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# RESEARCH BRIEF

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## Surveying China's Science and Technology Human Talents Programs

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**H**uman talent is considered the most important resource under the Chinese leadership's initiative to make China into an innovation-oriented nation. However, despite a growing scientific and engineering talent pool, China faces serious challenges—a lack of high-end, innovative talents, unbalanced structure and distribution of the talent pool, and low investment in human capital. To address these problems, the Chinese leadership has made great efforts, of which the use of talent programs to cultivate and attract promising scientists and engineers stands at the center. However, close examination of the three most important and prestigious national programs—the Recruitment Program of Global Experts (Thousand Talents Program), the National High-level Talent Special Support Plan (Ten Thousand Talents Program) and the Military High-level S&T Innovation Talents Program—and evaluation of their effectiveness reveals unclear results. At present, Chinese S&T talent programs are focused on development and implementation rather than supervision and evaluation. In addition, with a number of major cultural, economic, and political hurdles in the way, China is still far from becoming a world talent power.

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## THE EVOLUTION OF CHINESE S&T HUMAN TALENT DEVELOPMENT

China's talent problems are the consequence of the lingering effects of the Cultural Revolution, which lasted from 1966 to 1976. It damaged China's education trajectory, slowed the training of the next generations of scientists, engineers, and other professionals, and created a huge gap in the talent pool.

Until 1989, the focus of talent work was to rectify the wrongs of the Cultural Revolution and restore and develop China's education system. The Chinese Communist Party (CCP) leadership also launched its study abroad policy to send intellectuals and newly admitted college students for overseas training and study. Despite positive results, this policy had an undesired consequence—"brain drain"—with significant numbers of China's best and brightest S&T talent not returning after graduation. Combined with the impact of Cultural Revolution, China faced a serious talent challenge.

In response, China took steps in the 1990s to develop human capital, with a primary focus on attracting returnees. The government initiated various programs that aimed to implement its strategy of "rejuvenating the nation with science, technology, and education" (科教兴国). Major programs implemented and still active include the One Hundred Talents Program (百人计划), the National Science Fund for Distinguished Young Scholars (国家杰出青年科学基金), the Cheung Kong Scholars Program (长江学者奖励计划), and the One Hundred, One Thousand, and Ten Thousands of Talent Program (百千万人才工程).

The first three programs focus on attracting overseas talents by providing financial support ranging from 500,000 to 2 million RMB for research and salary. The One Hundred, One Thousand, and Ten Thousand Talent

Program has the goal of identifying and training outstanding domestic researchers. As an academic honor, the program does not carry any monetary award. All of these programs claim to be successful in developing or attracting talents for China. However, the reality is that the most talented scientists and academics have rarely returned to China after their training.

As the twenty-first century began, the political and scientific leadership realized that China did not have a talent pool of high-enough caliber individuals to fulfill the mission of turning the country into an innovative society. Therefore, talent recruitment received far greater attention and the Party's Organization Department took a more active role. In 2002, the CCP Central Committee put forward the principle that the "Party administers talent" (党管人才), which further increased attention and efforts towards talent development. In June 2003, the Politburo established the Central Coordinating Group on Talent (CCGT, 中央人才工作协调小组), which is directly under the Organization Department. This national-level coordination group became the leading entity for the country's talent work.

Despite China's large-scale efforts in talent development, there was neither a strategic human talent development plan nor a national level talent program until 2008, when the CCGT issued the first national-level talent program—the Recruitment Program of Global Experts, or Thousand Talents Program (海外高层次人才引进计划), which aimed to bring back 2,000 high-quality overseas talents in the next five to ten years. Four years later, CCGT launched the Ten Thousand Talents Program to select and support 10,000 domestic high-end talents. It is widely believed that China wishes to groom its own Nobel Prize winner through this program.

Another big development occurred in 2010 when the Central Committee and the State Council is-

sued the National Medium to Long-Term Human Talent Development Plan (2010–2020), a master plan to implement the strategy of "empowering the nation through talents" and a principal document guiding the next period's talent development work. According to the plan, the overall goals for China's human talent development by 2020 are to cultivate and foster a large talent pool with excellent quality, optimized structure, and reasonable composition; to establish a comparative advantage in talent competition; and ultimately to become a world talent power.

To achieve its goals, the plan outlined 10 major policies to create a favorable environment for talent development and designed 12 human talent development programs. In addition, all provinces and central Party and state departments are required to create their own talent development plans, using the national plan as a guide. The major talent programs already in place also made adjustments according to the national plan. These changes have laid the groundwork for a nationwide human talent development planning system.

### **Military S&T Talent Programs**

The People's Liberation Army (PLA) has also made concerted efforts to foster a professional scientific and technical workforce, starting in the early 2000s. This initiative was led by Jiang Zemin with the establishment of a human talent strategic engineering program, which intended to cultivate highly qualified personnel in five areas.

The State Council and Central Military Commission (CMC) then issued the "Decision on Establishing a Military Cadres Cultivating System Relying on Higher Education Institutions" to train military cadres and talents in targeted universities. Later, the CMC issued the "Military Talent Development Plan to 2020," which provided strategic guidance, overall objectives, and priorities for

human capacity building across the entire armed forces.

Another special program—High-Level Military Personnel in Science and Technology Innovation—was established in 2009 by the PLA’s four general departments. This program is designed to provide advanced training to 200 promising scientists and other military technical personnel, who will be selected every two years.

## ORGANIZATION STRUCTURE AND HIERARCHY OF CHINA’S HUMAN TALENT PROGRAMS

With such a variety of programs, it is useful to look at the overarching structure of China’s S&T talent development effort to better understand the relative importance of each program and how these programs fit into China’s overall talent development strategy.

Figure 1 shows the organizational structure of human talent development within the central government.

At the top are the Central Committee, the State Council, and the CMC. These entities do not usually issue specific talent programs, but instead supply strategic guidance. Under these are the Organization Department and CCGT, the ministries, and the four PLA general departments. Under the principle of the “Party administers talents” and with the Organization Department and CCGT being the leading entities for human talent issues, programs directly administered by those two groups will most likely receive more attention and support from the central government than those issued by ministries or PLA general departments.

The various civilian and military talent programs can be divided into three tiers: Tier 1, strategic guidance; Tier 2, national-level programs; and Tier 3, ministry level (Table 1). Even within the same tier, some programs receive special treatment and are considered more important. For instance, 3 of the 11 talent programs in Tier

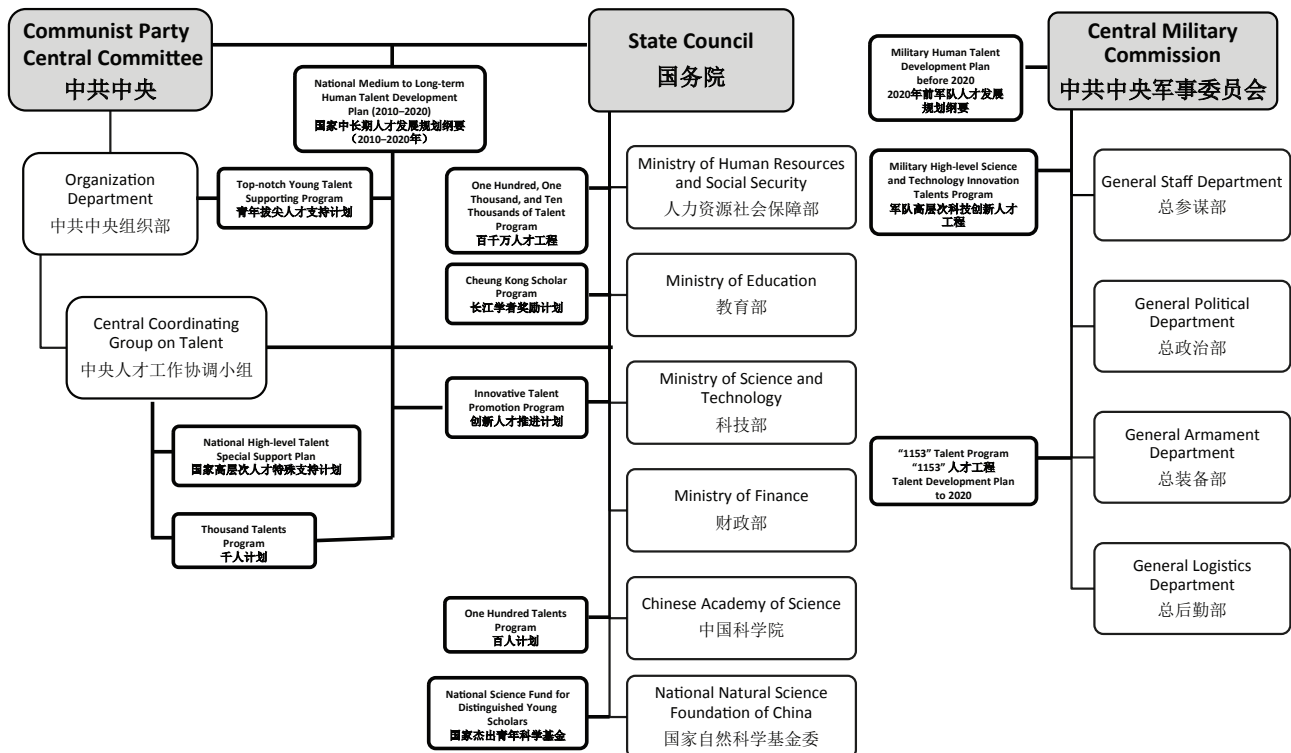
3 receive special funding from the Ministry of Finance.

## THE EFFECTIVENESS OF THE MAJOR NATIONAL-LEVEL HUMAN TALENT DEVELOPMENT PLANS

### The Thousand Talents Program

As discussed earlier, the Thousand Talents Program is the first national level program to attract high-level overseas talent. When first established by the CCGT in 2008, this program sought 2,000 high-level overseas talents in four areas: a) key national innovative projects; b) key disciplinary areas and key laboratories; c) state-owned enterprises and state-owned financial institutions; and d) high-tech industrial development zones. Selection involved a three-step process: first, an academic committee of the “unit that employs people” (用人单位) conducts an initial review of applicants, followed by a platform

FIGURE 1. Organization of entities in Chinese human talent development



**TABLE 1.** A hierarchy of human talent programs

	<b>Civilian</b>	<b>Military</b>
<b>Tier 1</b> (strategic guidance)	National Medium to Long-Term Human Talent Development Plan (2010–2020)	Military Talent Development Plan to 2020
<b>Tier 2</b> (national level)	Recruitment Program of Global Experts (Thousand Talents Program)  National High-level Talent Special Support Plan (Ten Thousand Talents Program)	High-Level Military Personnel in Science and Technology Innovation
<b>Tier 3</b> (ministry level)	Ministerial Medium to Long-Term Human Talent Development Plan  11 talent programs under the Medium to Long-term Human Talent Development Plan (2010–2020)  One Hundred Talents Program  National Science Fund for Distinguished Young Scholars  Cheung Kong Scholars Program  One Hundred, One Thousand, and Ten Thousand Talents Program	GAD talent development programs

Note: The Thousand Talents Program, one of 12 talent programs under the Medium to Long-term Human Talent Development Plan (2010–2020), is counted in Tier 2.

review by experts in the same field. The final step is to get approval from an expert committee.

The Thousand Talents Program is quite different from other such programs, mainly because it is directly administered by the CCGT. As a result, many problems that are difficult for a single minister to handle may be resolved. This program has become very successful in attracting overseas talents. By the end of 2011, 1,510 overseas talents had been admitted to this program. The number of talents with titles on a par with “professor” had exceeded the sum of those attracted in the past 30 years.

Despite its successes, this program still has some problems. First, the CCP’s involvement puts much greater pressure on the “unit that employs people” and local governments. Instead of using this program to address local talent issues, some localities and departments are using it as an indicator of their political achievements. Second, policy related to the Thousand Talents Program is not transparent, as the Organization Department does not publicize a cur-

rent list of awardees. Finally, most positions under this program are contract based, not tenured, which makes this program less attractive to people who have already secured a tenured position abroad.

#### ***The Ten Thousand Talents Program***

The Ten Thousand Talents Program is a complement to the Thousand Talents Program and, like that program, is under direct administration of the CCGT. Its objective is to select and support 10,000 leading experts and top-notch young talents in science, technology, engineering, and social sciences in the next 10 years, forming a high-level innovative talent team construction system.

This program is made up of three tiers of seven types of talents. The three tiers are outstanding talents, leading talents, and top-notch young talents. On October 30, 2013, the first list of finalists for this plan was released. Six were selected as outstanding talents, of whom the majority were academicians. The leading talents program selected 618, and

199 were selected for the top-notch young talents program. One issue to take note of is that the actual number of talents selected as innovative S&T leading talents and S&T leading entrepreneurs—subcategories of leading talents—is well below the official target, which could be an indication of a lack of innovative talents in local talent pools.

#### ***Military High-Level S&T Innovation Talents Program***

The Military High-level S&T Innovation Talents Program was jointly announced by the General Staff Department, the General Political Department, the General Logistics Department, and the General Armament Department in 2009. As the principal effort to develop future generations of defense S&T leaders, this program aims to select 200 promising scientists and other military technical personnel every two years for four years of advanced training. The training includes a mentor program with academicians or leading experts and the opportunity to go abroad to study. In addition, attend-

ees receive assistance and priority on major national and military S&T project applications as well as privileges in obtaining support for their research.

The recruiting process is made up of five steps, including setting up a quota of participants, nominations, and several rounds of reviews. In addition, the program has procedures for evaluation, supervision, and termination of participants.

A review of the program after its first two years showed impressive progress. This included the establishment of 96 “high standard” S&T innovation teams and the emergence of significant S&T achievements. Many academicians are involved in this program. The PLA Air Force alone has hired 78 academicians from the Chinese Academy of Science (CAS) and Chinese Academy of Engineering (CAE) as mentors.

## CONCLUSION

There is no doubt that China has made great efforts to develop human talent. However, talented personnel, especially high-level innovative S&T talents, are still in short supply. In addition, most of the programs are more focused on program development and implementation than on supervision and evaluation. Evaluations are conducted occasionally, but systemic supervision and evaluation mechanisms have not yet been established. Thus, the effectiveness of these programs is questionable. The fact that many programs do not release their list of awardees makes it even harder to measure their success—or failure.

Besides problems with the programs, other hurdles, such as innovation mechanisms, a problematic scientific environment, and cultural issues still stand in the way of China

accomplishing its goal to become a world talent power. The bright side is that China’s leaders have already realized the problem. Acknowledging the enormous challenges China faces in this arena, President Xi Jinping emphasized the need to “reform the mechanism for talent cultivation, importation, and utilization” and to “create a positive atmosphere that encourage[s] innovation” in his keynote speech at the CAS and CAE Congress in 2014. Still, it is much easier to identify a problem than to solve it, and changes do not happen overnight. China still has a long way to go to achieve its goal.

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