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EDITORIAL

Why China Needs Science . . . and Partners

It has been 18 years since China started to reform and open up to the rest of the world. During this period, the national economy has been developing rapidly, with an average annual growth rate of 9%. Recently, the Chinese People's Congress passed the next 5-year plan and a 15-year long-term development plan. The economy should maintain its good momentum, with an estimated growth rate of 7 to 8% during the next 5 years and about 7% in the next century. In order to sustain this growth, we are undergoing two transitions—from a planned economy to a market economy and from growth by increased development to growth by increased economic efficiency. In addition, we are using two strategies—building the country through science and education and through sustainable development. It will take international cooperation to achieve these objectives.

Why can't China do it alone? Because we have many problems. For example, we started to talk about 9-year compulsory education in 1985, but this goal has still not been achieved and will be only 85% complete by the year 2000. In some areas, we can only achieve 6-year compulsory education. In addition, development is not balanced across regions of China. Coastal areas are more advanced, but the middle and western regions are far behind. China still has 65 million people living in absolute poverty; the natural environments they inhabit are extremely poor. This is not to say that there is no future for development in the western regions. They have abundant underground resources, but exploiting them will depend on science, technology, and education, as well as government subsidies.

The biggest problem in China, however, is agriculture. China must use 7% of the world's arable land to feed 22% of the world's population and has a shortage of water resources as well. Currently, only one-third of China's cultivated land produces high yields; the other two-thirds produce medium or low yields. To develop agriculture, we need both practical techniques and high technology. For instance, the use of hybrid rice can increase yields by another 20% (after the most recent 15% increase); and with biological engineering, we have bred a new variety of cotton that is genetically resistant to bollworms, which have plagued our cotton production in recent years. Although China carries out a rather strict family planning policy, the population still increases by 13 million every year, and we must solve the problems of providing food, adequate living conditions, education, and employment for the increased population. I believe that science and technology can help us do so.

Chinese industry has high energy consumption, low efficiency, high materials consumption, and low product quality. These problems also need science and technology solutions. In addition, our government needs to correctly handle the relation between basic research and applied science. Because applied science can increase productivity, it has been viewed as important by society. However, basic research is also important; its development can bring about breakthroughs. China is a developing country and cannot afford to spend a lot of money on basic research. But the government does appropriate some money for it, and wider international cooperation would help expand China's basic research capabilities.

Since the founding of the People's Republic, we have gradually established a scientific research system that encompasses almost all fields of study. However, this system was based on the old Soviet model. Research was mainly carried out by institutes of the Chinese Academy of Sciences (CAS) and of the various ministries. In developed countries, research is mainly done at universities and by companies. We have encouraged research institutions to establish relations with business enterprises and encouraged large companies to do their own scientific research. CAS has also pioneered in letting research institutes set up enterprises to enter the market. In some large cities, we have set up science and technology parks whose development the government has encouraged by reducing taxes.

Although China has made great strides in development, there are also many difficulties, and it will take tens of years of arduous effort to solve them. We can't do it alone and would like to establish better cooperation with science and technology circles in the Asia-Pacific region and elsewhere in the world.

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The author is premier of China. This editorial was adapted with permission from a talk given on 23 April 1996 in Beijing to an audience of prominent scientists from throughout the Asia-Pacific region assembled by the AAAS in partnership with the Chinese Association for Science and Technology. A complete version of the talk is available in both English and Chinese on the World Wide Web at http://cs-mac.aaas.org/international/lipeng.htm.