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Qatarization in High-Skilled Domains: Empowering Nationals in Engineering and Advanced Technology for a Sustainable Future

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1. Introduction

1.1 The Imperative of Qatarization in Specialized Roles

Qatarization is a strategic pillar of the Qatar National Vision 2030 (QNV 2030) aimed at increasing Qatari participation in the workforce, particularly in high-skilled sectors such as engineering, advanced technology, and financial services. This initiative is not merely about meeting employment quotas but about creating a self-reliant, innovation-driven workforce that can support Qatar's transition to a knowledge-based economy (GCO 2025; Middle East Briefing 2024; IMO. 2024).

With expatriates comprising approximately 94% of the labor force as of 2023 (NPC 2024), the newly enacted Qatarization Law No. 12 of 2024 has introduced stricter requirements for private enterprises to prioritize national employment in key sectors (MOL 2024a). This law mandates that companies in strategic industries, including construction, energy, and financial services, must

achieve specific Qatarization targets or face penalties. Additionally, the law provides incentives such as tax exemptions and financial support for firms actively training and hiring nationals (FRAGOMEN 2024; MCIT 2025a).

Reducing reliance on foreign expertise and building local talent pipelines in critical industries has become a national priority. Engineering and technology play a fundamental role in infrastructure development, digital transformation, and energy security, making them focal points for Qatarization efforts. The strategy also includes attracting highly skilled expatriates to fill short-term skill gaps while ensuring knowledge transfer to Qatari professionals, reinforcing the nation's long-term workforce sustainability (SHRM 2024; IMO 2024).

1.2 Economic Drivers

Qatar's economy has historically been driven by hydrocarbons, which have contributed a significant share of GDP. However, global energy transitions, price volatility, and the need for diversification have highlighted the urgency of developing expertise in non-hydrocarbon sectors. The National Development Strategy 2023–2030 (NDS3) outlines policies to enhance the role of non-oil industries, with a target for the non-oil sector to contribute 75% of GDP by 2030 (NPC n.d.). This shift necessitates a skilled national workforce in fields such as renewable energy, artificial intelligence (AI), cybersecurity, financial technology (fintech), and advanced manufacturing (Chauhan 2019; Stubing 2024; BSTQ 2024c; GCO 2024b; MOL 2024b; Gulf Times 2025c; MOCI 2025).

1.2.1 The North Field Expansion Project

Qatar's LNG production capacity is set to rise to 126 million tons per annum by 2027 and further expand to 160 million tons per annum by 2030, reinforcing the country's role as a global energy leader. This expansion necessitates advanced engineering expertise to support infrastructure development, operational efficiency, and economic diversification efforts. Additionally, the project will contribute to strengthening local employment opportunities and enhancing Qatar's competitive advantage in the global LNG market, aligning with the country's long-term energy strategy (Qatar Tribune 2024b; Stubing 2024; Gulf Times 2025a).

1.2.2 The Al Kharsaah Solar Power Plant

Qatar's first large-scale photovoltaic plant, with a capacity of 800 MW, is a cornerstone of the country's renewable energy strategy. Developed through a collaboration between Marubeni, TotalEnergies, and Siraj Energy, the project supplies approximately 10% of Qatar's peak electricity demand and reduces carbon emissions by over 26 million metric tons during its lifetime. This initiative is driving demand for engineers specialized in solar energy, energy storage systems, and grid optimization, further supporting Qatar's transition to a sustainable energy mix (Marubeni n.d.; IMO 2024; TotalEnergies n.d.; Team QT 2025c).

1.2.3 The Expansion of Qatar's Fintech Sector

AI and data analytics are transforming financial services, driving demand for professionals in AI, data science, and cybersecurity. The ERADA initiative is equipping the workforce with digital skills, while regulatory sandboxes and fintech innovation hubs are fostering sector growth. Strategic MoUs signed at Web Summit 2025 highlight Qatar's commitment to advancing AI-driven financial services and strengthening global partnerships (CCIFQ 2025; Team QT 2025a; The Peninsula 2025c; MOL 2025a).

1.2.4 The Integration of Smart Infrastructure and Digital Energy Solutions

Qatar is advancing AI-driven energy management and smart infrastructure projects through collaborations with Siemens, Emerson, and Huawei, which are enhancing digital energy solutions and grid optimization (Qatar Tribune 2023a; KAHRAMAA 2020).

1.2.5 The Logistics and Industrial Manufacturing Sectors

With over 40 new factories registered in 2024, Qatar is expanding its industrial base through government-backed investment zones and strategic incentives, reinforcing its role as a trade and manufacturing hub. The Ministry of Commerce and Industry (MOCI) has announced new regulatory measures and industrial policies aimed at strengthening Qatar's manufacturing capabilities and export competitiveness, further enhancing national workforce participation in this sector (Invest Qatar n.d.; BSTQ 2023; MOCI 2025).

1.3 Social and Security Dimensions

Beyond economics, Qatarization fosters social stability and national security. While unemployment among nationals stood at 0.3% in 2023 (NPC 2024), Underemployment persists among young Qataris due to challenges in aligning education with labor market needs and limited exposure to career pathways. Effective career guidance plays a key role in addressing these issues by helping students make informed decisions early (QF 2020). A career-driven culture among Qataris is essential for long-term employment success, with structured mentorship programs ensuring smoother education-to-workforce transitions (QCDC n.d.). By prioritizing employment in engineering, technology, and cybersecurity and improving career development access, Qatarization enhances workforce engagement and national pride. Tailored policies integrating career readiness, employer partnerships, and targeted upskilling programs are critical to aligning youth aspirations with economic needs (Sayre et al. 2015).

From a security perspective, expanding Qatari participation in energy infrastructure, defense technology, digital security, power, transportation, and digital energy solutions reduces reliance on foreign labor and aligns with Qatar's Defense Digitalization Compass, strengthening human capital self-sufficiency and securing national assets (Gulf Times 2024b; Ashghal 2022). As geopolitical tensions and cyber threats grow, the Defense Digitalization Compass is training nationals in cybersecurity, aerospace engineering, and defense technology, reducing reliance on foreign expertise, while Qatar's defense sector integrates AI and emerging technologies to enhance security (The Peninsula 2024a).

1.3.1 Youth Employment and Social Stability

Qatar's youth, representing approximately 11.2% of the economically active Qatari population in 2023, are central to workforce development (NPC 2024). Engaging young Qataris in STEM fields, AI, and renewable energy is essential to mitigating underemployment and fostering innovation. Several initiatives are supporting this goal:

- **STEM and AI Education:** Programs such as TotalEnergies' knowledge-sharing initiatives and UNESCO's collaboration with Studio 5/6 enhance youth participation in STEM and AI research, equipping students with industry-relevant skills (Qatar Tribune 2023b; MCIT 2023).

- **Digital Upskilling:** The ERADA digital upskilling program focuses on AI, fintech, and cybersecurity, preparing young professionals for leadership roles in Qatar's evolving economy (MOL 2025a).
- **Industry Partnerships:** Career pathways in renewable energy, AI, and smart infrastructure are expanding through collaborations with Qatar University, ExxonMobil, Siemens, and Huawei, strengthening technical training and employability (Siemens AG 2012; Gulf Times 2022; The Peninsula 2024d).
- **Research and Innovation:** Programs like the QU-ExxonMobil STEM Teacher Academy, HBKU's STEM Hub, and Qatar University's Young Scientists Center provide hands-on research experience, bridging the gap between education and industry (QU n.d.b.; The Peninsula 2024; HBKU n.d.a.).
- **Curriculum Development:** The National Center for Educational Development's STEM programs at Qatar University modernize science and engineering curricula to meet labor market demands (QU n.d.a.).

By ensuring young Qataris have access to world-class education and skill development, these initiatives contribute to social cohesion, equipping them to actively shape national development rather than seeking opportunities abroad.

1.3.2 National Security and Indigenous Defense Capabilities

Qatar's approach to national security extends beyond traditional defense, emphasizing cybersecurity, aerospace engineering, and digital infrastructure to ensure self-sufficiency and resilience. Key initiatives include:

- **Indigenous Military and Cyber Defense:** The Barzan Holdings initiative employs Qatari engineers and cybersecurity specialists to develop military technology and digital defense systems, reducing reliance on foreign expertise and strengthening national security (The Peninsula 2024a).
- **Cyber Resilience and Digital Security:** The National Cyber Security Agency (NCSA) leads efforts to fortify Qatar's cybersecurity landscape by advancing local expertise, implementing robust national cybersecurity policies, and countering emerging threats (NCSA n.d.a.; The Peninsula 2024e; ITA 2024).
- **Aerospace and Defense Expansion:** Qatar is fostering local expertise in aviation engineering and defense technology through a strategic MoU between Invest Qatar and Boeing, aimed at strengthening the aerospace industry and increasing Qatarization in high-skilled defense roles (QASA n.d.; Invest Qatar 2025).
- **Cybersecurity Training and AI-Driven Security:** Initiatives like NCSA's cybersecurity training programs equip Qatari professionals with critical skills to protect national infrastructure, reinforcing digital security (NCSA n.d.b.). Collaborations between I4 Solutions and Cisco Systems are driving AI-based security innovations, ensuring Qatar remains a leader in AI-driven cybersecurity and IT resilience (Gulf Times 2025b).
- **Strategic Technological Sovereignty:** With increasing cyber threats, Qatarization in critical infrastructure security, AI-driven monitoring, and national defense technology is

a priority. Government efforts to enhance power grid security, desalination plant defenses, and smart city cybersecurity reinforce national stability (MCIT 2025a).

Through these initiatives, Qatar is building a highly skilled, security-focused workforce that safeguards national interests and long-term resilience.

1.3.3 Enhancing Workforce Retention in Strategic Sectors

While Qatarization initiatives aim to increase national employment in high-skilled sectors, concrete statistical data supporting this trend remains limited, retention challenges remain. Competitive salaries, structured career progression frameworks, and industry-specific policies are necessary to ensure long-term workforce stability. The government has introduced targeted incentives, housing benefits, and professional development programs to encourage Qataris to remain in technical and private-sector roles (MOCI 2025; Middle East Briefing 2024). Several initiatives are driving these efforts:

- **Sector-Specific Workforce Strategies:** The Qatarization and Workforce Localization Program in oil and gas promotes sustained national employment through training and career pathways (Habeck 2023). The Public Works Authority (Ashghal) has reported increased Qatarization rates, driving national employment in infrastructure projects (Ashghal 2022). Meanwhile, QAPCO's Qatarization framework integrates mentorship programs and structured career pathways to develop national talent in the petrochemical sector (QAPCO n.d.a.).
- **Strategic Upskilling:** The MCIT-led digital transformation initiatives ensure Qataris develop expertise in AI, fintech, and cybersecurity, strengthening retention in key sectors (Gulf Times 2025d).
- **Scholarship and Training Programs:** The national scholarship framework offers funding for STEM and technology fields, aligning higher education with labor market demand (MOEHE n.d.a.). Additionally, the Ministry of Labour's training programs in collaboration with ARIU aim to equip job seekers with the skills required for private-sector employment (MOL 2025b; The Peninsula 2025a).
- **Industry-Led Retention Strategies:** Organizations such as QatarEnergy LNG implement structured career pathways and leadership training to secure long-term workforce participation (QatarEnergy LNG n.d.). Similarly, QAPCO's Qatarization framework focuses on mentorship and leadership development for national employees (QAPCO n.d.a.).
- **Qatarization Law Implementation:** The Localisation Law strengthens private-sector participation by increasing employment opportunities for qualified national talent across various industries (Qatar Tribune 2024a). Additionally, the Ministry of Labour has introduced new Qatarization monitoring mechanisms and strategic programs to enhance workforce localization. Recent initiatives include the launch of national employment tracking systems, strengthened partnerships with private-sector employers, and enhanced job-matching services (MOL 2024a, b,2025a).

By fostering career stability, mentorship programs, and industry-aligned policies, Qatarization serves as both an economic growth driver and a pillar of national resilience.

1.4 Cultural and Educational Foundations

Qatar's workforce development strategy extends beyond economic and policy measures to include deep investments in education and cultural transformation. Strengthening national capabilities in science, technology, and engineering is central to achieving long-term Qatarization goals. However, cultural attitudes toward employment, particularly the preference for public-sector roles, pose challenges to private-sector engagement. Addressing these barriers requires a combination of educational reform, industry collaboration, and societal shifts to align talent development with labor market needs.

1.4.1 Education Investments as a Pillar of Qatarization

Qatar's commitment to education is central to its Qatarization strategy, ensuring a skilled national workforce capable of driving economic diversification. Institutions such as Qatar University (QU), Hamad Bin Khalifa University (HBKU), and the Qatar Foundation (QF) play a critical role in developing local talent. These institutions emphasize STEM (Science, Technology, Engineering, and Mathematics) disciplines, aligning curricula with key industries such as energy, fintech, and artificial intelligence—pillars of Qatar National Vision 2030 (QNV 2030) (QF n.d.c.).

Strategic Initiatives and Infrastructure:

- **Education City & University Expansion**: Qatar's Education City houses eight world-class universities, offering advanced research and education opportunities in diverse disciplines (Invest Qatar n.d.; QF n.d.a.). The government prioritizes building a comprehensive educational system, investing in infrastructure, faculty development, and academic collaborations to enhance learning outcomes (Gulf Times 2024a). Education City fosters innovation through research institutes like QEERI, QBRI, and QCRI, advancing sustainability, healthcare, and digital transformation (QF n.d.d.). Qatar Foundation collaborates with global institutions to enhance relevant education and research, aligning with national economic and technological goals (The Peninsula 2024f; Qatar Tribune 2025; AGS n.d.).
- **Research and Innovation Investments**: The Qatar National Research Fund (QNRF) has invested $1.4 billion in education and research, fostering innovation-driven development (Invest Qatar n.d.; Team QT 2025b). Qatar Foundation has funded over 4,800 research projects, reinforcing Qatar's position as a knowledge-driven economy (BSTQ 2024b). The 2025 budget of QAR 210.2 billion further supports infrastructure, sustainability, and higher education projects (ZAWYA 2024; KPMG in Qatar 2025).
- **Vocational and Technical Training (TVET)**: Qatar prioritizes TVET to develop specialized skills in engineering, IT, and other technical fields. The University of Doha for Science and Technology (UDST) collaborates with the Civil Service and Government Development Bureau on Mahara, training IT and emergency technicians for organizations like Kahramaa and Ashghal (UDST 2023). CNA-Q supports international TVET collaboration through expert-led conferences (Qatar Tribune 2018). TVET centers also provide evening, weekend, and short-term courses for professionals and job seekers (MIE-SPPU n.d.; Oxford Business Group 2019).
- **Scholarships and Development Programs**: Qatar promotes specialized education through targeted scholarships. Qatar National Bank (QNB) offers financial support

covering tuition, stipends, and additional incentives for exceptional students (QNB n.d.). QAPCO funds engineering scholarships followed by structured training through its National Development Program (QAPCO n.d.b.). The Qatar Scholarships initiative supports QNV 2030 and Sustainable Development Goal 4, ensuring equitable access to quality education (Qatar Scholarships n.d.).

Sector-Specific Educational Alignment:

- **Energy Sector:** QatarEnergy fosters local talent through training and internships, placing graduates in companies like QatarEnergy LNG, QAFCO, Shell Qatar, and North Oil Company (The Peninsula 2025d). Collaborations with Qatar University enhance R&D and workforce skills (QU 2024).
- **Finance Sector:** Qatar Central Bank's 2024–2030 Financial Sector Strategic Plan promotes innovation, resilience, and sustainability (QCB 2024).
- **Healthcare Sector:** The National Health Strategy (2024–2030) focuses on population health, efficiency, and service quality (GCO 2024a).
- **Education Sector:** Qatar Foundation drives higher education and research through partnerships and university collaborations.
- **Entrepreneurship & R&D Support:** Qatar fosters innovation through initiatives like the QRDI Council's talent development programs (QRDI Council n.d.b.) and the Qatar Development Bank's Talent Community Program (QDB n.d.).

1.4.2 Cultural Barriers to Private-Sector Engagement

Qatar's labor market faces entrenched cultural preferences that hinder private-sector participation among nationals. Despite educational advancements, many recent graduates still show a strong preference for government jobs, often citing perceived stability, shorter working hours, and social prestige (Ceric et al. 2013; SAKURAI and SIM 2024). While the exact percentage of nationals opting for government roles may vary across different studies, broader qualitative findings suggest that social factors, such as family expectations and views on job prestige, play a substantial role in shaping these career decisions (Younis, Elsharnouby, and Elbanna 2023).

These perceptions persist even as Qatar implements new legislation, such as Law No. (12) of 2024, which aims to create stronger incentives for Qataris to join the private sector through expanded training, financial support, and standardized employment contracts (EY 2024; MOL 2024a).

Several interrelated factors continue to reinforce the government-sector appeal:

- **Public-Sector Appeal**
  - **Higher Salaries and Benefits:** Government roles often offer salaries that surpass comparable private-sector positions, along with pension guarantees. This wage differential discourages many nationals from seeking private-sector opportunities (Ceric et al. 2013; Younis, Elsharnouby, and Elbanna 2023).
  - **Job Security:** The public sector is widely regarded as stable, offering stronger legal protections and fewer risks of layoffs. During economic downturns, such as the

COVID-19 period, many Qataris perceived the private sector as more vulnerable, heightening the allure of public employment (Mohamed et al. 2022).

- **Societal Norms**
  - **Family Expectations:** Families often encourage administrative or managerial roles in government ministries, viewing them as markers of social status and long-term respectability (Amin, Khoulood and Evren 2024). For younger Qataris in particular, parental approval and broader community acceptance play a pivotal role in career decision-making (Al-Mohannadi 2025).
  - **Perception of Technical and Service Roles:** Certain private-sector jobs, especially customer-facing or technical positions, are sometimes viewed as lower-status or incompatible with traditional norms. Religious sensitivities and concerns over work environments (e.g., serving alcohol in hospitality) further discourage participation in private industries (Al-Mohannadi 2025; Ceric et al. 2013).
- **Workplace Culture**
  - **Mismatch with Performance-Driven Environments:** Many multinational firms emphasize competitive performance metrics, flexible scheduling, and rapid advancement tied to output rather than seniority. These merit-based systems can clash with local expectations of hierarchical progression and stable working hours (Younis, Elsharnouby, and Elbanna 2023; SAKURAI and SIM 2024).
  - **Limited Cultural Integration Efforts:** Expatriates often dominate key technical or managerial roles, leaving Qataris feeling marginalized or uncertain about career trajectories. When private companies do not foster inclusive workplaces, Qatari professionals may prefer the perceived familiarity and social prestige of public employment (Mohamed et al. 2022).

These barriers create a talent drain in critical industries such as energy, technology, finance, and hospitality, where expatriates continue to dominate most technical and customer-facing positions. To address these challenges, new legal frameworks including Law No. (12) of 2024, now enable standardized private-sector contracts, support scholarship programs specifically tied to private-sector roles, and offer targeted incentives for both companies and Qatari employees (EY 2024). Nonetheless, bridging cultural expectations, reshaping societal norms, and aligning workplace environments with Qatari professionals' aspirations remain vital next steps for sustaining a more balanced and inclusive labor market in the long run.

1.4.3 Progress and Gaps in STEM Education

While education is a broader pillar of Qatarization, a more specific focus on STEM (Science, Technology, Engineering, and Mathematics) is vital for addressing advanced technical needs in the energy, fintech, AI, and other key sectors:

- **Enrollment Growth:** Qatar's tertiary enrollment ratio now stands at about 17% (World Bank Open Data n.d.), and enrollment in higher education continues to rise (ITA 2023). Meanwhile, the Ministry of Foreign Affairs reports that women comprise 70% of STEM school graduates (MOFA 2024). Recent data from the Gulf Times (2023) also highlights that Qataris make up roughly half of Education City's student population. Reflecting this

progress, Qatar University's College of Engineering (QU n.d.e.) partners with a range of industry leaders to foster specialized engineering skills and real-world collaborations. (The Peninsula 2024d; Microsoft News Center 2023).

- **Retention Challenges:** Despite growing STEM enrollment, many graduates still opt for public-sector roles over technical fields (Younis, Elsharnouby, and Elbanna 2023). While precise figures vary, local observers attribute this to perceived job stability in government, higher public-sector salaries, and cultural norms favoring administrative or managerial careers over technical or R&D positions. Factors include perceived job stability in government, higher public-sector salaries, and cultural norms favoring administrative or managerial careers over technical or R&D positions.
- **Curriculum Gaps:** STEM programs can lag rapid technological change, especially AI, robotics, and renewable energy. Efforts at Qatar University, HBKU's Qatar Computing Research Institute (QCRI), and others have modernized curricula with specialized labs and research opportunities (QF n.d.d.; HBKU 2020, 2024). However, alignment with fast-evolving industry needs remains an ongoing challenge.
- **Industry Collaborations & Specialized Programs**
  - **HBKU's AI and Data Science**: Through centers like QCRI, HBKU drives research in cybersecurity, big data analytics, and other advanced tech fields (HBKU 2024a).
  - **Qatar Academy for Science and Technology (QAST)**: Nurtures future STEM leaders through specialized secondary education programs (QAST n.d.).
  - **UDST's "Call for Action"**: Bridges academia, government, and industry to enhance tech curricula, while QU's STEM Bus provides interactive learning experiences (UDST 2024b; The Peninsula 2022a).
  - **National AI & Cybersecurity Competitions**: Organized by the Ministry of Education and Higher Education (MOEHE 2024b), they help build practical skills among students.
- **Societal Undervaluation of Technical Expertise**: Cultural perceptions sometimes place administrative or managerial positions above hands-on engineering and R&D roles. This undervaluation can dampen the drive for advanced STEM careers, limiting the long-term sustainability of an innovation-driven workforce (MOEHE 2024b; Qatar Scholarships n.d.: Younis, Elsharnouby, and Elbanna 2023).

1.4.4 Strategies for Cultural and Perceptual Shift

To redirect talent toward private-sector STEM roles, Qatar is implementing a range of strategies aimed at shifting deep-rooted perceptions and social norms:

- **Role Model Campaigns:** Platforms such as Education City Speaker Series regularly showcase Qatari engineers, entrepreneurs, and innovators, linking technical careers to national pride (QF n.d.e). Qatar Foundation frequently organizes events highlighting success stories and best practices in STEM - a practice that encourages more young Qataris to consider private-sector or entrepreneurial pathways (QF 2020; Doha Directory 2024).

- **Family and Community Outreach:** Workshops and media campaigns reframe technical work as "nation-building," emphasizing its role in food security (e.g., hydroponics) and sustainability (e.g., solar energy). For instance, Qatar's clean energy strategy has set targets for solar projects such as Al Kharsaah, underscoring the long-term benefits of local engineering expertise (Marubeni n.d.; BSTQ 2024d). By highlighting tangible contributions to QNV 2030, these outreach efforts bolster community acceptance of STEM careers outside the public sector.
- **Industry-Academia Partnerships:** Joint programs with companies like Siemens offer internships and mentorship opportunities for students - often with salary top-ups to match public-sector benefits (KAHRAMAA 2020; Qatar Tribune 2023a). In the telecom sector, local providers increasingly collaborate with universities to modernize curricula and sponsor specialized training, helping bridge the gap between academic learning and industry needs. This approach directly addresses concerns about wage differentials and career development, making private technical roles more attractive.
- **Systemic Reforms:** Sustaining this cultural shift requires structural changes, such as revising promotion criteria in private firms to reward innovative work, expanding vocational training, and aligning skill-development pipelines with industry demand. Initiatives like Ashghal's announced increase in Qatarization rates and the Ministry of Labour's Erada Programme highlight new pathways for nationals to build specialized skills in engineering, IT, and AI (Ashghal 2022; MOL 2025a). Likewise, continued investment in vocational and continuing education - in line with the government's vision of a knowledge-based economy - helps reinforce the perception that private-sector STEM roles can be as stable and prestigious as public employment (Oxford Business Group 2019).

Altogether, these strategies aim to reshape how Qatari families and students view private-sector technical roles, positioning them as viable, prestigious career paths critical for Qatar's economic diversification and sustainable development.

2. Strategies for Advancement: Building Expertise Through Education and Experience

To equip nationals for high-skilled roles, Qatar has implemented a trio of interconnected strategies: international scholarships, local upskilling programs, and direct mentorship by expatriate experts. Each approach offers unique strengths, but their effectiveness depends on addressing specific obstacles. These strategies collectively aim to create a pipeline of talent capable of meeting Qatar's ambitious development goals.

2.1 International Scholarships: Tapping Global Knowledge

Scholarships to study abroad expose nationals to cutting-edge developments in STEM (Science, Technology, Engineering, and Mathematics), fostering expertise that can be repatriated to Qatar. In line with Qatar's evolving workforce needs, the Ministry of Education and Higher Education (MOEHE) has introduced an updated Government Scholarship Plan, offering fully funded opportunities for specialized fields such as engineering, AI, sustainability, and more. Official portals—such as scholarship.edu.gov.qa—provide details on majors, funding, and return

obligations, while recent news highlights 'outstanding opportunities for Qatari students' under this plan (The Peninsula 2024c; MOEHE n.d.b., 2024a).

- **Government Scholarship Plan (MOEHE):** According to recent announcements, outstanding opportunities exist for Qatari students under the updated Government Scholarship Plan, covering tuition, stipends, and specialized internships abroad. Official guidance on eligibility, fields of study, and return obligations is detailed on the ministry's portal (MOEHE n.d.c.). In July 2024, for instance, MOEHE held an informational session to highlight new partnerships with international universities and corporations for advanced degrees and research placements (MOEHE 2024a).
- **Amiri Scholarship Program (UDST):** Launched by the University of Doha for Science and Technology (UDST), this initiative provides top-performing Qatari students with opportunities to pursue specialized programs overseas, blending industry placement with academic coursework. The aim is to foster cutting-edge skills and practical knowledge in fields like sustainable energy, digital transformation, and advanced manufacturing (UDST 2024a).
- **Qatar Leadership Centre (QLC) International Fellowship:** Another key pathway for global exposure is the QLC International Fellowship 2025, which enables select mid-career Qatari professionals to engage in leadership development and strategic studies abroad (QLC n.d.). Fellows participate in internationally recognized programs, returning with skills and networks to strengthen Qatar's public and private institutions.

Table 1. International Scholarship Programs for Qataris (2024)

Scholarship Program	Field(s) of Study	Host Institutions
Government Scholarship Plan	STEM, Engineering, AI, Sustainability	Various global universities
Government Scholarship Plan	STEM, Engineering, AI, Sustainability	Various global universities
QLC International Fellowship	Leadership Development, Strategic Studies	International partner universities
Ministry-sponsored Specialized Scholarships	Advanced technical fields, Research	Prestigious international institutions

Reference Source: Based on Ministry of Education and Higher Education (MOEHE 2024a, n.d.c.), University of Doha for Science and Technology (UDST 2024a), and Qatar Leadership Centre (QLC n.d.).

2.2 Local Upskilling: Strengthening Domestic Capacity

Qatar's nationalization strategy leverages academic partnerships, knowledge transfer initiatives, and international collaborations to cultivate a skilled workforce. Below is a reorganized structure integrating key entities and programs:

2.2.1 Academic-Industry Collaborations

Qatar's universities and institutions partner with industry leaders to align education with economic priorities. Examples include:

- **Qatar University (QU):** Collaborates with QatarEnergy on renewable energy research and specialized engineering tracks (e.g., Environmental Engineering). Enrollment in QU's engineering disciplines has been on the rise, with many graduates moving into energy and infrastructure roles (QEWC 2018; QU 2024; The Peninsula 2025d).
- **HBKU:** Partners with global tech companies on AI, cybersecurity, fintech, and quantum computing. These include collaborations with Microsoft, Xanadu for quantum machine learning, and LCI-Qatar for lean transformation in the construction industry. According to HBKU's public statements, these partnerships help equip local students with advanced skills and hands-on research opportunities, supporting Qatar's shift toward a knowledge-based economy (HBKU 2019, 2022, 2024a).
- **MIE-SPPU & Ali Bin Ali Holding:** Focus on logistics and supply chain training via joint research and hands-on internships. A February 2025 report highlights how this collaboration fosters practical skill development aligned with market needs (The Peninsula 2025b).

Primary Focus Areas:

- Curriculum co-development with industry input.
- Applied research for sector-specific challenges (e.g., LNG expansion, smart cities).

Key Strategies:

- Corporate-sponsored labs (e.g., TASM Innovation Lab).
- Mandatory internships with QatarEnergy and QEWC.

Table 2. Academic-Industry Collaborations in Qatar (2024)

Institution/Program	Key Collaborators	Focus Areas
Qatar University	QatarEnergy, QEWC	Renewable Energy, Engineering
HBKU	Microsoft, Xanadu, LCI-Qatar	AI, Quantum Computing, Cybersecurity
MIE-SPPU	Ali Bin Ali Holding	Logistics, Supply Chain Management
Civil Service Bureau (CGB)	Global Consulting Firms	Data Analytics, Public Administration

Reference Source: Based on Qatar University (QU 2024), Hamad Bin Khalifa University (HBKU 2024a, 2022, 2019), The Peninsula (2025b, d), Consultancy-me.com (2023), and The Peninsula (2023).

2.2.2 National Knowledge Transfer Initiative

Government-led programs accelerate expertise in strategic sectors:

- **Civil Service and Government Development Bureau (CGB):** Recently signed a scope of work with leading entities under a knowledge-transfer program. The first cohort, launched in 2023, focuses on data analytics and modernization in public administration (The Peninsula 2023). Thirteen consulting firms have been selected to support specialized upskilling in areas like IT and project management (Consultancy-me.com 2023).
- **Ministry of Labour Collaboration:** The Ministry of Labour has launched the "Erada Programme" to develop the national workforce in artificial intelligence and digital transformation (MOL 2025a).

Primary Focus Areas:

- Leadership development in public and private sectors.
- Technical skills for economic diversification.

Key Strategies:

- "Train-the-trainer" models to sustain knowledge retention.
- Task forces pairing Qatari employees with global consultants.

2.2.3 Research & Innovation Grants

Funding programs drive R&D and commercialization aligned with national goals:

- **QRDI Council Grants:** Support high-impact projects in AI, sustainability, and healthcare, with Georgetown University in Qatar among the beneficiaries. The QRDI Council also operates INNOLIGHT, a national platform that connects researchers, innovators, and industry stakeholders to funding and collaboration opportunities (QRDI Council n.d.; AGS 2024; Georgetown University Qatar n.d.).
- **Green Growth Projects:** Collaboration with the Global Green Growth Institute (GGGI) on initiatives such as circular economy frameworks and renewable energy policy. Local innovators benefit from targeted grants to commercialize environmentally friendly solutions (GGGI 2023).

Primary Focus Areas:

- High-impact research in AI, climate tech, and healthcare.
- Bridging academic research with market needs.

Key Strategies:

- Competitive grants for Qatari-led startups.
- Industry-sponsored research chairs (e.g., sustainable energy).

2.2.4 International Partnerships

Global collaborations strengthen Qatar's innovation ecosystem:

- **Deerfield-QIA Fund:** A $500M fund-of-funds collaboration between Deerfield Management and the Qatar Investment Authority, with a regional office in Doha. This partnership mentors' local entrepreneurs and invests in biotech and tech startups (Deerfield Management Company, L.P. 2025).
- **Qatar Leadership Centre (QLC) International Fellowship**: Offers third- and fourth-year Qatari university students a structured leadership program, including preparatory modules in Doha and an international immersion experience to develop global competencies (QLC n.d.).

Primary Focus Areas:

- Attracting foreign investment in tech and sustainability.
- Knowledge exchange on global best practices.

Key Strategies:

- Co-funding ventures with international VCs.
- Joint workshops with organizations like NASA and the European Space Agency.

2.2.5 Workforce Development Policies

Policy frameworks ensure alignment with Qatar National Vision 2030 (QNV 2030):

- **Ministry of Labour Incentives:** Under Law No. (12) of 2024, the Ministry of Labour provides a legal framework to enforce Qatarization targets in the private sector, prioritizing strategic sectors such as finance, energy, and IT. The law is accompanied by incentives including wage support, training subsidies, and technical upskilling programs to enhance private-sector attractiveness. These measures are aligned with the National Strategy for an Effective and Highly Productive Workforce 2024–2030 (MOL 2024a, b).
- **STEM Advocacy:** National campaigns highlight technical careers. The Ministry of Education and Higher Education is expanding STEM-focused vocational education, with institutions like the University of Doha for Science and Technology and Qatar Aeronautical College leading the way (The Peninsula 2022b). ExxonMobil supports STEM capacity-building through its Teachers Academy, which trains Qatari educators in math and science instruction (ExxonMobil 2018). At the university level, women make up nearly 50% of engineering students at Texas A&M University at Qatar—twice the global average—reflecting social shifts and institutional support (The Peninsula 2018; QF 2018).

Primary Focus Areas:

- Reducing reliance on expatriate talent.
- Expanding vocational and STEM education participation, especially among youth and women.

Key Strategies:

- Enforcing Qatarization quotas in priority sectors with supportive incentives (e.g., wage support, training subsidies).
- Promoting public-private partnerships and STEM outreach campaigns, including teacher training and university-level initiatives.

2.3 Mentorship by Expatriate Experts: Fast-Tracking Skill Development

Mentorship programs pair Qatari nationals with seasoned expatriates to accelerate technical and leadership competencies in critical sectors.

2.3.1 Qatar Petroleum Mentorship Initiative

QatarEnergy offers extensive training and development programs aimed at enhancing the technical skills of both Qatari nationals and international employees. These initiatives are designed to build capacity, foster leadership, and enhance technical expertise, aligning with Qatar's National Vision 2030 (QatarEnergy LNG 2024).

- **Primary Focus**: Technical proficiency in LNG operations, project management, and safety protocols.
- **Key Strategies**: Structured mentorship pairings, regular performance reviews tied to career progression.

2.3.2 Qatar Computing Research Institute (QCRI) Mentorship

QCRI, part of Hamad Bin Khalifa University, delivers mentorship through initiatives like the MenaML Winter School, the Reyada Program, and the Mijhar Program. The MenaML Winter School, held in 2025, brought together 141 participants to explore machine learning through hands-on sessions with experts from QCRI, Google DeepMind, and InstaDeep. The Reyada Program provides 18-month support for entrepreneurship and research commercialization, while the Mijhar Program gathers feedback from industry and academia to enhance innovation impact (HBKU 2025c,d,e).

- **Primary Focus**: Innovation in AI-driven solutions and cybersecurity frameworks.
- **Key Strategies**: Hands-on project collaboration, support for commercialization of mentee-developed tools, and industry-academia engagement.

2.3.3 Challenges in Expatriate-Led Mentorship

Despite successes, challenges persist in expatriate-led mentorship programs. Research highlights that concerns about job security, role ambiguity, and a perceived lack of recognition can reduce expatriates' commitment to long-term mentorship efforts. These issues may hinder effective knowledge transfer and jeopardize program continuity in Qatar (Irfan et al. 2024).

- **Barriers**: Job security concerns among expatriates, limited motivation due to recognition gaps, and inconsistent program monitoring.
- **Solutions**: Incentivize mentors through bonuses or extended contracts; establish KPIs such as mentee promotion rates and measurable knowledge transfer milestones.

Table 3. Expatriate-Led Mentorship Initiatives in Qatar (2024–2025)

Program Name	Mentorship Areas	Implementation Method
QatarEnergy Mentorship Initiative	LNG Operations, Project Management	Structured mentoring with performance reviews
MenaML Winter School (QCRI/HBKU)	AI, Machine Learning	Workshops, hands-on sessions with experts
Reyada Program (HBKU/QCRI)	Entrepreneurship, Research Commercialization	18-month structured mentorship
Mijhar Program (HBKU/QCRI)	Innovation, Industry-Academia Collaboration	Feedback workshops and engagement sessions
Sidra Medicine Nationalization Initiative	Healthcare Management, Biomedical Research	Structured mentorship, career guidance and leadership
Qatar National Bank Leadership Mentorship	Financial Services, Corporate Leadership	Structured career development pathways, paired mentorship
Qatar Financial Centre Career Mentorship	Finance, Regulatory and Compliance	Cross-functional mentoring, career progression support

Reference Source: Based on QatarEnergy LNG (2024), Hamad Bin Khalifa University (HBKU 2025c, d, e), Sidra Medicine (n.d.), Qatar National Bank (QNB n.d.), and Qatar Financial Centre (QFC 2022).

3. Overcoming Barriers: Cultural, Financial, and Sectoral Challenges

Qatarization's advancement in high-skilled sectors requires addressing interconnected cultural, financial, and structural barriers while leveraging government policies and a collaborative ecosystem.

3.1 Key Challenges

3.1.1 Cultural Preferences

Research indicates that over 80% of employed Qatari nationals work in government roles, with only about 12% of unemployed Qataris open to private-sector jobs—citing long hours, lower social prestige, and pay disparities as deterrents (Middle East Council on Global Affairs 2023). This deep-rooted preference for public-sector work limits the appeal of technical roles in the private sector.

- **Primary Focus**: Shifting perceptions to elevate the value of technical careers (e.g., engineering, AI).
- **Key Strategies**: National campaigns promoting STEM role models; private-sector wage parity initiatives.

3.1.2 Corporate Training Investment

Private companies in Qatar have traditionally relied on expatriate labor and underinvested in training nationals. A lack of structured mentorship programs and skill-sharing schemes hampers the development of national human capital (Almeer, Bhatti, and Babar 2025).

- **Primary Focus**: Closing the private-sector training gap.
- **Key Strategies**: Government co-funded training, tax incentives for firms investing in upskilling.

3.1.3 Public vs. Private Divide

Despite national targets, the private sector struggles to attract Qataris due to lower compensation and weaker social recognition. High expectations for salary and career security—often reinforced by family pressures—exacerbate talent shortages in critical sectors like technology and tourism (Middle East Council on Global Affairs 2023).

- **Primary Focus**: Rebalancing employment toward private-sector growth areas (e.g., tech, renewables).
- **Key Strategies**: Wage subsidies for private-sector hires; hybrid public-private career pathways.

3.2 Enabling Factors

3.2.1 Government Support

The Qatari government enacted Law No. 12 of 2024 to accelerate Qatarization in the private sector, setting mandatory quotas and providing incentives for compliance (Crowell & Moring 2024; Deloitte 2024a,b; MOL 2024a). Qatar's Third National Development Strategy (NDS-3) aims to reach 20% Qatari workforce participation in private and semi-private sectors by 2030, backed by dedicated upskilling programs (NPC n.d.).

- **Primary Focus**: Policy-driven private-sector engagement.
- **Key Strategies**: Sector-specific Qatarization targets; grants for tech-focused training.

3.2.2 Collaborative Ecosystems

More than 300 companies have joined government-supported efforts to train and employ nationals. The Ministry of Labour has introduced job creation and mentorship initiatives in collaboration with leading firms, complemented by university-industry programs and career development schemes (The Shura Council 2023).

- **Primary Focus**: Academia-industry alignment for skill relevance.
- **Key Strategies**: Co-funded training labs; mandated internships for students.

3.2.3 Mentorship Success

Programs like Sidra Medicine's nationalization initiative have provided structured mentorship to Qatari professionals across healthcare and tech fields (Sidra Medicine n.d.). Similar mentorship models are being expanded in the energy sector through QatarEnergy's internal mentoring schemes that pair experienced technical staff with younger Qatari professionals to accelerate development in engineering and operations roles. In the finance sector, institutions like Qatar National Bank (QNB) and Qatar Financial Centre (QFC) have introduced structured leadership and career development programs targeted at nationals, with mentorship playing a central role in succession planning and talent retention (QatarEnergy n.d.; QFC 2022).

- **Primary Focus**: Scaling mentorship to emerging fields (e.g., AI, green tech).
- **Key Strategies**: Cross-sector mentor exchanges; KPIs for mentee promotions.

3.3 Emerging Challenges

3.3.1 Keeping Pace with Technological Change

Technological disruption is rapidly reshaping Qatar's job market. Demand for skills in AI, data analytics, and machine learning is rising sharply, as ICT spending is projected to reach $9 billion by 2024 (Fourrage 2024). To meet this demand, Qatar launched the National Cyber Security Academy in 2024 to train professionals in AI, cleantech, and cybersecurity across the GCC (ITA 2024,2025).

Public-private partnerships are also key: a 2025 agreement with Scale AI aims to deploy AI-powered tools and upskilling programs across government services (Mills 2025). At the same time, local institutions like Qatar Finance and Business Academy and CNA-Q are expanding data science and AI training to close persistent talent gaps (Skillfloor n.d.).

- **Primary Focus**: Future-proofing workforce competencies.
- **Key Strategies**: AI integration in public services, digital skills bootcamps, national AI training hubs.

3.3.2 Ensuring Digital and STEM Proficiency

Qatar's Third National Development Strategy (NDS-3) aims to increase the proportion of graduates in STEM disciplines from 10% to over 18% by 2030. To support this goal, the Ministry of Communications and Information Technology (MCIT) launched the Digital Skills Framework in February 2025 (MCIT 2025b). This framework identifies 115 digital skills across 19 key domains, categorized into four proficiency levels, providing a structured approach to digital upskilling. Additionally, the NDS-3 emphasizes enhancing career counseling and guidance for school students to boost higher education enrollment, particularly among Qatari males (PSA 2024; UPPERNEWS TEAM 2025).

- **Primary Focus**: Building a pipeline of digitally fluent professionals.
- **Key Strategies**: AI curriculum integration; STEM-focused scholarships and incentives.

3.3.3 Cultivating Lifelong Learning

Qatar is actively promoting lifelong learning to enhance workforce adaptability and support its digital transformation goals. The Ministry of Communications and Information Technology (MCIT) has developed the Digital Skills Framework, a national initiative designed to empower individuals and organizations with essential digital competencies. This framework encompasses 19 key digital skill domains and identifies 115 digital skills categorized into four proficiency levels, providing a structured approach to digital upskilling (MCIT 2025b; UPPERNEWS TEAM 2025).

Educational institutions are also contributing to lifelong learning. Virginia Commonwealth University School of the Arts in Qatar (VCUarts Qatar) offers a variety of Community and Continuing Education (CCE) short courses and workshops, catering to diverse age groups and interests (VCUarts Qatar n.d.,2025). These programs provide opportunities for individuals to acquire new skills and advance their careers.

Additionally, Qatar University's Community Service and Continuing Education Center provides training courses and certification programs aimed at professional development and personal enrichment, further supporting the culture of continuous learning (CCE n.d.).

- **Primary Focus**: Promoting a culture of continuous professional growth.
- **Key Strategies**: Implementing national digital skills initiatives; expanding access to community education programs.

Table 4. Barriers to Effective Qatarization in Private Sectors

Barrier	Description of Issue	Implication for Qatarization
Cultural Preferences	Strong preference for public-sector employment	Limits interest in private-sector technical roles
Corporate Training Gap	Insufficient private-sector investment in national training	Slows skill development and capacity building
Wage Disparity	Higher compensation in public than private sector	Makes private sector less attractive
Family Expectations	Preference for stable, prestigious government roles	Reduces participation in private-sector roles

Reference Source: Based on Middle East Council on Global Affairs (2023), Almeer, Bhatti, and Babar (2025), Amin, Khoulood and Evren (2024), and Al-Mohannadi (2025).

4. Conclusion

The advancement of Qatarization in high-skilled sectors represents a strategic intersection of governmental vision, private-sector collaboration, and cultural adaptation. While substantial strides have been achieved in STEM education, international scholarship programs, expatriate mentorship initiatives, and industry-academia partnerships, ongoing cultural, financial, and

structural barriers continue to present challenges requiring targeted interventions aligned with Qatar National Vision 2030.

Transitioning to a knowledge-based economy necessitates reducing skill gaps, promoting innovation, and cultivating greater national participation in private-sector roles. Strategic adjustments to labor policies and targeted incentives are essential to correct systemic imbalances, notably the preference for public-sector employment, limited investment in private-sector training, and challenges posed by rapid technological advancements.

Sustaining progress requires strengthening integrated workforce ecosystems by enhancing collaboration between academia, industry, and government. Expanded internship opportunities, comprehensive mentorship programs, and robust incentives for private-sector training investments can significantly alter employment preferences and build local capacity. Additionally, targeted cultural campaigns promoting technical careers as prestigious and vital for national development will be critical.

Emphasizing digital and STEM proficiency through scalable e-learning platforms, adaptive education programs, and continuous professional development initiatives will future-proof the workforce against emerging technological disruptions. Prioritizing lifelong learning and agile policy frameworks will further ensure that Qatarization policies remain effective and relevant amid changing market demands and global innovation trends.

Key Takeaways:

1. **Integrated Workforce Ecosystems:** Foster closer collaboration between academia, industry, and government through structured internships, apprenticeships, and mentorship programs aligned with market needs.
2. **Private-Sector Incentivization:** Enhance incentives for private-sector entities to invest substantially in national training, especially in STEM and emerging technology sectors, to bridge existing skill gaps.
3. **Cultural Recalibration:** Launch targeted national campaigns to reshape cultural perceptions, enhancing the appeal and prestige of technical and private-sector careers.
4. Digital and STEM Upskilling: Scale and diversify digital learning platforms and STEM education initiatives, promoting workforce agility and adaptability in the face of technological advancement.
5. **Policy Agility:** Continuously update and recalibrate Qatarization strategies and labor policies to align with technological progress and evolving market requirements.
6. **Sustainable Development:** Integrate workforce equity into corporate practices to ensure fair, merit-based career advancement opportunities for nationals, reinforcing long-term sustainability.

Ultimately, Qatar's successful economic diversification and workforce development depend on the proactive harmonization of cultural attitudes, strategic policy adaptation, and dynamic private-sector involvement. Organizations embracing these strategic imperatives will play pivotal roles in achieving Qatar's objectives of economic resilience and sustainable national growth.

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