

Strategic Dominance, Scientific Power, and the Road to Quantum Internet

Executive Summary

China commands the global quantum stage, accounting for an estimated **35% of worldwide government quantum funding**—equivalent to tens of billions of U.S. dollars from a total \$42B pool as of mid-2025. Backed by the **14th Five-Year Plan (2021–2025)** and long-term vision through 2035, quantum computing and communications are designated as strategic “industries of the future.” Breakthroughs like **USTC’s Zuchongzhi-3** and **Jiuzhang photonic platforms** highlight China’s ongoing pursuit of **quantum supremacy**, while commercial momentum builds behind players like **SpinQ**, which is targeting a **100-qubit machine by year-end**.





National Strategy & Infrastructure

China's approach to quantum is **centralized, long-range, and politically reinforced**:

- **Quantum technology** is enshrined in national megaprojects and Politburo agendas.
- R&D investments rise by approximately **7% annually**, with strategic funding flowing into **regional science hubs** in **Hefei, Zhangjiang**, and the **Greater Bay Area**.
- **Quantum communications infrastructure** is unmatched globally, led by the **Micius (Mozi) satellite**, enabling real-world **quantum key distribution (QKD)** and laying the groundwork for a **quantum internet by 2030**.

Public-Private Synergy & Academic Excellence

- **University of Science and Technology of China (USTC)** remains the epicenter of scientific breakthroughs, including **Zuchongzhi-3** and **Jiuzhang**.
- **SpinQ Technology** continues to push commercialization goals, including its **100-qubit hardware roadmap**.
- **Talent pipelines** like the **Qiming Plan** and **Thousand Talents Program** help repatriate and recruit top global scientists, driving innovation across quantum hardware, software, and communications.





Global Collaboration & State-Backed Funding

Despite growing emphasis on **self-reliance**, China remains open to select **international collaboration**—and is less restrictive in its export policies compared to Western allies. Notable investment vehicles include:

- **National Integrated Circuit Industry Investment Fund III** – \$47.5B
- **National AI & Quantum Industrial Fund** – \$8.2B These funds channel support into quantum startups and adjacent technologies like AI, semiconductors, and materials science.

G7 Dynamics & Strategic Posture

Although not part of the G7, China's quantum strategy is a **key driver of Western coordination**. Its **state-led innovation model** contrasts with the more market-driven approaches of the U.S. and EU. China's rise in quantum is fueling **G7 discussions on cybersecurity, finance, and military preparedness**, reinforcing quantum's role in **tech diplomacy and national defense**.



Opportunities & Challenges



Opportunities:

- **Unmatched scale** of public investment and talent development
- A growing, **government-guided quantum ecosystem** with increasing commercial traction
- Leadership in **quantum communication**, poised to dominate QKD and early-stage quantum internet frameworks

Challenges:

- **Export controls and sanctions** from the U.S. and allies threaten access to high-performance components (e.g., dilution refrigerators, AI chips, advanced lasers)
- **Transparency deficits** around benchmarks, roadmaps, and metrics make it difficult for outside observers to assess progress
- Risk of **technonationalism** isolating China from collaborative international progress





2025 Outlook & What's Ahead

- Advances expected in **photonic and superconducting platforms**, pushing boundaries in speed and stability
- **Quantum-safe satellite and terrestrial networks** will continue expanding
- The upcoming **15th Five-Year Plan (2026–2030)** is likely to:
- Embed quantum across **industrial policy**
- Set global standards
- Strengthen China's foothold in the **Asia-Pacific quantum ecosystem**

Final Reflection

China is not merely participating in the quantum race—it's shaping the track. With historic breakthroughs, deep pockets, and a coordinated national vision, China stands as a quantum powerhouse. Yet, its long-term leadership will depend on transparency, global trust, and continued execution—not just scale and ambition. The next five years will determine whether its scientific achievements evolve into **industrial dominance and international influence**.

