

The background of the slide is a photograph of the United Arab Emirates flag. The flag is partially visible on the left side, showing its green, white, and black horizontal stripes. On the right side, the red vertical stripe is visible, along with a portion of the gold flagpole. The rest of the background is a solid light blue color.

UAE: The State of Quantum Computing

-- Aug 2025

**The Quiet Build:
UAE's Quantum
Strategy Is Already
in Motion**

Executive Summary

The foundation is built on significant institutional power. ATRC, launched in 2020, operates through TII, whose Quantum Research Centre is developing domestic qubit systems, secure cryptography frameworks, and applied sensing technologies.

In 2024, the UAE implemented mandatory post-quantum cryptography for all public agencies and critical infrastructure. It was not a trial— it was regulation. This policy puts the UAE ahead of several G20 peers in post-quantum readiness.





The infrastructure is not just theoretical—it is being developed. The XPANSE Initiative, launched at the *Make It in the Emirates Summit* (May 2025), brought together national leaders like ADNOC and global tech stakeholders to turn quantum concepts into practical energy, logistics, and security solutions.

Public / Private Collaboration & Academic Firepower

This ecosystem isn't running on government alone. In 2025, Norma and AI Fardan Ventures signed an MOU to establish a regional quantum R&D center focused on AI, data infrastructure, and quantum-secure cloud.

Meanwhile, NYU Abu Dhabi's Center for Quantum and Topological Systems (CQTS) is evolving into the intellectual engine behind the UAE's commercialization push. Highlighted at the Quantum Innovation Summit 2025, CQTS bridges high-level theory with deployable tech—and gives the MENA region an academic anchor in the quantum space.



International Relationships & Funding

The UAE's quiet power lies in its strategic neutrality and its ability to act as a collaborative magnet. By staying geopolitically flexible, the country remains open to partnerships with Western, Asian, and emerging-market quantum players alike.

Funding flows are designed to attract not just multinationals, but early-stage ventures. Zones like VerneX Quantum Valley offer startup incentives and access to national infrastructure—blending government backing with private sector acceleration.



G7 Summit & Strategic Alignment

The UAE's presence alongside G7-aligned initiatives has been increasingly visible. In working groups on post-quantum security, ethical AI, and critical infrastructure resilience, the UAE presents itself not as a peripheral player—but a node of influence.

Its early policy mandates and tech diplomacy around encryption and sensing have positioned it as a model case study in applied, scalable quantum integration for smaller advanced economies.



Opportunities and Challenges

Opportunities:

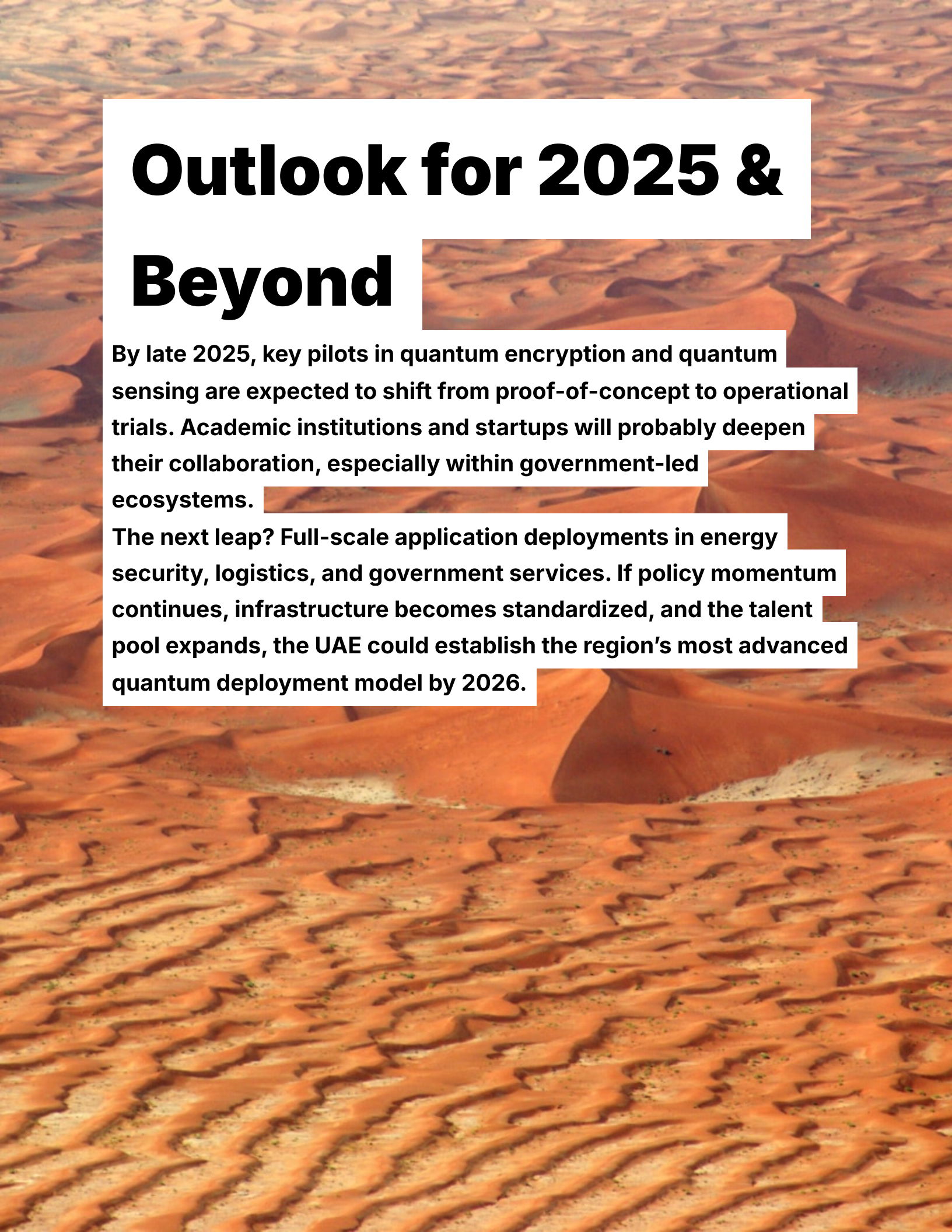
- **Cyber Resilience:** Encryption mandates enhance sovereignty and trust in digital infrastructure.
- **Economic Diversification:** Quantum R&D ties directly to Vision 2030's shift toward knowledge-based industries.
- **Regional Leadership:** With zones like VerneX, the UAE becomes a gravitational center for quantum talent, capital, and experimentation.



Challenges:

- **Talent Capacity:** Engineering expertise is still developing, and brain drain is a real risk.
- **Commercial Gaps:** Hardware and software pipelines aren't fully deployed; systems are still in early-stage pilot mode.
- **Execution Pressure:** Sustained coordination across academia, industry, and policy is essential to avoid fragmentation.





Outlook for 2025 & Beyond

By late 2025, key pilots in quantum encryption and quantum sensing are expected to shift from proof-of-concept to operational trials. Academic institutions and startups will probably deepen their collaboration, especially within government-led ecosystems.

The next leap? Full-scale application deployments in energy security, logistics, and government services. If policy momentum continues, infrastructure becomes standardized, and the talent pool expands, the UAE could establish the region's most advanced quantum deployment model by 2026.



Final Reflection

The UAE's approach to quantum isn't speculative—it's sovereign. Where other nations are still holding think tank roundtables, the UAE is laying cables and writing code.

This is strategy, not spectacle.

If the country continues aligning its technical goals with regulatory clarity, global partnerships, and academic rigor, it won't just participate in the quantum era—it may quietly define its boundaries.

By mid-2025, the United Arab Emirates isn't experimenting with quantum—it's executing on it. Backed by the Advanced Technology Research Council (ATRC) and Technology Innovation Institute (TII), the UAE has designed a national quantum roadmap that's more blueprint than brochure.

Quantum isn't being approached as hype—it's being woven into hardware development, encryption protocols, national infrastructure, and, critically, policy. From quantum-resistant cryptography mandates to homegrown research centers, the country is establishing not just capacity—but capability.