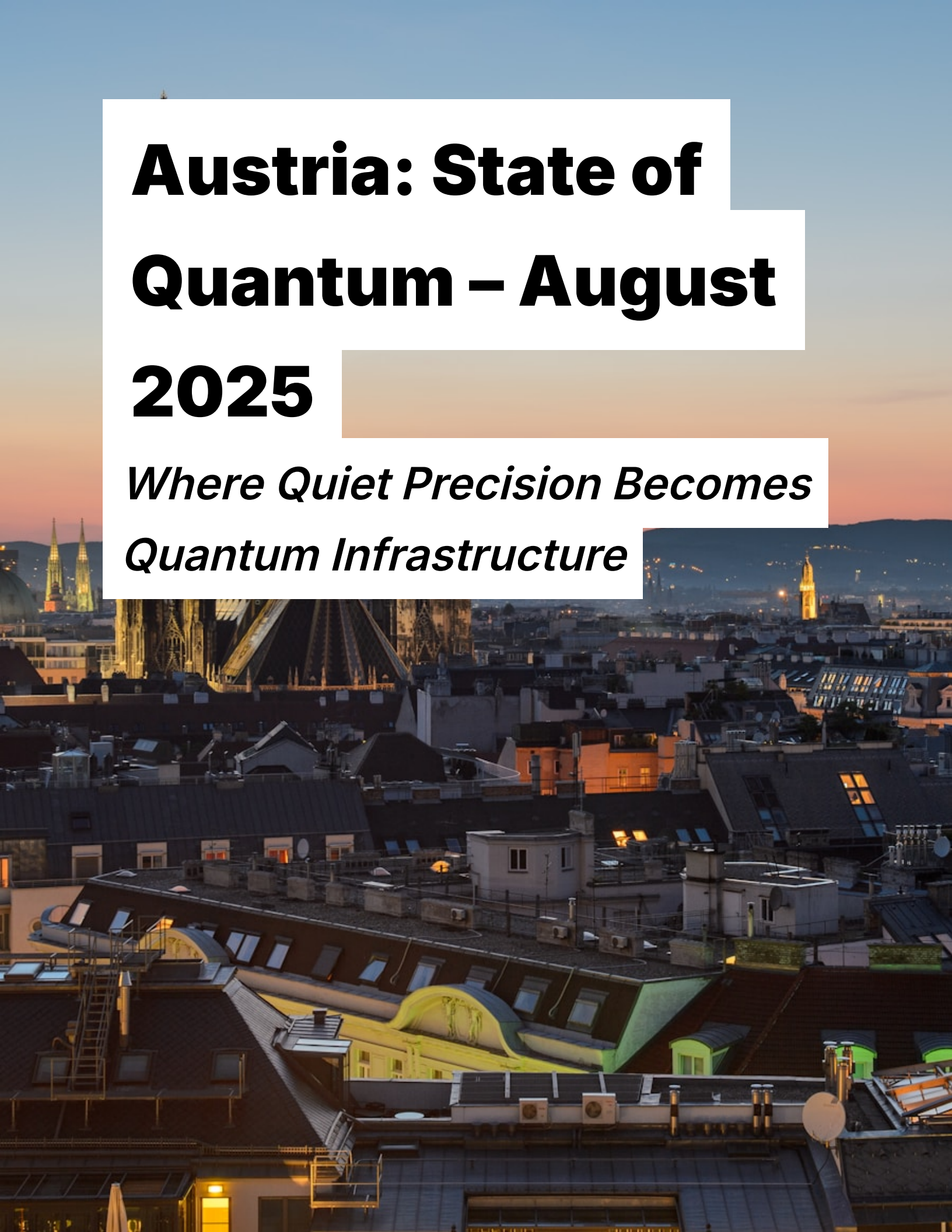
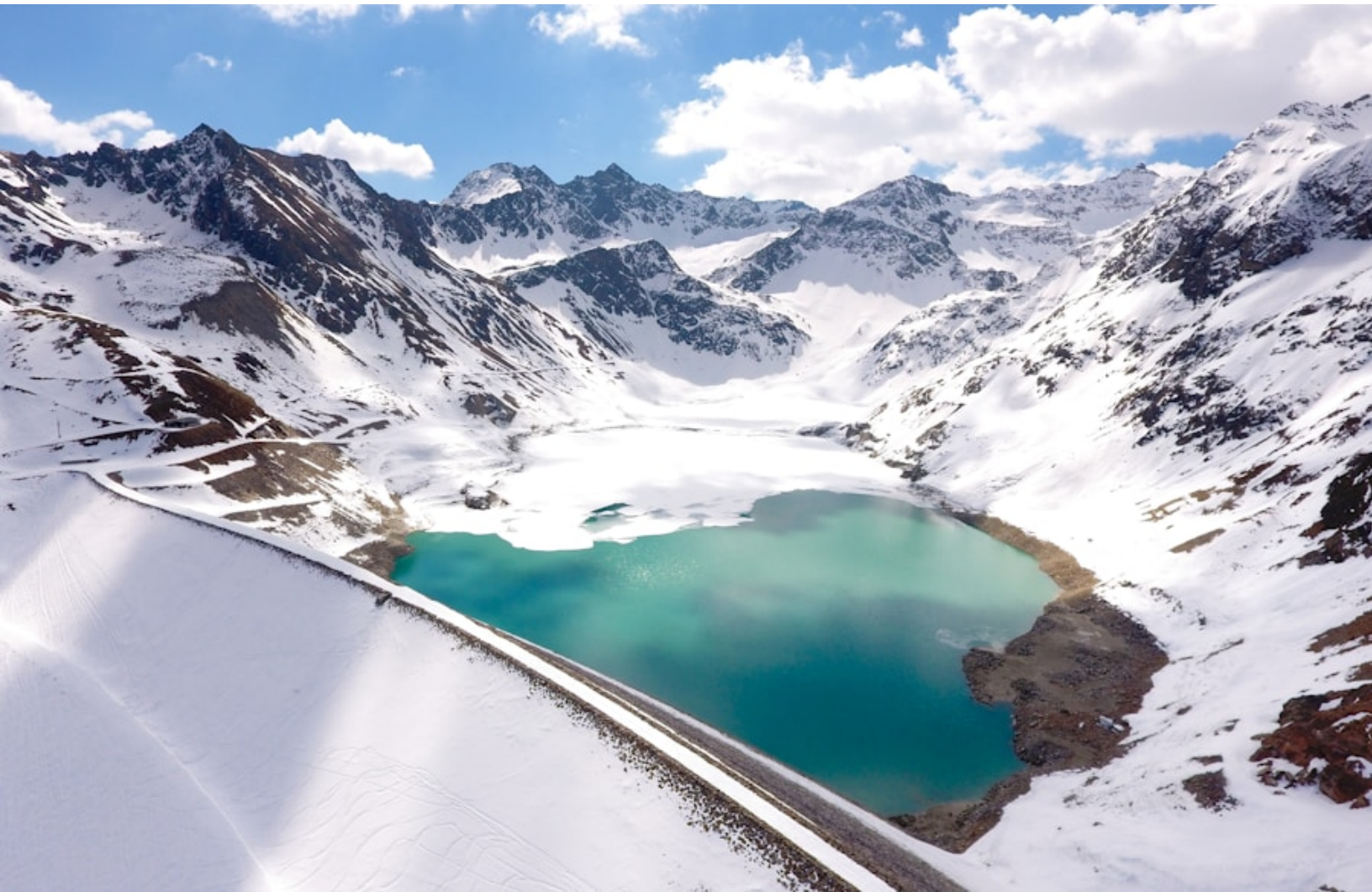
# Austria: State of Quantum – August 2025

*Where Quiet Precision Becomes Quantum Infrastructure*



# Executive Summary

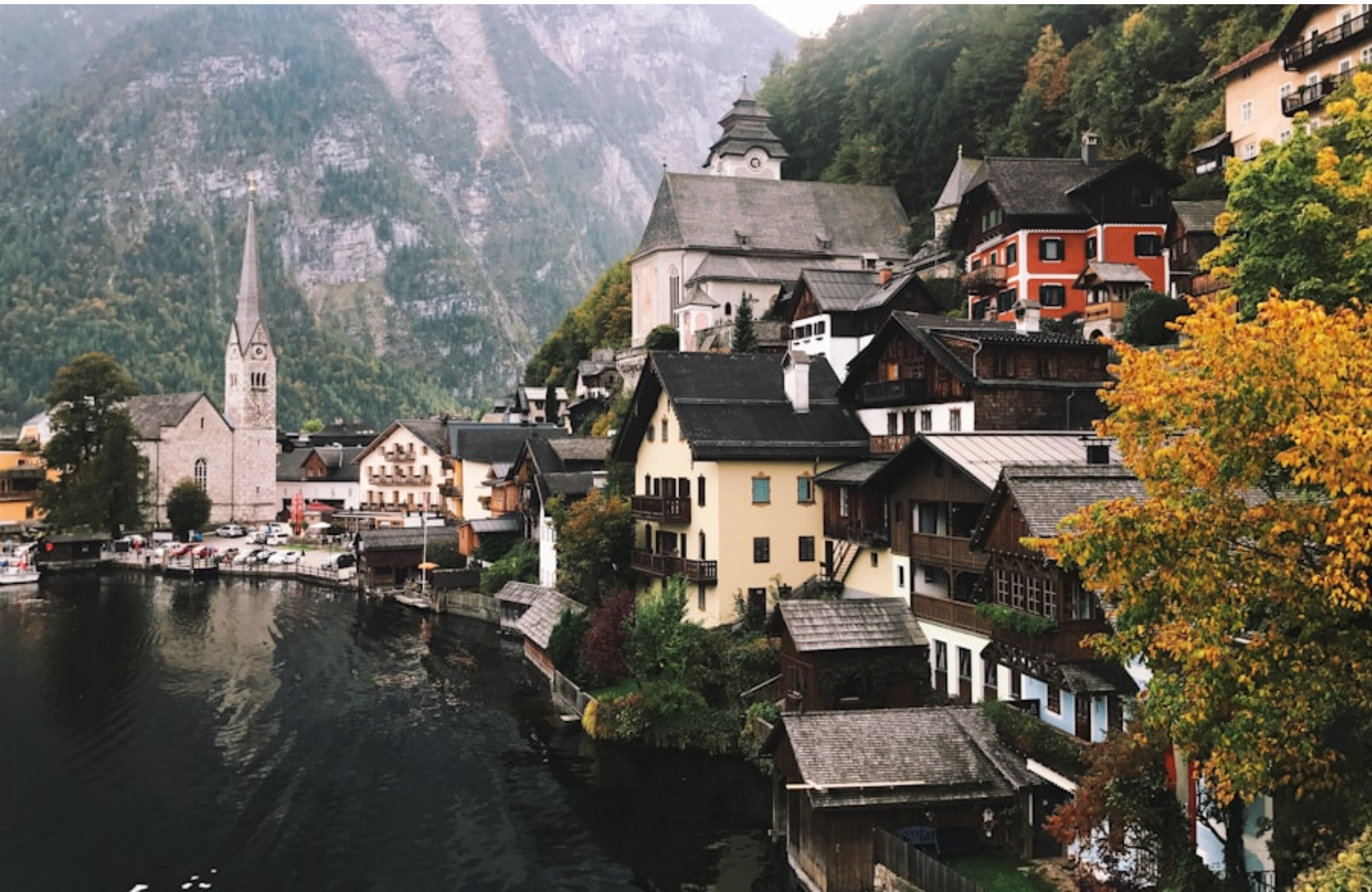
Austria continues to play a significant role in Europe’s quantum development. With strong theoretical foundations, top-tier academic institutions, and a long history of leadership in quantum optics and entanglement, Austria’s 2025 quantum strategy is built on scientific integrity and international trust. Through the Quantum Austria initiative, national infrastructure projects, and involvement in EuroQCI and NATO sensing programs, Austria has evolved from an academic pioneer to a secure and reliable contributor to Europe’s quantum sovereignty efforts.

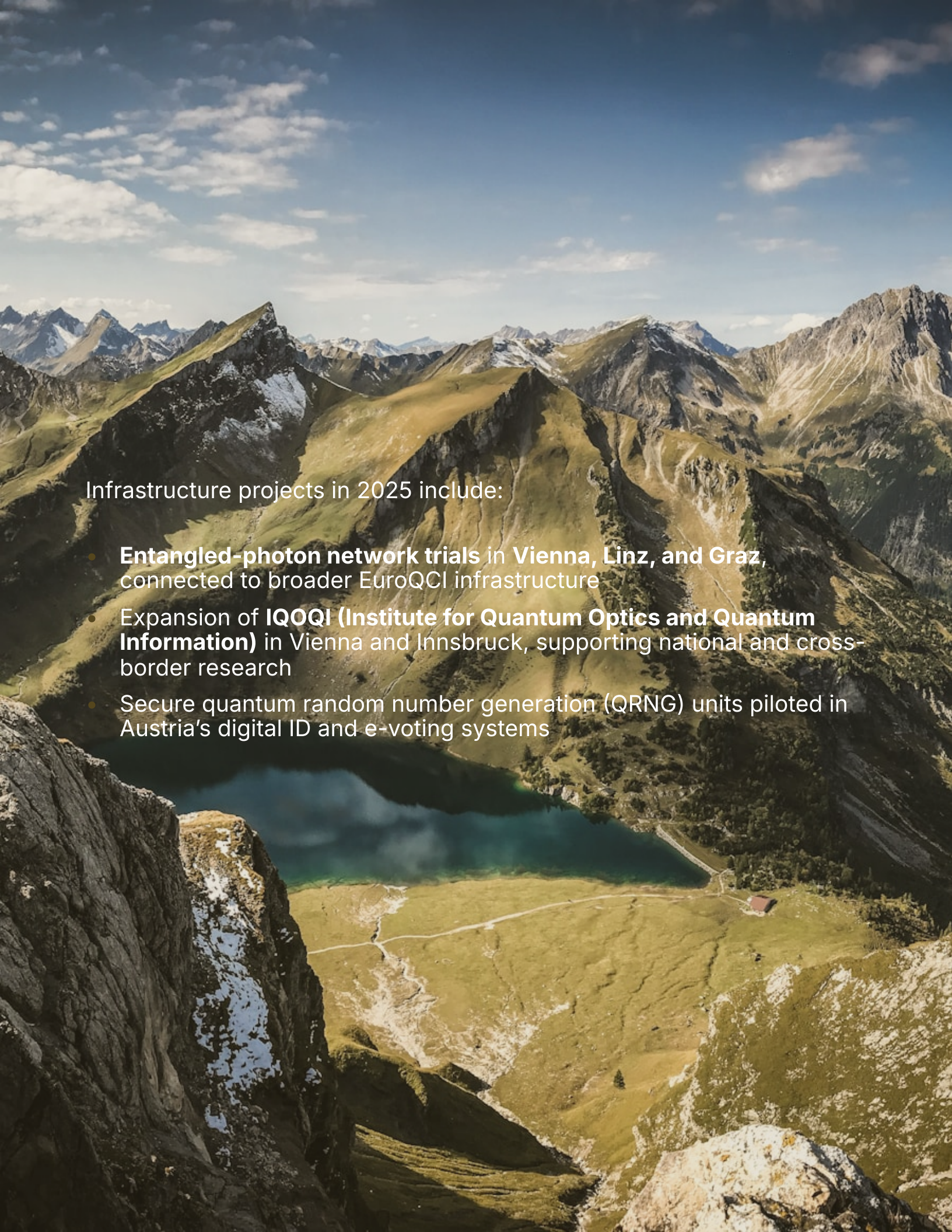


# National Strategy & Infrastructure

Austria's national quantum strategy has taken shape around **Quantum Austria**, a €100 million investment framework launched in 2022 and coordinated by the **Austrian Research Promotion Agency (FFG)** and the **Ministry for Climate Action, Innovation, and Technology**. It supports:

- Fundamental and applied quantum research at universities and national labs
- Quantum communication trials, including **entanglement-based QKD networks**
- Investment in **quantum hardware platforms**, especially ion traps and integrated optics





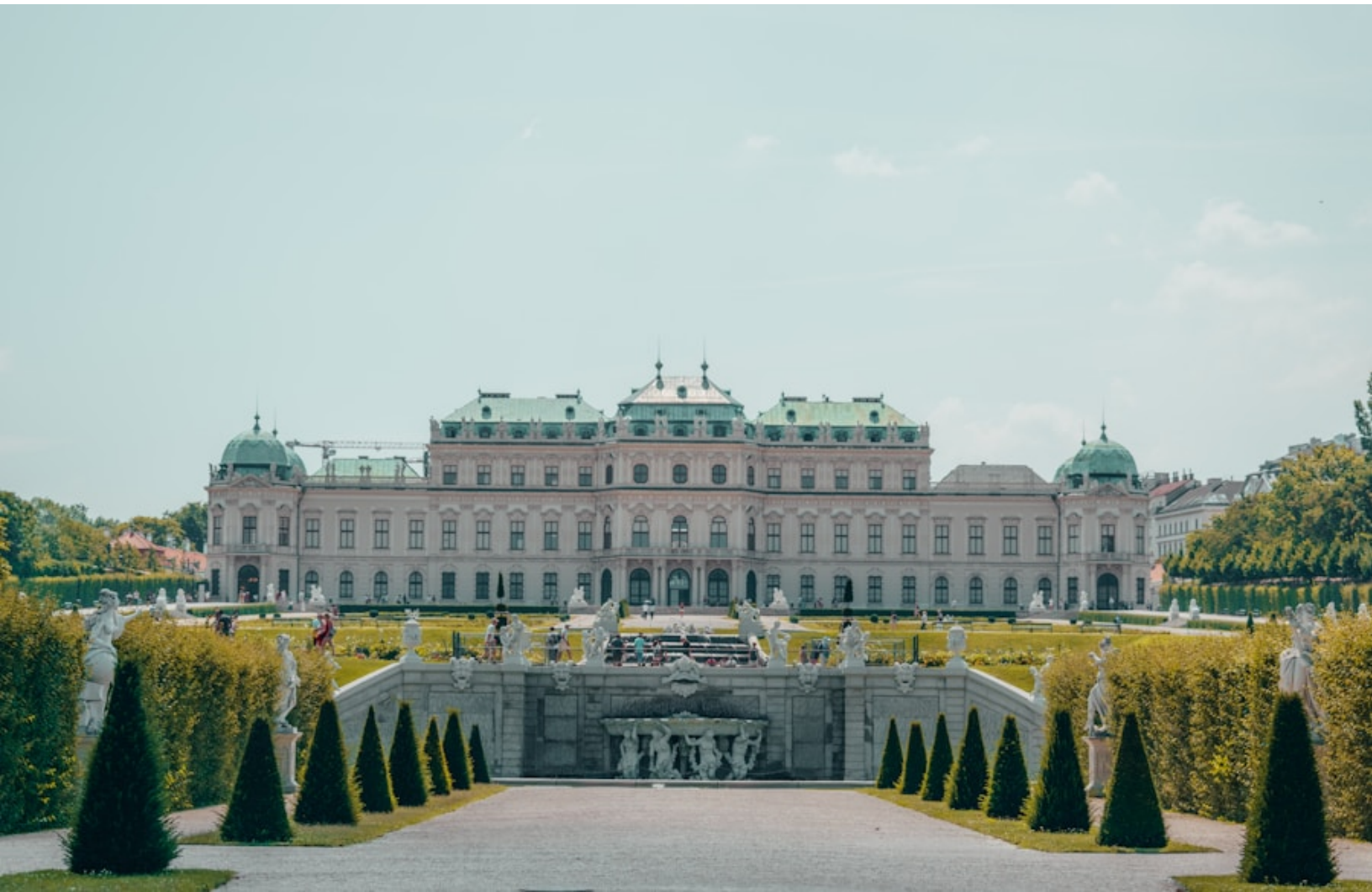
Infrastructure projects in 2025 include:

- **Entangled-photon network trials** in **Vienna, Linz, and Graz**, connected to broader EuroQCI infrastructure
- Expansion of **IQOQI (Institute for Quantum Optics and Quantum Information)** in Vienna and Innsbruck, supporting national and cross-border research
- Secure quantum random number generation (QRNG) units piloted in Austria’s digital ID and e-voting systems

# Public / Private Collaboration & Academic Firepower

Austria’s academic institutions remain globally respected for foundational quantum science. Notably:

- **University of Vienna**, **University of Innsbruck**, and **TU Wien** continue to lead on ion trap experimentation, quantum optics, and theoretical physics
- **Anton Zeilinger’s legacy**—Nobel laureate and long-standing quantum visionary—remains central to Austria’s research culture and global partnerships.
- **AIT (Austrian Institute of Technology)** drives applied research in quantum communications, system integration, and cryptographic trust layers



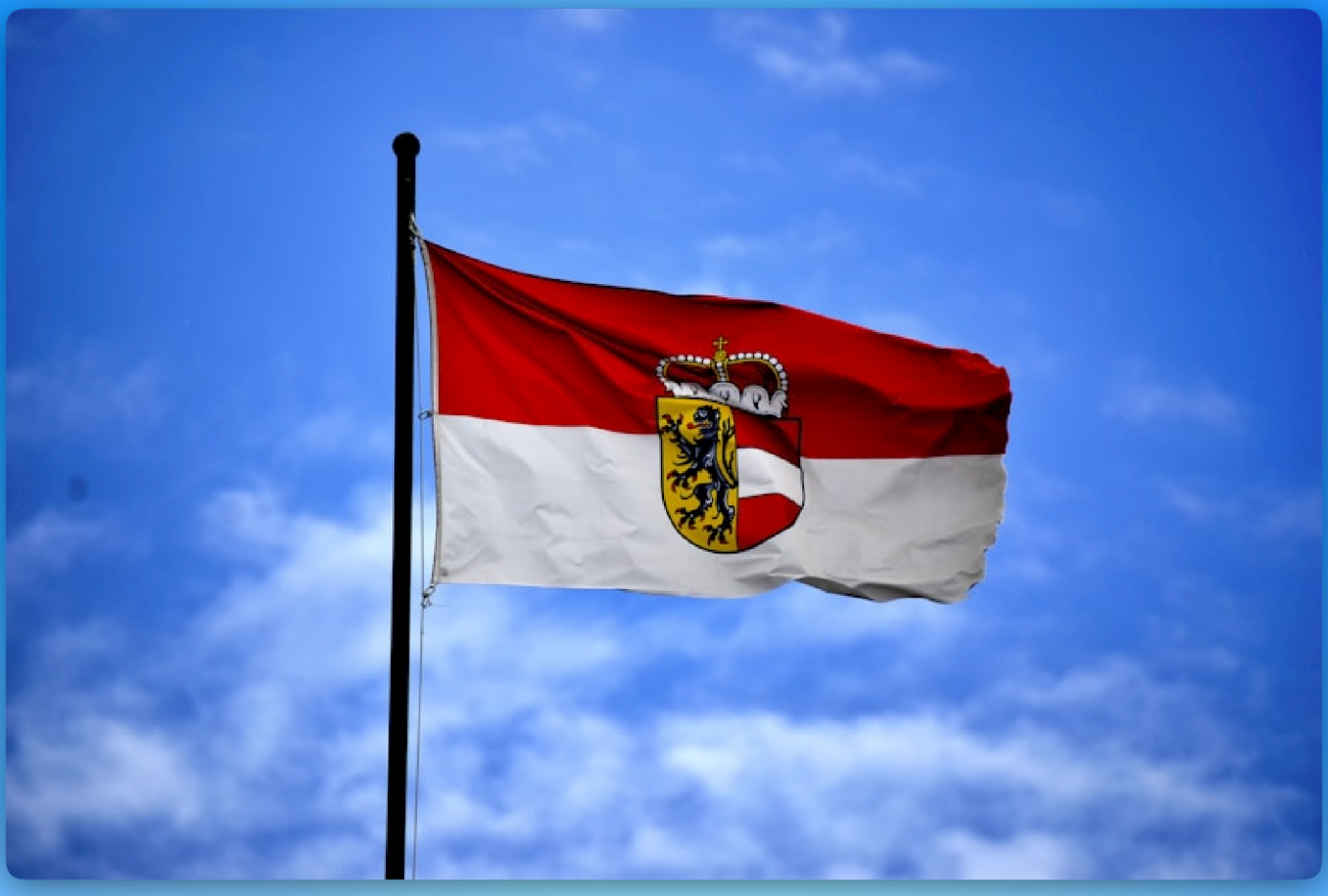
Private-sector participation is growing:

- **qtlabs GmbH** develops secure communications and QRNG tools for finance and public sectors
- **Qnami Austria** (a Swiss-Austrian spinoff) is advancing quantum sensing and magnetic microscopy for biomedical applications.
- Emerging SMEs are supported through targeted funding within the Quantum Austria program, though scaling remains a challenge.

# International Relationships & Funding

Austria is deeply embedded in the European quantum ecosystem and plays a bridging role between Western and Central Europe.

- Key participant in **Horizon Europe** and **EuroQCI**, receiving over €50 million in EU quantum funding since 2023
- Collaborates bilaterally with **Germany**, **Switzerland**, and **Czechia** on quantum network standardization and sensing trials
- Actively engaged in **NATO's quantum sensing initiative**, contributing Austrian-developed entanglement protocols to early radar experiments
- Austria supports academic exchanges and joint lab facilities through EUREKA, COST, and bilateral science cooperation agreements.

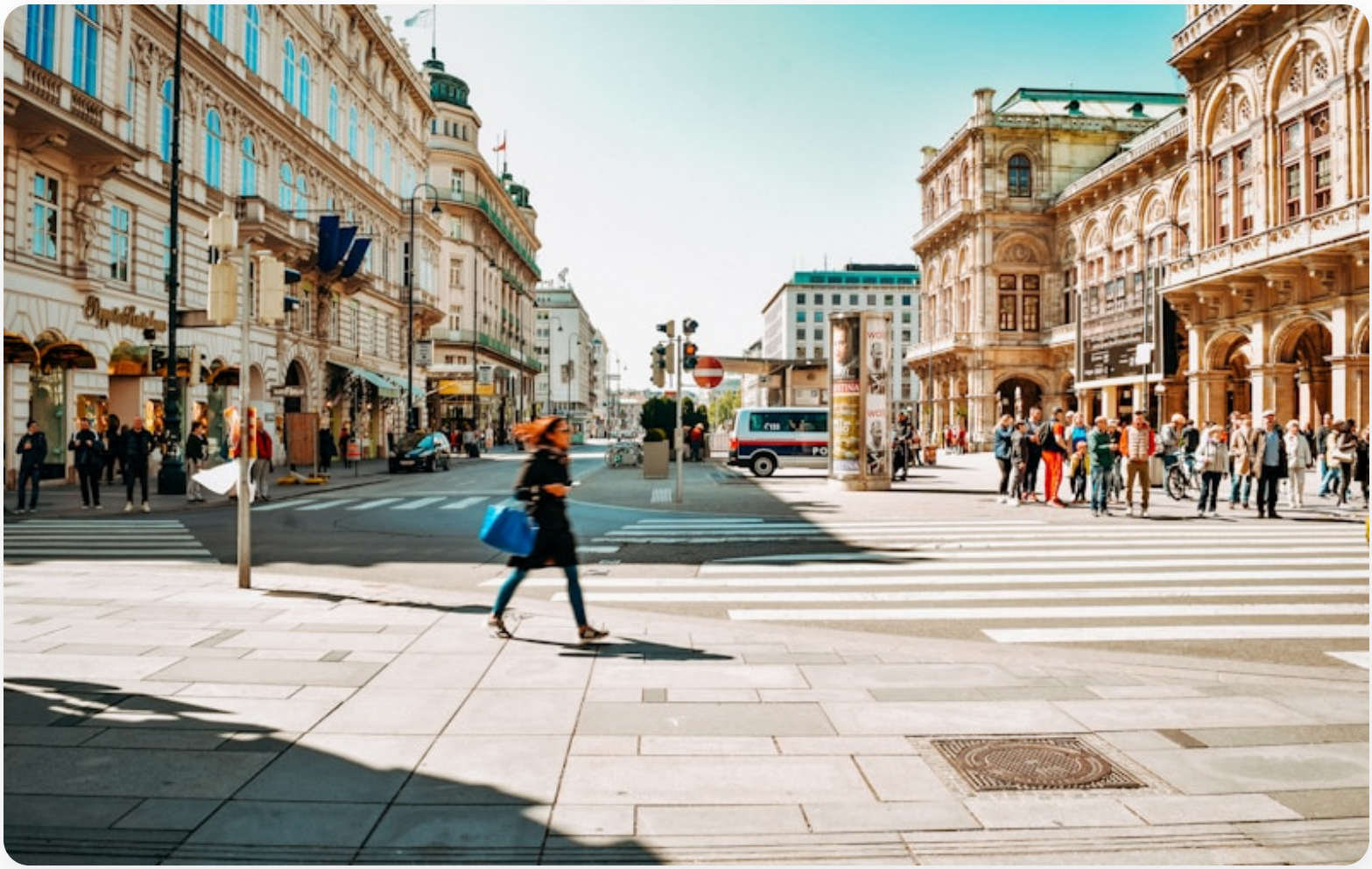


# G7 Summit & Strategic Alignment

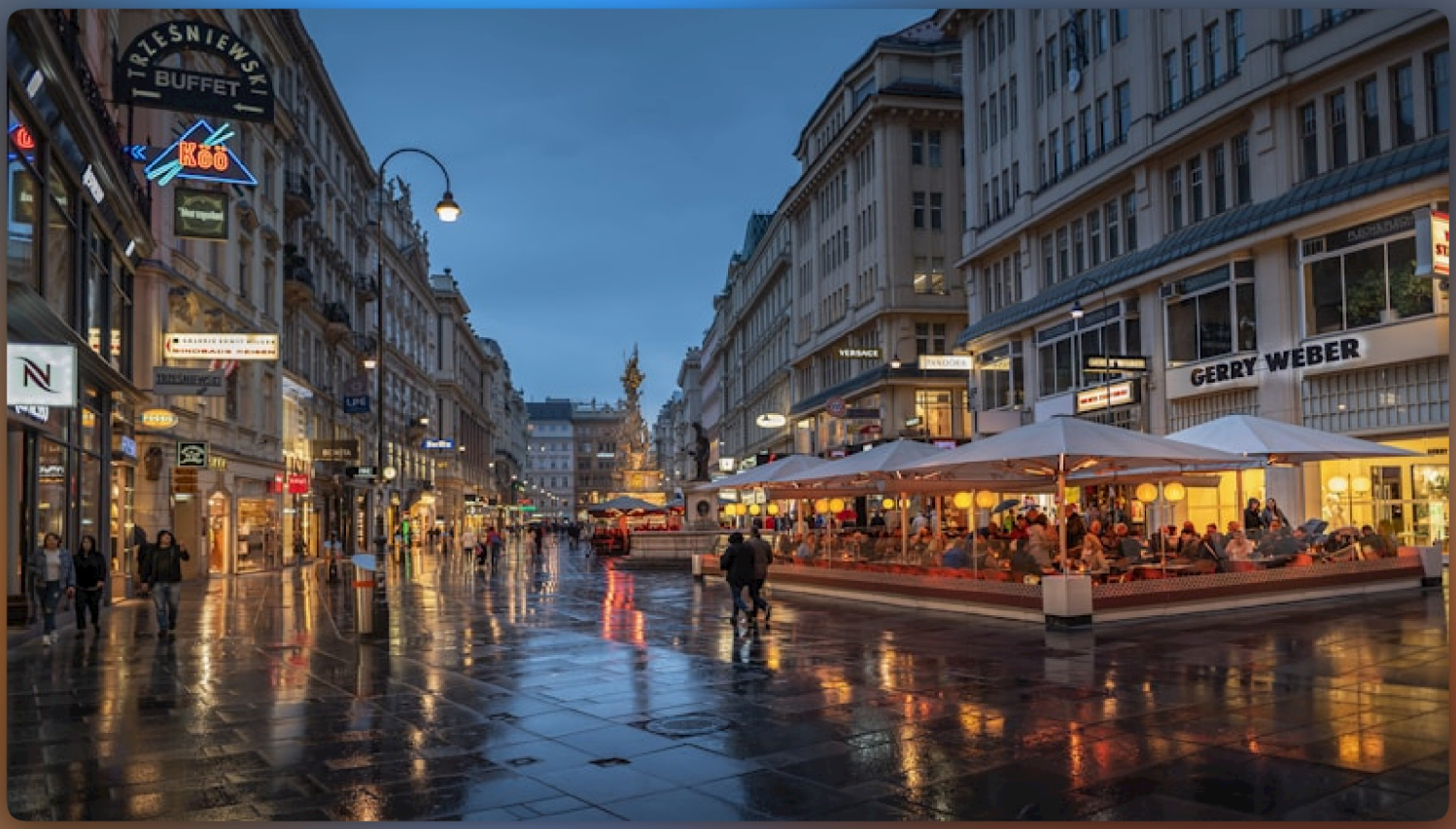
Though not a G7 member, Austria participated as an observer in the **2025 Puglia Summit**, contributing technical expertise and policy recommendations on:

- **Quantum trust frameworks** for secure AI and health data
- **Post-quantum cryptography** for public infrastructure
- **Sovereignty-aligned quantum networks** in the Alpine and Danube corridors

Austria's diplomatic tone was subtle but impactful—emphasizing *resilience through scientific transparency*.



# Opportunities and Challenges

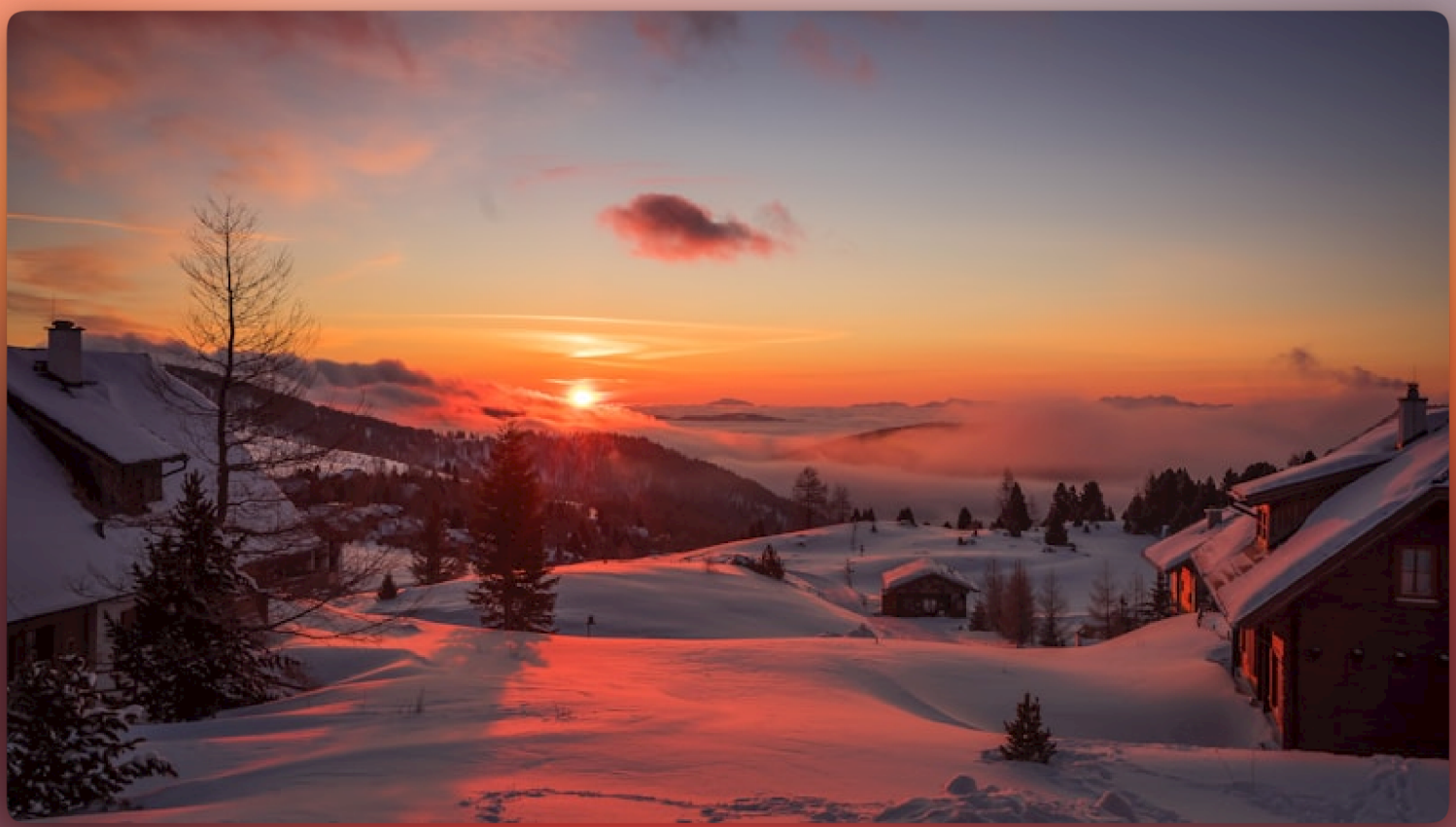



# Opportunities

- **Ion trap computing** and **entanglement-based networking** are core strengths Austria can further commercialize.
- As a **neutral nation**, Austria can serve as a **trusted node for secure European quantum infrastructure.**
- Academic excellence positions Austria to lead in **ethics, governance, and cross-border interoperability.**

# Challenges

- **Commercialization remains slow**—industrial participation trails behind academic leadership.
- **The startup ecosystem** is modest in size and lacks scale-up capital
- **Talent bottlenecks**—Austria produces top-tier researchers, but retention and intersector mobility remain weak
- **Austria's next stage** hinges on translating its research depth into commercial and institutional integration—without sacrificing the intellectual rigor that defines its reputation.



# Outlook for 2025 & Beyond

Austria is expected to:

- Expand its **QKD and QRNG networks** into cross-border corridors with **Slovakia, Hungary, and Slovenia** by 2027
- Release a **quantum workforce development strategy** aimed at PhD-to-industry pathways, SME participation, and gender equity in the quantum field.
- Play a quiet but influential role in **EU digital sovereignty**, particularly in secure infrastructure and post-quantum readiness.

# Final Reflection

Austria’s quantum identity is not built on headlines—it’s built on **precision, trust, and continuity**. In a time when some nations sprint toward visibility, Austria has chosen integrity. As of August 2025, Austria remains one of Europe’s most trusted stewards of quantum science: not chasing the race, but shaping the route.