

Openness is no longer assumed; it is designed and managed

China's collaboration framework is changing, with a shift in regional partnerships and use of tightly controlled platforms. **By Futao Huang**

International research collaboration is entering a more cautious phase as geopolitical tensions intensify, especially among nations competing for technological advantage. Nowhere is this shift more closely scrutinized than in relation to China. But evidence from within Chinese institutions suggests that rather than retreating from global science, China is reorganizing how it collaborates – and defence-aligned universities and virtual research environments are predicted to play a central role.

In interviews I had with 12 senior academics and administrators at Chinese universities in late 2025, the participants described a shift towards a system of collaboration that still seeks global partnerships, but which is anchored by domestic concerns. The model captures a tension between political pressure to restrict knowledge and data and reputational incentives to remain engaged in international collaboration. As one dean told me, “There is a clear understanding that cutting ourselves off would damage our research capacity and talent development. So, international engagement remains a necessity, not a choice.”

China's Seven Sons of National Defence – an elite group of institutions established to serve China's military-industrial and defence research system – are a key component of this shift. These institutions are directly overseen by central government ministries and have historically adopted a more cautious and selective approach to global partnerships, reflecting their defence-oriented mission. Because of their expertise in maintaining governance structures, compliance routines and controlled research environments, China seems to be repositioning the Seven Sons as central nodes in its tightly managed model of collaboration that links research, industry and state objectives.

Interviewees told me that, in most cases, current and new international collaborations facilitated by the Seven Sons take the form of highly structured, long-term partnerships, including shared laboratories and coordinated training and recruitment programmes. International partners are encouraged, they said, but noted that it is increasingly difficult to partner with institutions in the United States and parts of Europe amid tighter regulatory environments. This



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has prompted Chinese universities to shift towards Asia, the Middle East and selected European partners. “It’s not that we stopped wanting US collaboration – it’s that many US partners stopped responding,” one administrator said.

Strong focus

Another major change is the rapid expansion of digital and hybrid (digital and in-person) collaboration models at Chinese universities over the past five years. Interviewees reported that researchers are increasingly collaborating via remote access to research platforms and experimental systems, such as simulation programs and instrument-control interfaces, which reduce the need for travel and cross-border transfer of data sets. One interviewee described using a university-hosted ‘virtual lab’ – a cloud-based workspace that allows overseas collaborators to run simulations and analyse outputs without having access to raw data sets. “They can work with the results,” he explained, “but the core system stays on our servers.”

These platforms allow Chinese researchers to remain connected to global networks while maintaining institutional control over sensitive infrastructure and data. Access is often tiered – only researchers working in specific roles or projects can view underlying data sets or change system functions – and participation is monitored by the host university. Interviewees said that although some researchers viewed the systems as cumbersome, others saw them as a workable compromise. As one put it: “It’s not ideal, but it allows collaboration to continue where it otherwise wouldn’t.” These arrangements are not temporary substitutes for physical mobility. Instead, they represent a redefinition of how openness operates in China’s reimagined model of collaboration.

A controlled openness

The evolution of China’s collaboration model to include more guardrails such as these means processes are often slower, sometimes adding months to the launch of a project. But it means that it “usually results in approval rather than rejection at the institutional level”, a professor told me. Giving universities clear rules of engagement can also benefit early-career researchers. As one junior faculty member said: “It’s harder to act informally now, but easier to know what is allowed – which reduces personal risk.”

China’s evolving research landscape highlights a challenge that science systems around the world face: how to sustain mutually beneficial collaboration amid geopolitical fragmentation. For China, research security does not preclude openness, but redefines the channels and partners through which it operates. For policymakers and research leaders elsewhere, the lesson is not to replicate China’s approach, but to recognize that the future of global science will depend on collaboration models that balance connectivity with responsibility.

What distinguishes China is not the presence of security concerns – which many countries share – but the scale and institutionalization of its response. Rather than leaving collaboration decisions to individual researchers, Chinese universities are putting formal systems in place to control how openness works, allowing partnerships to continue under tighter controls.