socio-economic development and S&T progress. Under the guidance of Deng Xiaoping Theory, the important thought of Three Represents and the Scientific Outlook on Development, we shall strive for S&T advancement by implementing the strategy of rejuvenating the nation through science, education and talent, proceeding from national conditions, taking a people-oriented approach, deepening reforms and opening wider to the outside world, in order to build a well-off and harmonious society.

今后15年，科技工作的指导方针是：自主创新，重点跨越，支撑发展，引领未来。自主创新，就是从增强国家创新能力出发，加强原始创新、集成创新和引进消化吸收再创新。重点跨越，就是坚持有所为、有所不为，选择具有一定基础和优势、关系国计民生和国家安全的关键领域，集中力量、重点突破，实现跨越式发展。支撑发展，就是从现实的紧迫需求出发，着力突破重大关键、共性技术，支撑经济社会的持续协调发展。引领未来，就是着眼长远，超前部署前沿技术和基础研究，创造新的市场需求，培育新兴产业，引领未来经济社会的发展。这一方针是我国半个多世纪科技发展实践经验的概括总结，是面向未来、实现中华民族伟大复兴的重要抉择。

要把提高自主创新能力摆在全部科技工作的突出位置。党和政府历来重视和倡导自主创新。在对外开放条件下推进社会主义现代化建设，必须认真学习和充分借鉴人类一切优秀文明成果。改革开放20多年来，我国引进了大量技术和装备，对提高产业技术水平、促进经济发展起到了重要作用。但是，必须清醒地看到，只引进而不注重技术的消化吸收和再创新，势必削弱自主研究开发的能力，拉大与世界先进水平的差距。事实告诉我们，在关系国民经济命脉和国家安全的关键领域，真正的核心技术是买不来的。我国要在激烈的国际竞争中掌握主动权，就必须提高自主创新能力，在若干重要领域掌握一批核心技术，拥有一批自主知识产权，造就一批具有国际竞争力的企业。总之，必须把提高自主创新能力作为国家战略，贯彻到现代化建设的各个方面，贯彻到各个产业、行业和地区，大幅度提高国家竞争力。

科技人才是提高自主创新能力的关键所在。要把创造良好环境和条件，培养和凝聚各类科技人才特别是优秀拔尖人才，充分调动广大科技人员的积极性和创造性，作为科技工作的首要任务，努力开创人才辈出、人尽其才、才尽其用的良好局面，努力建设一支与经济社会发展和国防

The guiding principle for S&T development over the next 15 years is "boost innovation, achieve breakthroughs, support growth, and lead the future". "Boost innovation" refers to enhancing original and integrated innovation, and re-innovation based on assimilation and absorption of imported technology, with a view to improving the national innovation capability. "Achieve breakthroughs" showcases our commitment to leapfrogging development in areas with great bearing on the national economy, social wellbeing and national security. "Support growth" means striving for breakthroughs in key and generic technologies to address pressing challenges and drive sustainable and coordinated socio-economic progress. "Lead the future" reflects a vision in targeting frontier technologies and fundamental research, which will, in turn, create new market demand and new industries to drive economic growth and social development in the future. The guiding principle is a summary of China's practice and experience in S&T development for more than a half century, with great significance to rejuvenating the Chinese nation.

This calls for strengthening of innovation capability as the core of S&T undertakings. The Chinese government has long paid close attention to innovation. To press ahead with the modernization drive with an open mind, we must earnestly study and draw on all the fine achievements of human civilization. Since reform and opening-up in 1978, China has imported a huge amount of technology and equipment that has played an important role in raising the overall technological level of industry and promoting economic development. However, one should be aware that importation of technology without assimilation, absorption and re-innovation is bound to weaken R&D capability that, in turn, widens the gap between China and the world advanced levels. Experience has shown that, in areas critical to the national economy and security, core technologies cannot be purchased. In the fierce international competition, it is imperative for China to enhance its innovation capability, master core technologies in some critical areas, own proprietary intellectual property rights, and build a number of internationally competitive enterprises. In a word, the improvement of innovation capability must be implemented in all sectors, industries and regions so as to enhance national competitiveness.

R&D personnel are critical to increasing innovation capability. The first and foremost task is to create favorable environment for cultivating and attracting

建设相适应的规模宏大、结构合理的高素质科技人才队伍，为我国科学技术发展提供充分的人才支撑和智力保证。

2. 发展目标

到2020年，我国科学技术发展的总体目标是：自主创新能力显著增强，科技促进经济社会发展和保障国家安全的能力显著增强，为全面建设小康社会提供强有力的支撑；基础科学和前沿技术研究综合实力显著增强，取得一批在世界具有重大影响的科学技术成果，进入创新型国家行列，为在本世纪中叶成为世界科技强国奠定基础。

经过15年的努力，在我国科学技术的若干重要方面实现以下目标：一是掌握一批事关国家竞争力的装备制造业和信息产业核心技术，制造业和信息产业技术水平进入世界先进行列。二是农业科技整体实力进入世界前列，促进农业综合生产能力的提高，有效保障国家食物安全。三是能源开发、节能技术和清洁能源技术取得突破，促进能源结构优化，主要工业产品单位能耗指标达到或接近世界先进水平。四是在重点行业和重点城市建立循环经济的技术发展模式，为建设资源节约型和环境友好型社会提供科技支持。五是重大疾病防治水平显著提高，艾滋病、肝炎等重大疾病得到遏制，新药创制和关键医疗器械研制取得突破，具备产业发展的技术能力。六是国防科技基本满足现代武器装备自主研制和信息化建设的需要，为维护国家安全提供保障。七是涌现出一批具有世界水平的科学家和研究团队，在科学发展的主流方向上取得一批具有重大影响的创新成果，信息、生物、材料和航天等领域的前沿技术达到世界先进水平。八是建成若干世界一流的科研院所和大学以及具有国际竞争力的企业研究开发机构，形成比较完善的中国特色国家创新体系。