**Lessons from China**

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The process of socio-economic development in developing countries is a challenging task. There is much to learn however from the successes of China; never in human history have the lives of so many been transformed so quickly.

China realized four decades ago that the key to socio-economic development was largely dependent on its ability to manufacture and export high-technology (high value-added) goods. So, research and development in carefully selected fields was given the highest national priority, both in government institutions and through financial support to private-sector enterprises with integrated R&D institutions.

The R&D expenditure increased by a phenomenal 18 per cent annually between 2000 and 2022. As a result, China overtook the US as the world leader in innovation in 2020, and now has a much greater number of international patents filed annually than the US. The figure of international patents filed by China has increased by an astonishing 200-fold during the last 20 years, according to the World Intellectual Property Organisation.

Of particular importance to promote innovation and entrepreneurship was the Spark Programme. It laid the foundations of China’s technological development and economic growth. The Spark Programme provided funding and support to small and medium-sized enterprises (SMEs) to encourage entrepreneurship. It helped create new businesses in China and led to the growth of the private sector, which became a powerful driving force behind China’s economic development.

The Spark Programme also provided funding for research and development, which led to the development of new technologies and products and helped improve productivity and competitiveness in various industries. The programme focused on key technologies that were important for China’s development, such as information technology, biotechnology, advanced manufacturing, nanotechnology, energy and space engineering.

This helped build China’s technological capabilities in these emerging areas and laid the foundations for future growth. The Spark Programme also encouraged international cooperation by providing funding for joint research projects with foreign universities and companies. This helped build bridges between China and the rest of the world and facilitated technology transfer and knowledge sharing.

China has established many innovation centres including the Zhongguancun Science Park in Beijing and the Zhangjiang Hi-Tech Park in Shanghai. These innovation centres are providing liberal funding and technical support to startups and entrepreneurs with particular emphasis on cutting-edge technologies in important emerging disruptive fields. This programme is part of a national innovation policy under which tax incentives are provided to startups and liberal funding is provided to SMEs.

The National Science and Technology Major Project Management Measures were first enacted in 1997 and were updated in 2019. They establish a framework for managing major science and technology projects, including intellectual property protection and technology transfer. The Patent Law as well as the Copyright Law of the People’s Republic of China were first enacted in 1984 and 1990 respectively, and they have been updated several times since then.

Several other initiatives were also launched by China for strengthening science, technology and higher education. The 973 Program, also known as the National Basic Research Program, launched in 1997 provided funding for basic research in key areas such as biotechnology, information technology, and environmental science. The 863 Program, also known as the National High-Tech Research and Development Program, launched in 1986, provided funding for research and development in high-tech areas such as aerospace engineering, energy and telecommunications.

The National Innovation System launched in 2006 was aimed to promote innovation by improving the links between universities, research institutions and industry. The Changjiang Scholars Program was launched in 1998 and aimed to attract top scholars from across the world to work in Chinese universities and research institutions.

These developments have been supported by massive investments in science and technology education, with the result that some 600,000 students are sent abroad to top Western universities for PhD or postdoctoral training annually, and over 500,000 trained professionals are returning annually after the training and joining the Chinese scientific and industrial work force in fields such as artificial intelligence, quantum computing, robotics, industrial biotechnology, energy storage systems and others.

This massive induction of highly qualified, technologically competent manpower into Chinese R&D institutions is having a hugely transformative impact on China’s ability to manufacture and export high-technology goods, giving it the muscle to acquire the latest defence technologies to protect itself from any adventurous incursions by enemies.

To strengthen higher education, China established a number of important programmes. Project 211 launched in 1995 was aimed to improve the quality of education and research in Chinese universities. Project 985 launched in 1998 helped build world-class universities in China. The project provided funding and support to selected universities to help them develop research centres of excellence and attract top talent. Another similar programme launched in 2015, the Double First-Class Initiative, also supported major national universities to achieve top international status.

The development of colleges in China was supported through the National College Student Innovation and Entrepreneurship Program launched in 2012. It is aimed to encourage innovation and entrepreneurship among college students and provides funding and support to student-led startups and innovation projects.

As a result of these and other initiatives, China has succeeded in a rapid transition from a weak agricultural economy to a strong technology-driven knowledge economy. However, this could not have been achieved without rooting out massive corruption from China. The National Supervisory Commission (NSC) was established in 2018 as an independent anti-corruption agency that was tasked with investigating, supervising and enforcing discipline on government officials, including those at the highest levels of power.

In 2013, Chinese President Xi Jinping announced the ‘Four Comprehensives,’ which included a comprehensive anti-corruption strategy that was aimed to enhance the integrity of the government, curb corruption, and promote rule of law. Since the launch of the anti-corruption campaign in 2012, thousands of officials at all levels of government have been punished for corruption offenses. High-profile cases include the conviction of former Communist Party Politburo member Bo Xilai for corruption and the conviction of former security czar Zhou Yongkang for bribery and abuse of power.

For Pakistan to move forward and emulate the rapid socio-economic development of China, it must have a two-pincer strategy. The first pincer should be focused on measures to make science, technology, education and entrepreneurship the key pillars for sustainable and equitable socio-economic development. The second pincer should be to enact laws and implement an aggressive national strategy to punish the corrupt. Pakistan can only then embark on the road to rapid progress.

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