



U.S.-China Economic and Security Review Commission

The U.S.-China Economic and Security Review Commission was created by Congress to report on the national security implications of the bilateral trade and economic relationship between the United States and the People's Republic of China. For more information, visit www.uscc.gov, call 202-624-1407, or email: contact@uscc.gov.

July 28, 2016

REPORT RELEASED: CHINA'S STATE PLANS FOR TECHNOLOGICAL, ENERGY, INDUSTRIAL, AND DEFENSE DEVELOPMENT

Washington, DC - Today, the U.S.-China Economic and Security Review Commission released a report prepared for the Commission entitled [*Planning for Innovation: Understanding China's Plans for Technological, Energy, Industrial, and Defense Development*](#). The report provides an assessment of China's state plans for civilian and defense-related science and technology (S&T), industrial, and energy development and their economic and security implications for the United States. The authors are Tai Ming Cheung, Thomas Mahnken, Deborah Seligsohn, Kevin Pollpeter, Eric Anderson, and Fan Yang, writing for the University of California Institute on Global Conflict and Cooperation.

The report finds that China's state plans remain a critical policy tool for defense and civilian technological development. Key drivers that guide China's formulation of these plans and their stated goals are techno-nationalism and promotion of indigenous innovation. These drivers are reflected in the range of supporting state-directed policies such as the cultivation of local and national champions, foreign investment and technology import restrictions, and forced technology transfers. According to the report, China's success in S&T development has overwhelmingly been in lower-end innovation. China has been less successful in higher-end innovation—where U.S. and other foreign firms currently maintain a lead in technological and managerial expertise—due to its weak research and development capabilities, inadequate funding, and structural problems in S&T systems.

China's heavy investment in its defense-related S&T plans has been more successful than in civilian sectors in creating better quality and quantity output and higher-end innovation, thus narrowing the technological gap the United States has long had over China. The Chinese government is leveraging asymmetric and deterrence capabilities such as cyber and its rapidly growing defense budget—supported by its high economic growth—to challenge U.S. power projection capabilities and technological edge. But bureaucratic stovepipes, weak institutionalization, and an underdeveloped governance regime continue to pose significant challenges to China's defense S&T development. To retain its advantage, the U.S. Department of Defense in 2014 launched the Third Offset Strategy and Defense Innovation Initiative, which focus on strengthening its military leadership, war gaming capabilities, business operations, and research and development on breakthrough technologies such as unmanned undersea vehicles and high-energy lasers.

The report also assesses the impact of China's industrial policies on U.S. firms in 11 industries, among them integrated circuits, biopharmaceuticals, and cloud computing. It finds that while China's state plans have led to intensified competition for U.S. firms, their overall impact has been positive due to China's enormous market demand and the lack of current Chinese expertise or technological know-how. A decade from now, sectors that will provide the toughest competition for U.S. firms include 5G technology, information and communication technology, cloud computing, global navigation satellite systems, and integrated circuits. The report uses a sensitivity analysis to calculate the range of outcomes regarding the magnitude of impacts to the U.S. labor market from Chinese manufactured imports to 2020. It estimates that in a best case scenario, U.S. manufacturing jobs could increase by 273,100 jobs based on increased exports but in a worst-case scenario fall by 431,600 jobs based on growth in Chinese imports. Either outcome would depend on

the growth of the Chinese market and the ability of U.S. firms to remain globally competitive and maintain fair market access in China.

In order for the United States to maintain its strategic advantage in core industries, the report advocates that the U.S. government (1) prioritize key sectors, including advanced materials and sensors, through programs such as the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) initiative; (2) support the Third Offset Strategy and the Defense Innovation Initiative with greater investment and policy attention; and (3) strengthen U.S. government and private sector information security and update technology transfer restrictions to reflect developments in the current international technology market and maximize their effectiveness.

###

The Third Offset Strategy is using innovation and technology such as advanced aeronautics, unmanned undersea vehicles, and high-energy lasers to stay ahead of adversaries and counter the rise in antiaccess/area denial (A2/AD) weapons and technologies.

The BRAIN initiative is designed to support the development and application of new technologies for understanding how the brain works and how neurological and psychiatric conditions occur.

DISCLAIMER: This report was prepared at the request of the U.S.-China Economic and Security Review Commission to support its deliberations. Posting of the report to the Commission's website is intended to promote greater public understanding of the issues addressed by the Commission in its ongoing assessment of U.S.-China economic relations and their implications for U.S. security, as mandated by Public Law 110-161 and Public Law 113-291. However, it does not necessarily imply an endorsement by the Commission or any individual Commissioner of the views or conclusions expressed in this commissioned research report.