

# Challenges of the Knowledge Society: Exploring the Case of Qatar

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**Abstract:** *Qatar's Permanent Constitution and National Vision 2030 constituted the turning point in Qatar's transition toward knowledge society. Articles 22-49 of Qatar's Permanent Constitution together with the 4 pillars of Qatar's National Vision 2030 explicitly refer to the importance of knowledge acquisition, production and dissemination, and promotion of human socio-economic development. Qatar has remarkably invested in education, human capital, R&D, and ICT. Institutions such as Qatar Foundation (QF) and its entities like Qatar National Research Fund (QNRF), Qatar Science and Technology Park (QSTP), in addition to Qatar University and ictQatar are in the heart of Qatar's knowledge society construction. Moreover, Qatar has capitalized in importing existing organizational capacity, faculty and staff, and accumulated reputation of a number of eminent global higher education institutions such as Georgetown University, Texas A&M University, and Weill Cornell Medical College. Despite many years of substantial investments in human capital, ICT and the relevant infrastructures, Qatar's transition toward knowledge society is facing serious challenges. These challenges relate to reform and development of education and training to make knowledge as a principal driver of growth, diversification of the economy to ensure endurance of adequate revenues to fund projects, resolve the expatriate and workforce issues to ensure equilibrium and efficiency, efficient management of growth and uncontrolled expansion to avoid duplication of works and waste of resources, good governance across government and private sectors projects to cope with modernization, professionalism and transparency, balancing between modernization and preservation of traditions to respond to globalization without losing the identity, balancing the rights of the present and future generations to uphold justice, and sustain the environment to make it healthy for living. The aim of this paper is threefold: Outline the main features of Qatar society, highlight the status quo of Qatar knowledge society and explore the major challenges for it.*

**Keywords:** *Knowledge Society, Qatar, Tradition, Modernization, Challenges*

## 1. Introduction

Qatar has emerged as a renowned country for its remarkable achievements in education, human development, economy, media and politics despite its relatively small geographical and population size. In recent years, Qatar has become eminent to the international community because of hosting the 2022 World Cup, having Al-Jazeera Agency Networks, its humanitarian support to victims of war and conflicts zones including Syria, Yemen, Libya, Sudan, and for its successful mediation and conflict resolution efforts particularly in the Middle East such as resolving the conflict between Djibouti and Eritrea, Sudan and Chad, also the internal conflicts between Sudan and Darfur opposition, the Palestinian Authority or more specifically Fatah and Hamas in Palestine. Few decades ago, the state and society in Qatar were traditional in values, social, political and economic institutions. The country's economy was solely depending on hydrocarbon resources and almost all projects were funded from oil and gas revenues. However, the enormous transition took place since the ratification the Permanent Constitution in 2004 and the approval of the vision 2030 in 2008. The case of Qatar is worth investigating to understand how the country is transitioning from traditional society to dynamic knowledge society and economy and analyzing key challenges ahead. This research is descriptive and analytical however; it includes some normative perspectives as the author uses the participant observation method to incorporate some insights from his work experience as a full time employee of HBKU for more than 4 years also for working almost two academic years as an Assistant Professor of Sociology with Qatar University. The author has also been participating and attending several knowledge production and dissemination events in Qatar. The significance of this study stems from being quite comprehensive in terms of the scale of topics covered, most updated in terms of data, and original in terms of referring to primary sources and references. Therefore, this paper begins with analyzing the main features of Qatar traditional and modern socio-cultural, economic and

political setup. It then investigates the challenges to Qatar's evolution toward knowledge society. The author concludes that Qatar's development to knowledge society is crippled with major challenges however; the country got what makes it succeed essentially the political will, National Vision, economic wealth, right infrastructure, institutions in place, and the human capital.

## 2. Country profile

In this part of the analysis, it is important to provide a concise overview on Qatar's geography, history, socio-cultural, political, demographic, and economic background. Qatar is a relatively small peninsula located in the midst of the western coast of the Arabian Gulf with some islands namely Halul, Shira'wa, and Alashat. The total area of Qatar is approximately 11,627 sq. km and it shares a land border with the Kingdom of Saudi Arabia to the South and maritime border with Bahrain, the United Arab Emirates and Iran. It occupies a strategic location in the central Arabian Gulf near major petroleum deposits. (Hukoomi n.d.; Al-Sharqawi 2013, 189) Qatar has been inhabited since 4000 BC. The origin of the name is uncertain, but according to some references it dates back at least 2,000 years since the term "Catharrei" was used to describe the inhabitants of the peninsula by Pliny the Elder (1st century A.D.), and a "Catara" peninsula is depicted on a map by Ptolemy (2nd century A.D.) The Ottomans ruled it for four consecutive centuries until 1915 then it became a British protectorate from November 3, 1916 until it gained independence on September 3, 1971 during the rule of the former Emir Sheikh Ali bin Abdullah Al-Thani who is a decedent of Al-Thani family, which ruled the country since 1868 A.D. The Al-Thani family descends from Al-Ma'adhid who are from Tamim clan, which is a branch of the tribe of Wahba. They migrated from Najd region in Saudi Arabia and settled in Qatar peninsula (Al-Sharqawi 2013, 196-198; Hamdan 2012, 111-113; Central Intelligence Agency n.d.) Qatar society traditionally consists of nomadic Bedouin tribes, Indian and Iranian-trading families clustered in villages of Doha, Al-Wakra, Al-khor and Al-Zubara. The inter-tribal relations were unofficial and based on personal relationships between the tribe-chiefs who enjoy absolute power. The Qataris are simple, easygoing, kind people who engaged in farming, hunting, fishing, pearling and trade. Their social and cultural values such as tolerance and generosity are rooted in the Islamic tradition. They are family oriented people, consanguinity and arranged marriages are widely practiced, segregation of males and females in education and work places is enforced, and respect of kinship ties and the elderly is widely observed. Before, the discovery of oil and gas Qatar was a poor small nation; less than 35,000 people, which receives financial aid from Great Britain in return for protection. However, after the discovery of oil in 1939 and the establishment of Qatar Petroleum Company which started exporting oil in 1949, as World War II interrupted oil production, the society undergone remarkable changes. These changes could be attributed to the huge positive impacts of oil and gas revenues on the welfare of the people, the increase of the government investment in improving the infrastructure and funding development projects, and the flow of migrant laborers who were recruited from many countries including India, Iran, Palestine, Egypt, and the Philippines to work in the oil and gas industry, construction projects, in other government and private sectors in addition to foreign investors who found the country safe, stable and promising for business opportunities and maximizing the profit. Among the significant changes in the Qatari society is the empowering of women to study, work and lead. The generous scholarship for those Qataris who studied abroad whether in the Arab countries or in Europe and America, helped in bringing knowledge and skills to the country. The two significant factors that have been driving the changes in the country are the high integrity and political will of the leaders and the huge investment in human capital in general and in education, healthcare, and innovation in particular. This made Qatar enjoys prominent positions in human development, literacy, diplomacy, and humanitarian works at the regional and international levels. For instance according to the data provided by the World Intellectual Property Organization (WIPO) in 2016, Qatar filed 142 applications for intellectual property 48 of which have been granted, submitted 690 patent applications, and lodged 3,328 trademark submissions. The top Patent Cooperation Treaty Applicants in 2017 are Qatar Foundation with 10 applications and Qatar University with three applications. (Hamdan 2012, 25-51, 104-159, 179-183; Weber 2014, 63-65; WIPO n.d) As of 1 February 2018, the population clock indicates that Qatar has a population of over 2.7 million with a gender distribution of over 2 million males and approximately 0.7 million females. The total population includes 11.6% or approximately 310,000 Qatari and 88.4% non-Qatari mainly male immigrant workers who arrive in Qatar on work visas without their families, making the country number 143 in the world and the population growth rate estimated at 2.27%. Qatar is a young society, the median age of population is 33.2 years, and more than 25% below 25 years, over 70% below 55 years, only 1% above 65 years and the life expectancy rate is 78.9 years. Over 99% of the population lives in Doha city and suburb on the eastern side of the peninsula with a considerable community clustered in Dukhan and Al-Khor villages. Arabic is the official language in Qatar and English is commonly used as a second language. Islam is the official religion of

the State of Qatar and the Islamic Law (Sharia) is the principal source of legislation. The Qataris are generally conservative Sunni Muslims but there are other religious groups living in Qatar namely Christian, Hindu and Buddhist. Public spending has witnessed and increase in the pace of the economic development to achieve Qatar National Vision 2030, therefore Qatar earmarked 3.5% of GDP for public spending on education. The youth literacy rate is above 98% of the total population and the unemployment rate is 0.3%. (Hukoomi n.d.; Ministry of Development Planning and Statistics n.d.; Al-Sharqawi 2013, 189; World Economic Forum 2016; Central Intelligence Agency n.d.) Historical sources indicate that the founder of the Al-Thani monarchy in Qatar was Sheikh Muhammad bin Thani who officially ruled the country from 1868 to 1876 and died in 1879. While investigating the political history of Qatar, one cannot overlook Sheikh Khalifa bin Hamad Al-Thani who was born in 1932, took power on 22 February 1972 and ruled the country until 1995. Perhaps he could be considered as the real founder of the State of Qatar because of amending the Provisional Constitution, forming the first Council of Ministers, establishing the different government structures such as the Ministries, Shura (consultative) council, and the Audit Bureau. He also expanded and strengthened Qatar's foreign diplomatic relations and increased the number of agreements and contracts with oil and gas international corporations such as OMACO, Standard Oil of Ohio and Elf Aquitaine. It is also very important to mention the great contribution of His Highness Sheikh Hamad bin Khalifa Al-Thani, the Father Emir, who ruled Qatar from July 27, 1995 to June 25, 2013. Many observers view His Highness Sheikh Hamad as the father founder of modern Qatar. He is directly credited with many of the huge changes in almost all aspects of the Qataris life particularly education, socio-economic, political, and media that occurred through his visionary and outstanding leadership. It is worth mentioning that the Permanent Constitution of the State of Qatar and Qatar National Vision 2030 were drafted, ratified and came into effect during his rule. Moreover, in a unique act in modern political history especially in the Middle East, HH Sheikh Hamad peacefully abdicated on June 25, 2013, and transferred power to his son the current Emir His Highness Sheikh Tamim bin Hamad Al-Thani who became the 9th Emir since the beginning of the rule of Al-Thani. (Hamdan 2012, 111-126, 155; Weber 2014, 63) Qatar is one of the world's most dynamic and fastest growing economies. According to the official figures, the Qatari economy grew by 2.2% in real terms in 2016 reaching QR796.2 billion (approximately US\$219 billion) and the IMF projects an overall 2.6% GDP growth for 2018. With its US\$124,900 GDP per capita in 2017, Qatar ranks as the wealthiest nation of the almost 200 countries in the world. Qatar booming economy enabled the country to invest in general infrastructural development and mega projects in line with Qatar National Vision 2030. Few examples could be cited here including US\$11 billion for Doha International Airport, US\$5.5 billion for new Doha Port, US\$25 billion for Doha Rail and US\$45 billion for Lusail which is considered as 'Qatar Future City'. Qatar's industries include natural gas, crude oil production and refining, ammonia, fertilizer, petrochemicals, and steel reinforcing. Despite the dominance of oil and gas sector, other non-hydrocarbon sectors such as manufacturing, financial services and construction has grown by 5.6% or QR21.4 billion (approximately US\$0.66 billion) to reach QR400 billion (approximately US\$110 billion) in 2016. Oil and gas revenues stood as QR132.9 billion (approximately US\$36.5 billion) in 2016 comparing to QR170.6 billion (approximately US\$47 billion) in the previous fiscal year, recording a decline of 22.1% due to the decline in oil and gas prices. In addition, public revenues fell by 12.2% or QR161.2 billion (approximately US\$44.5 billion) public expenditures increased by 11.6% in order for the government to ensure continuity of public projects and infrastructure to realizing Qatar National Vision 2030 in human, social, economic and environmental development. The low oil and gas prices, the decline in public revenues and the rise in public spending caused a budget deficit of QR49.858 billion (approximately US\$14 billion) comparing to approximately US\$1.6 billion budget deficit in previous fiscal year. However, Qatar Sovereign Wealth Fund (SWF) currently stands at US\$335 billion that backs Qatar's booming economy and society. (Ministry of Development Planning and Statistics n.d.; Qatar Central Bank 2016, 21-48; IMF n.d.; Weber 2014, 64)

### **3. Key Constituents of Qatar's Knowledge Society**

It is important for any investigation on Qatar's evolvement to a dynamic knowledge society to bring into limelight the key foundations, institutions, stakeholders, partners and highlight their role, efforts, and contributions to the transition toward knowledge society. These constituents include the Permanent Constitution of the State of Qatar, Qatar National Vision 2030, Qatar University (QU), and Qatar Foundation for Education, Science and Community Development (QF) and its entities, and ictQatar.

#### **1. The Constitution of the State of Qatar**

The Provisional Constitution of Qatar was issued on April 2, 1970 and thus the first Council of Ministers was formed on May 28, 1970 however, the amended version was issued and came to force in the Sate on April

19, 1972. (The Permanent Constitution of the State of Qatar 2004; Hamdan 2012, 116) During the rule of the Father Emir HH Sheikh Hamad bin Khalifa Al-Thani, a constitution committee was formed by the Emir decree in July 1999 and submitted the draft of the constitution in July 2002. The Permanent Constitution of the State of Qatar passed the referendum on 29 April 2003 with 96.6% majority votes. It was ratified on 8 June 2004, and came into effect on 9 June 2005. (The Permanent Constitution of the State of Qatar 2004; Hamdan 2012, 122; Al-Sharqawi 2013, 69-71) The new constitution establishes the main foundations of the community, accomplishes the people's participation in decision-making and guarantees their rights and freedoms. It includes 150 articles that regulate all aspect of life in the country pertaining to rights and duties. For instance, articles 22, 24, 25 and 49 explicitly refer to the right to education and emphasize on the role of the state in promoting sound education, fostering and encouraging scientific research, helping disseminate knowledge in addition to making general education compulsory and free of charge. It is worth mentioning in this context that while article 21 focus on preserving the family, supporting its structure and protecting women, children and the elderly, article 23 refers to the state's obligation to foster public health, provide the means of prevention of disease and epidemics and promote cure. Ensuring the public welfare, raising the standard of living and insuring fundamental freedoms such as freedom of expression, freedom of scientific inquiry, freedom of media, and freedom of worship are guaranteed by articles 28, 47, 48 and 50. It is essential to note that articles pertaining to citizens' rights and liberties cannot be amended. (The Permanent Constitution of the State of Qatar 2004)

## **2. Qatar National Vision 2030 (QNV)**

QNV was published in July 2008. It is based on the guiding principles of the Permanent Constitution of Qatar besides it has emerged from intensive consultation across Qatari society. The Vision defines broad future trends and reflects the aspirations, objectives and culture of the Qatari people. It provides a framework within which national strategies and implementation plans can be developed. The Vision rests on four pillars which are (a) Human development to enable its people to sustain a prosperous society, (b) Social development to build a just and caring society based on high moral standards and capable of playing a significant role in the global partnership and development, (c) Economic development of competitive and diversified economy capable of meeting the needs of, and securing a high standard of living for all its people, for the present and future, and (d) Environmental development that maintains balance and harmony between economic growth, social development and environmental protection. In this Vision, Qatar has explicitly indicated the need to shift from the reliance on hydrocarbon revenues to knowledge production activities particularly education, research, patenting, intellectual property, peer-reviewed science and engineering papers and media. In summary, the Vision outlines how Qatar will use the vast revenues from its substantial hydrocarbon resources to transform itself into a modern knowledge-based society. The vision regards the people of Qatar as key to achieving its aim, and the plan places developing human capitals as the fundamental priority for the next 15 years. The Vision is being implemented in a series of five-year strategic plans. The strategic plans will help the nation to realize the Vision by setting and prioritizing concrete goals with time-bound targets. It will also articulate the necessary processes, stakeholders' roles, and the expected standards which are needed to deliver on the Vision. (QNV 2008, 1-2, 10-34; Weber 2014, 61) It has been stated in the introduction of the second Qatar National Development Strategy 2018-2022 that the Strategy builds on the achievements of the first strategy 2011-2016 and focuses on attaining eight objectives which are; (a) focus on people because they are both the means and target of development, (b) ensure clarity of national priorities included in the strategy, (c) ensure clarity and realistic identification of goals and expected results, (d) ensure clarity in roles and responsibilities in executing programs and projects, (e) strengthening the relationships between the different strategies and executive plans and the allocated budget, (f) improving the mechanisms of monitoring and follow up, (g) develop and modernize the administration particularly in the financial, human resources, technology and legislative sectors, and (h) design a comprehensive communication strategy which includes a coordination mechanism in each sector and in between the sectors and all stakeholders engaged in executing the strategy. The strategy consists of 15 chapters beginning with the achievements and lessons learned from the first strategy covering almost all areas of sustainable development such as education, health, human capital, culture, sports, administration, infrastructure, environment and economy diversification. (MDPS 2018)

## **3. Qatar Education System**

Traditional education in Qatar before the 1950s was based on few schools and informal classes (kuttab) offering religious, Qur'an reading and reciting, and Arabic language lessons. Traditionally trained teachers usually conduct these classes at mosques or at home. Some families have sent their children to pursue their traditional studies abroad mainly in Egypt and Lebanon. Qatar's modern education system officially began in 1951 by establishing the Ministry of Ma'arif (education) by which the state became directly responsible and

involved in supervising and developing it from all angles, in addition to allocating substantial budgets. The education system is guided by three principles; protecting the heritage of the Muslim nation, preserving the Arab-Islamic identity of the people, and developing the education system and curricula through benefiting from the modern era achievements in technology and educational methods and techniques. Modern public schools and relevant infrastructures were built in the 1950s and 1960s. For instance, the first school for boys established in the school year 1952-1953, the first school for girls established in the academic year 1954-1955, adult and illiteracy education began in 1954. The first secondary school for boys began operating in 1961 and the first secondary school for girls started operating in 1965. The tertiary education system began with the establishment of the College of Education in 1973 with a vision to place education as a priority in the country's expansion. In its first year, the College enrolled 57 male and 93 female students. The primary, secondary and vocational education has remarkably expanded throughout the years because rapid demographic growth and the government support and spending on education infrastructure, employees and development. For instance, the government covers costs of schooling in public schools and provides textbooks, stationary, health services, electricity and water free of charge. The Supreme Education Council (SEC) founded in 2002 and the Emir of the State himself oversees it. SEC is the highest educational authority responsible for the education policy, planning, development and enforcement. It includes three executive departments that are the department of education, the department of evaluation, and the department of higher education (Hamdan 2012, 199-207; Al-Sharqawi 2013, 203-206; Powell 2014, 258-259)

#### **4. Qatar University (QU)**

Due to the country's rapid development and need to provide additional areas of specialization, QU was founded in 1977 as the national institution of higher education in Qatar. It became the home of four new colleges namely College of Education, College of Humanities and Social Sciences (currently named College of Arts and Sciences), College of Sharia, Law and Islamic Studies (currently became two colleges; College of Sharia and Islamic Studies and College of Law), and the College of Science which later became part of the College of Arts and Sciences. Thereafter, the College of Engineering was founded in 1980, the College of Business and Economics in 1985, the College of Pharmacy in 2008, the College of Medicine in 2014, and the College of Health Sciences in 2016. The university is also the home of more than 15 research centers, which strive to make an impact on a global scale. These research establishments include Gas Processing Center, Biomedical Research Center, Qatar Mobility Innovation Center, Center for Sustainable Development, Social and Economic Research Institute, and Gulf Studies Center. QU currently boasts a population of over 20,000 students, and an alumni body of over 40,000. It also employs over 2,000 local and international highly experienced teaching and research faculty. QU faculty members are not only engaged in teaching, research and student care, but also contributes actively to the needs and aspirations of society and present their expertise in the media. In 2003, the University embarked on an ambitious reform plan to increase the efficiency of its administrative and academic processes, and promote quality education. To this end, a university-wide Strategic Plan 2010-2013 was launched focusing on efficient and effective services, and research, leading to the establishment of the Office of Academic Research in 2007, which oversaw a growing number of high-profile satellite research centers. Community service also became a large focus, and many facilities and services were enhanced and expanded upon, to meet the needs of the public. Qatar University has recently launched its five-year strategy (2018-2022) 'From Reform to Transformation'. This strategy is aligned to Qatar National Vision 2030 and seeks to promote excellence in four key areas; education, research, institution, and engagement with a view of occupying an outstanding position in the map of excellent education providers at the international and regional levels. (Hamdan 2012, 207; Qatar University n.d.)

#### **5. Qatar Foundation for Education, Science and Community Development (QF)**

QF was founded by His Highness Sheikh Hamad Bin Khalifa Al-Thani, the Father Emir, and his wife Her Highness Sheikha Moza bint Nasser in August 1995. QF is the largest private non-profit organization in Qatar dedicated to helping shape the future of the Qataris through advancements in education, R&D, and community development. The foundation aims at making Qatar a vanguard for productive change in the region and a role model for the broader international community. Through its wide range of activities and institutions, the Foundation promotes a culture of excellence and furthers its role in supporting an innovative and open society that aspires to develop sustainable human capacity, social, and economic prosperity for a knowledge-based society. It is worth emphasizing that the Sidra tree (*Ziziphus spina-christi*) in the logo of QF symbolizes the essence of the vision and mission of the organization. The Sidra is a native tree, which could be found throughout the country, especially in northern and central Qatar. It grows in the wild and flourishes in the harsh and arid climate. With its roots bound in the soil and its branches reaching upwards toward perfection, it is a symbol of

solidarity and determination. The Sidra tree's deep roots regarded as a strong anchor, connecting contemporary learning and growth with the country's culture and heritage. Poets, scholars and travelers would traditionally gather in the shade of the Sidra's spreading branches to meet and talk. This aspect of the Sidra tree's role is reflected in QF's commitment to education and community development as well as being a naturally healthy and comfortable place at which to gather and exchange knowledge and opinions. The tree's fruit, flowers and leaves provide the ingredients for many traditional medicines, which reflects QF's science and research objectives. The branches of the Sidra tree represent the diversity of QF today. The leaves, flowers and fruits equate to the individual lives that the tree nourishes, with the fruits going on to produce seeds that guarantee sustainability and a healthy future. Hence, the Sidra tree is perhaps the most prominent tree in Qatar and it certainly occupies a special position in the hearts of the Qatari people that is why it stands out as the perfect symbol for the vision and mission of QF. The foundation is the largest organization in Qatar and it consists of around 50 entities. (See examples in Table 1) QF Education City is a 2,500-acre campus launched in 2003 and today it is the home of Hamad Bin Khalifa University (HBKU), eight of the eleventh International Branch Campuses (IBCs) of worldly renowned universities such as Georgetown University, Texas A & M, Weil Cornell Medical College in addition to several research establishments. The attempt to circumscribe all QF entities is not the purpose of this paper hence few key entities will be introduced here. (Qatar Foundation n.d.; Al-Sharqawi 2013, 216-217; Hamdan 2012, 207; Powell 2014, 269)

**a) Hamad Bin Khalifa University (HBKU)**

HBKU was founded in 2010 with a vision to be an innovation-based entrepreneurial university leading in education and research, solving critical challenges facing Qatar and the world. HBKU today has five colleges; College of Islamic Studies, College of Science and Engineering, College of Law and Public Policy, College of Humanities and Social Sciences, and College of Health and Life Sciences. In addition to a number of research institutes and centers including Qatar Biomedical Research Institute (QBRI), Qatar Environmental and Energy Research Institute (QEERI), Qatar Computing Research Institute (QCRI), Qatar Cardiovascular Research Center (QCRC) and the Research Center for Islamic Legislation and Ethics (CILE). The University offers 17 programs such as multidisciplinary PhD in Genomics and Precision Medicine, and MA in Digital Humanities and Societies. HBKU employs 75 faculty members and enrolls over 625 students from 57 nationalities, 41% of them are Qataris. QScience.com, which is an open access academic journals platform, initiated by QF and was first launched on 13 December 2010. It signified QF commitment to disseminate research to the widest possible international knowledge seekers. The pioneer publications were in the fields of medical studies and practices particularly cardiology and heart disease treatment. Articles have to be submitted online and international experts rigorously review every article. QScience has become a part of HBKU Press and it is today the online home for a growing range of peer-reviewed open access journals that publish the latest research and reviews in Medicine and Bioscience, Healthcare, Social Science, Islamic Studies and Engineering. QScience has more than a dozen of affiliated peer-reviewed journals such as Global Cardiology Science and Practice, Journal of Emergency Medicine, Trauma Acute Care, Qatar Medical Journal, Near and Middle Eastern Journal of Research in Education, Religions, and QScience Connect. QScience journals have won the recognition of renowned international data bases such as PubMed Central and the premier full-text database of medical articles. This means that all articles published on the database will have a much higher visibility among the global research community. (Hamad Bin Khalifa University n.d.; QScience.com n.d.)

**b) International Branch Campuses (IBCs)**

Qatar has invested substantially in attracting the best international higher education institutions to open branches in Doha. Comparing to GCC, Qatar differ immensely in the scale of investment, the number of universities and the variety of programs offered. In the period from 1998 to 2012 Qatar entered into agreements with 11 international prominent higher education institutions from USA, Canada, UK, France and the Netherlands. These universities aim to prepare students for employment as well as for global citizenship by emulation of global principles and norms adapted to local or national contexts of Qatar. QF Education City hosts eight branch campuses; six American universities, one from UK and one from France. The IBCs offer specializations and programs such as medicine and health sciences, engineering and applied sciences, IT and design, foreign affairs, journalism, and tourism and hospitality. (See Table 2) These institutions bring their own principles, personnel, and student culture. Some researchers noted that the investment in inviting IBCs have been oriented mainly to Western models without sustained reflection on and tackling all of the contextual condition needed to implement and sustain them. (Ministry of Education and Higher Education n.d.; Hamdan 2012, 123; Powell 2014, 259- 270)

**c) Qatar Science & Technology Park (QSTP)**

QSTP was inaugurated in 2009 and it is located in QF Education City as a part of QF R&D and incubator for technology production development in Qatar. The park fosters an innovation and entrepreneurship ecosystem in Qatar that works to accelerate commercialization of market-ready technologies to realize Qatar's national diversification drive. It focuses on four overarching themes; Energy, Environment, Health Sciences, and ICT. QSTP is a leading institution committed to investing in new technology development programs, creating intellectual property, enhancing technology management skills, and developing innovative new products. QSTP does not only support the economic and human development objectives for Qatar through incubation, funding, training, and mentorship, but also increasingly becoming a recognized regional and international hub for applied research, innovation, development, and entrepreneurship. QSTP has developed a smart partnership with a variety of stakeholders including QF research institutes and the private sector to accelerate product innovation, encourage new product and services development, and boost the commercialization of scientific research. QSTP is a free zone that hosts more than 50 local and international companies such as ExxonMobil, SIEMENS, AIRLIFT, MEDI, Vodafone and QNB. It offers various benefits to local and international entities including 100% foreign ownership, operate as a local company or as a branch of a foreign company, hire expatriate employees, tax-free, duty-free import of goods, equipment and tools into the free zone, and unrestricted repatriation of capital and profits. It provides two types of funds: (a) Product Development Fund: funding for small and medium-sized enterprises (SMEs) and startups that develop products and services relevant to the local market needs, and (b) Tech Venture Fund: provides an opportunity for tech founders and entrepreneurs to source seed-stage capital when they are first embarking on their journey. Besides, QSTP work on student development and exposure to see what is happening on the other side of the world; discover their potential, open up their horizons and meet people who disrupt the world and enhanced peoples' lives by organizing students' innovation trips for instance trips to the Silicon Valley, the world's leading hub for innovation and technology development, and engage the students in a summer training program provided by the European Innovation Academy (EIA). (QSTP n.d.)

**d) Qatar National Research Fund (QNRF)**

QNRF was inaugurated in 2006 and it has reached cycle 11 for funding. It is currently located within the premises of QSTP in Education City. QNRF's vision is to enable research and development excellence in Qatar in order to achieve a knowledge-based economy. It aims to foster original, competitively selected research in engineering and technology, physical and life sciences, medicine, humanities, social sciences and the arts. It encourages dialogue and partnership, and currently focuses on optimizing resources, encourages innovative research, and is moving from predominantly investigator-driven research to mission-driven research. QNRF provides funding for research projects in three main areas; Research, Capacity Building and Development Programs, and K-12 Programs. Under each area QNRF funds various research program projects, initiatives, competitions and awards comprising the National Priorities Research Program (NPRP), the Thematic and Grand Challenges Research Program (TGCRP), Technology Development Fund (TDF), Undergraduate Research Experience Program (UREP), Qatar Research Leadership Program (QRLP), National Scientific Research Competition, and Managing Award. Submission for research fund is open for local and international researchers and organizations. For example, the NPRP funding award is up to four years where funds for a one-year project may not exceed US\$200,000, US\$400,000 for a two-year project, US\$600,000 for a three-year project and US\$700,000 for a four-year project. For example, QNRF awarded over US\$53 million of research grants to investigators in Qatar in 2012. Among the completed researches DeSIGN: Guided Practice for Sign Language that is an educational software application for deaf and hard-of-hearing students, which provides guided communication practice using sign language. The DeSIGN tutor utilizes a knowledge-tracing algorithm to adapt its tests to the learning level of the students. Another successful research was about wind and wave studies in Qatar where for the first time, fine detail about the wind and wave conditions around the coast of Qatar has been recorded by arranging the most sophisticated equipment available on the edge of a 500-meter pier extending into the Gulf. This replaced the very poor models to track winds and waves and helped marine life and the offshore oil and gas industry, and renewable energy initiatives. (QNRF n.d.; Weber 2014, 77-78)

**e) World Innovation Summit for Education (WISE)**

WISE was initiated by QF under the leadership of Her Highness Sheikha Moza bint Nasser in 2009 and thus the first WISE was held in Doha from 16-18 November 2009. It is an international, multi-sectorial platform for creative thinking, debate and purposeful action. The WISE community is a network of education stakeholders; from students to decision-makers, coming from about 200 countries that share ideas and collaborate to seek creative solutions to solve challenges facing education. WISE has become a global reference for innovative approaches to modern education. While WISE leaders recognize the gap between the technology and healthcare sectors and education where the latter is lacking innovative approaches in both policymaking and in the

classroom, they envision education as the key to addressing the toughest challenges facing communities around the world today. These challenges particularly include eradicating poverty, resolving conflicts peacefully, eliminating inequality and injustice, reducing unemployment, enhancing environmental sustainability and being ready to respond to future challenges. Therefore, WISE is a response to the necessity of revitalizing education and providing a global platform for the development of new ideas and solutions. Since 2009, WISE continues to generate fruitful dialogue and productive partnerships. The WISE research reports produced in collaboration with recognized experts from around the world, address pressing global education issues and reflect the priorities of the Qatar National Research Strategy. It is important to emphasize that these timely, comprehensive reports feature action-oriented recommendations and policy guidance for all education stakeholders, offering concrete, improved practices in specific contexts such as school leadership and collaborative professionalism, design thinking, apprenticeship, disability, early childhood education, and migration. The reports are available on the WISE website and through the mobile application in addition to a limited number of printed editions in English and Arabic. (WISE n.d.; Hamdan 2012, 199-200) The 9th edition of WISE took place on 14-16 November 2017 in Doha under the theme 'Co-Exist, Co-Creat: Learning to Live and Work Together'. A large number of educationists and opinion makers from around the world have participated in the summit to address important education challenges in times of disruption and economic uncertainty stemming from conflict, mass migration, growing inequality, on-going, rapid technological change and other forces. The 2017 WISE Summit was an opportunity to rethink and reorganize the way learning is delivered in an age of disruption. Participants explored and discovered several topics that are shaping the future of teaching and learning including the impact of artificial intelligence on education, transforming roles of teachers and leveraging social entrepreneurship for innovation. The Summit has also had several discussions on changing mindsets toward migrants, reimagining higher education in the connected world, the impact of nudging, connecting private and public actors and strategies to build future knowledge societies. Challenges in education also present opportunities to break down old assumptions and bring forth the new ideas that are paving the way for positive disruption. With the topic of co-existing in a changing world, developing skills, attitudes and values to shape tomorrow, the conference explored the role of innovation in education to cultivate values, behaviors and attitudes. It addressed complex challenges, advance cultural cohesion and nurture global citizenship in the rapidly evolving world. The second pillar of co-creating knowledge societies; transitioning from knowledge economies to knowledge societies, examined strategies, policies and practices to empower individuals to become highly skillful innovators who can drive economic development, contribute to social good and design the future world. The final pillar of the program is learning to learn: New perspectives and practices in teaching and learning. It aims to discover new and emerging teaching and learning approaches that help learners develop relevant cognitive, social and emotional skills to live and work in an age of disruption. WISE summit 2017 highlighted that the pace of scientific and technological development continues relentless. Constant advances in artificial intelligence, automation and biotechnology have the potential to dramatically overturn long-held assumptions about what it means to be human. (Varghese 2017)

#### **f) World Innovation Summit for Health (WISH)**

WISH was incepted in 2013 as a global healthcare community dedicated to capturing and disseminating the best evidence-based ideas and practices. It is a solution-focused establishment which aims to create and disseminate world-class, evidence-based content and knowledge, face the most pressing global healthcare challenges, and influence healthcare policies locally and globally. Its core values include collaboration, mutual trust and respect, generosity (sharing and giving) and transparency at all times. WISH has held three summits since its inception; in 2013, 2015, 2016, and the fourth summit will be held from 13-14 November 2018. More than 1,000 leaders and healthcare delegates and experts from over 100 countries have attended previous summits including more than 50 ministries of health that oversee healthcare policy for more than 2 billion people, and representatives of major international organizations such as the United Nations, the European Union, the Carter Center, the Bill & Melinda Gates Foundation, and the Rockefeller Foundation. (WISH n.d)

#### **g) Annual Research Conference (ARC)**

QF began organizing its ARCs in 2010 with a vision that research and innovation are the keys that unlock discovery's doors to strengthening societies and achieving the most ambitious goals. It has become a platform where aspiration, expertise, and pioneering spirit meet, where challenges become opportunities to improve lives, and where drive and direction come from the templates of inspiration, Qatar National Vision 2030, and the Qatar National Research Strategy (QNRS). Therefore, each ARC represents a unique yearly opportunity for knowledge sharing and partnership to boost Qatar's research and innovation agenda. The Conference usually takes place in March of every year at Qatar National Convention Center (QNCC) in QF Education City in Doha. This year



ARC'18 is the 9th edition and it was held from 19-20 March 2018 under the theme 'R&D: Focused on Priorities, Delivering Impact'. It endeavored to pursue the vision of developing Qatar into a leading center for research and development excellence and innovation. ARC'18 featured thought-provoking panel discussions and technical presentations, where leading experts shared constructive experiences and innovative approaches aimed at addressing critical issues facing Qatar and the region. Her Highness Sheikha Moza bint Nasser, Chairperson of Qatar Foundation, and Her Excellency Sheikha Hind bint Hamad Al-Thani, Vice Chairperson and CEO of Qatar Foundation, together with other government ministers and dignitaries, and about 2,600 delegates from Qatar and around the world have attended ARC'18. In order to consolidate the management of all QF research development and innovation (RDI) activities into one executive position, H.H Sheikha Hind announced the establishment of a nationally-focused Research, Development and Innovation (RDI) Council which consist of government representatives, RDI stakeholders from the nation's key sectors, and experts from academia and industry. The Council is tailored to the specific needs of Qatar while drawing on international examples of best practice. It is led by Dr Richard O'Kennedy and it aims to bring together the stakeholders to provide direction and guidance on all RDI efforts, ensuring alignment to national priorities in order to contribute to major national RDI decisions collaboratively. (Qatar Foundation ARC n.d) The ARC'16 could be a another illustrative example which is worth mentioning here. It was held at QNCC from 22-23 March 2016 under the theme 'Investing in Research and Innovating for Society'. ARC'16 emphasized that strategic investment in research and development is instrumental for the future of Qatar and global society. More than 2,000 people including dignitaries, senior officials, and delegates have attended the conference. Her Highness Sheikha Moza bint Nasser addressed the conference and highlighted that the Arab world's investment in research and development is minimal compared with the Western countries and Eastern Asia. She considered this as a dilemma, which requires immediate action and explained how QF plays a significant role in responding to the necessity of building Qatar's knowledge society. ARC'16 is a showcase of how this is going to be produced and supported within QF from the breakthroughs made by its research institutes, to the enabling effect of QF R&D entities, QNRF and QSTP. According to its organizers, the conference was a magnet for the national, regional, and global research community, and a platform for strengthening the chain connecting the many vital elements that progress basic research to innovation. It also provided researchers from all over the world with the tools that will enable them to share knowledge and inspire future generations. ARC'16 also highlighted exemplars of pioneering research and impactful innovation developed within QF, such as Masarak, which is an intelligent traffic monitoring, and navigation application developed by Qatar Mobility Innovations Centre (QMIC), tenant of QSTP, in partnership with the Ministry of Municipality and Planning. The QF R&D's Best Innovation Award is usually awarded to the winner during the conference. The Award winner was Dr Adnan Abu Dayya, Executive Director and CEO, QMIC for his innovative project on tailored technology that is designed to make roads safer, while providing the basis for a homegrown technology-based industry built around intelligent transport. The value of this project lies in addressing national mobility strategies, supporting mega-projects, creating economic value, and eventually creating a high-tech export industry. ARC'16 also included the winner of QF R&D's Best Research Project Award, presented to Dr Shehab Ahmed from Texas A&M University at Qatar for his work in developing power electronics and systems for integrating renewable energy into Qatar's power grid. In this way, ARC'16 exhibited how the pursuit and creation of innovation has been embraced at all levels and ages across Qatar, within an ambitious research and innovation culture that develops the human capacity required for success. Experts participating in ARC'16 largely agreed to the concept that 'excellence breeds excellence', emphasized on the need for having enough high-quality talent to execute innovation that can be transformed into economic value, and stressed on the globalized nature of research and innovation as well as its trans-sectorial and interdisciplinary nature that requires collaboration and partnership at the local, regional and international levels. ARC'16's audience where representatives from QF member HBKU and its three research institutes namely QBRI, QCRI, and QEERI. They explained the exchange of knowledge could address Qatar's research grand challenges and propel Qatar's knowledge-based economy. The integration of the annual QNRF Forum with ARC'16 crystallized the research funding entity's development and achievements in the 10 years since its establishment and visualized the way ahead for the research that emanates from, and catalyzed by QF and Qatar. ARC'16 has manifested an investment in research and innovation that brings the future into ownership. (Qatar Foundation 2016)

## **6. ictQatar**

The ictQatar Strategy is to actively leverage ICT to support the realization of Qatar's overall national development goals and position Qatar as a leading knowledge economy enabled by ICT by 2015. It has achieved 100% in three objectives; double the ICT workforce, double the ICT sector's contribution to GDP and achieve wide accessibility and effectiveness of all key government services. Qatar ranks 2nd globally, after Singapore, in

government prioritization of ICT and effective use of ICT in government. It has almost reached 100% of broadband penetration in households and businesses, and the telephone fixed line and mobile cellular telephone subscribership and users exceeds 175 telephones per 100 persons. ictQatar has progressed immensely in content digitization and creation by converting printed material to digital content and publish them online and creation and publishing of born-digital content. It has been working on attracting, promoting and exposing of young talent to the digital content realm. ictQatar has also contributed to laws and regulations by initiatives such as ICT Regulatory Framework, Consumer and Digital Rights Laws and Green ICT Policy Instruments & Guidelines. (ictQatar Strategy n.d) in 2016 ictQatar was merged with the Ministry of Transportation to form the Ministry of Transportation and Communications (MOTC). MOTC's focus was the Qatar Smart Nation Program (QSNP), a 5-year USD1.64 billion initiative launched to develop Qatar's ICT infrastructure, and transform Doha into one of most connected cities globally. QSNP aims to harness technology and innovation to improve quality of life and help drive sustainable economic development across five priority sectors: (a) Transportation Objectives: Seamless mobility, searchable city, universal access, and safe journeys, (b) Logistics Objectives: Connected logistics, digital workplace, dynamic delivery, and empowered recipients, (c) Environment Objectives: Sustainable resources, digital urbanization, environment stewardship, and connected farming, (d) Healthcare Objectives: Healthcare on-demand, extended care, seamless hospitals, and connected wellness, and (e) Sports Objectives: Active nation, augmented game experience, competitive athletes, and connected fans. Individual government agencies including the Ministry of Interior, Ministry of Finance, and Ministry of Municipalities and Environment continue their respective "digitization" strategies, as part of Qatar's E-government 2020 objective.

Total ICT spending in Qatar stood at US\$1.9 billion in 2016, with expected growth of 10% in 2017, largely due to increase in the government's requirement for ICT services including Smart City Solutions, Cyber Security, E-commerce, E-Education, E-Health, Financial Technology and E-Government Solutions. (Export.GOV n.d.)

#### **4. Challenges of Qatar's Knowledge Society**

Qatar's transition toward knowledge society is facing grand challenges. In the following paragraphs, the author focuses on key challenges to Qatar knowledge society:

##### **a) Education and training**

Qatar spends 3.5% of its GDP on education, the Permanent Constitution explicitly emphasize on sound education and innovation in research, and the National Vision 2030 deals with education as power and the prime drive for human capital building and future prosperity. However, there are numerous challenges that face Qatar's endeavors to achieve world-class education, training and cultural enhancement. Qatar aspires to realize its national vision in full by having its people highly educated and capable of driving the different aspects of life toward knowledge society. The education system has to encourage analytical and critical thinking, as well as creativity and innovation. It has to promote social cohesion and respect for Qatari society's values and heritage, and advocate for constructive interaction with other nations. The Qataris need to put more efforts in knowledge application to Qatar society, and knowledge production particularly innovative research that is needed for the economy. The unsustainable population growth, which is principally caused by the influx of migrant workers and their families and children, requires offering quality education opportunities and services and the necessary funds, human resources, and infrastructures. One of the challenges which is related to this, is preserving the native language in all skills as Arabic is the official language of instruction at public schools and universities. However, English language use is growing and it is a requirement for some courses of study. While textbooks are written in modern standard Arabic, most teachers in Qatar speak an Arabic dialect such as Egyptian and Syrian. This has affected the Qatari student language abilities and perhaps created more burden in speaking and using the standard Arabic language in knowledge acquisition, production and dissemination. The declining interest in mathematics and science in Qatar's schools and colleges and the low graduation rates and decline in enrolment in science and engineering based specialties in the universities lead to severe shortage of highly skilled Qataris is also a challenge for the transition to knowledge society. Moreover, there is a challenge in providing the necessary communication, coordination, exchange, and synergetic relationships between the higher education institutions because they work independently without strong coordination and there are no mechanisms of collaboration to improve the quality in educational programs, research and other areas in addition to the absence of accurate data and information on education and training. This has created duplication of efforts and has reduced the effectiveness in education businesses. Furthermore, Qatar has invested billions of dollars in attracting worldly renowned universities to open branches in Doha and prepare the Qataris for the job market as well as for being global citizens. There are some challenges in this regards including Qatar's ability to combine or integrate the

IBCs and the national higher education institutions to make it a successful and sustainable path for the future of higher education and science in Qatar. This challenge has much to do with removing the attitudinal and structural barriers before education and knowledge management. Another challenge is also the accessibility of IBCs higher education especially for members of migrant families, taking into consideration some gender related issues and sensitivity, and the shaky roles assumed and fixed-term contracts provided to expatriate university professors and researchers. Supporting the IBCs to establish a robust scientific environment in their niche area of expertise for the future wealth and well-being of Qatar society is also one of the significant challenges. Creating a break in the casual link between work and reward where students expect reward without necessarily having to work hard to attain it is a challenge especially in view of the fact that expatriate teachers and university professors might compromise the academic standards and tolerate such attitude because of fear from bad feedback from students which could potentially lead to nonrenewal of contracts. Qatar spent enormous amount of money on the education infrastructure such as new university and school buildings, libraries and laboratories but the challenge now is to spend more on teachers professional development and welfare. Qatar is investing remarkably in training programs to the extent that almost all government employees are required to attend trainings, professional development programs, workshops, seminars, and short courses. These training programs are narrowed in their scope to cover very specific skills instead of a long-term apprenticeships that qualify the trainees for the knowledge society. (Ministry of Development Planning and Statistics 2018, 173-174; General Secretariat for Development Planning 2008, 13-16; Weber 2014, 64-77; Powell 2014, 256-266)

#### **b) Economy diversification**

Oil and gas are obviously depleted resources and their prices have been sharply declining in recent years inflicting heavy losses of revenues and consequently crippling the government capability in funding projects and creating uncertainties for national planning since the economy is essentially fuelled by hydrocarbon wealth. These two factors urged Qatar leaders to plan for developing the infrastructure by using the most advanced technology and production methods in the existing oil and gas fields, creating new sources of renewable energy, diversification of economy, and encouraging recycling projects and systems to gradually reduce the dependency on hydrocarbon recourses. Moreover, Qatar lacks crude natural resources that are used in construction such as building roads, bridges, airports, and ports which absorb substantial portion of its budget to import them. For example, in April and May 2016, Qatar spent more than QR436 million (approximately US\$120 million) on import of construction material. As it has been explained above, Qatar spends over US\$2 billion on consuming ICT goods and services, however producing the required ICT that provide all what the economy needs in general remain one of the challenges. The private sector is also facing some challenges such as lack of policies that limit its ability to enter the domestic market and compete and grow efficiently and effectively. Besides, while there are numerous numbers of banks and financial institutions in Qatar, entrepreneurs and small and medium business projects are facing difficulties and obstacles in securing finance for their new projects and economic activities. Moreover, the work environment, business and investment opportunities are dominated and monopolized by the public sector, giant companies, and business tycoons. Therefore, this unhealthy situation needs to be changed to enable the private sector and SMEs to play an essential role in contributing to the economy and achieving sustainable development. It is also important to highlight the lack of regional coordination and the state of competition between the GCC countries in the activities of organizing international exhibitions, civil and commercial air transport, aluminum production, iron, basic petrochemical products, and plastics. These challenges have become so complex because of the recent GCC crisis. (Ministry of Development Planning and Statistics 2018, 81-122; Secretariat for Development Planning 2008, 24-29; Weber 2014, 67-68)

#### **c) Expatriates and workforce issues**

Qatar's population is rapidly growing due to a sharp rise in the number of expatriate workers in the local labor market. These migrant short-term contract workers are critically needed for the immense urban development, and large-scale investment projects. This situation has led to a large increase in the ratio of expatriates to locals in the labor force, and a particularly sharp and unanticipated rise in the numbers of low and unskilled workers. More than 95% of these expatriates are concentrated in the private sector. The state is the primary employer of Qataris and only 0.5% of them work in the private sector. This situation made Qatar unique in the world in that over 86% of its population consists of foreigners and perhaps fostered institutional disorganization, lack of employee commitment, and the continual loss of the country's specific knowledge. It is obvious that the imbalanced composition of the population and the disequilibrium in the structure and force of the labor market is affecting Qatar's transition toward knowledge society. Consequently, Qatar must determine a suitable size and quality of its expatriate labor force. It must weigh the consequences of recruiting expatriate workers particularly the potential negative impact on national identity, against the anticipated economic benefits

that accrue from an increase in the numbers of foreign workers in the total labor force. Hence, the challenge here is how to choose a development path that is compatible with the targeted size and quality of expatriate labor that are determined by Qatar's leadership and people. The other challenge is how to up-skill the Qataris in general and the females in particular and develop their capabilities to engage in the labor market especially in the private sector in addition to linking education to training. Preparing sufficient numbers of qualified Qataris to meet the demands of the job market particularly in the private sector remain a challenge. (General Secretariat for Development Planning 2008, 7, 18; Ministry of Development Planning and Statistics 2018, 193-195; Weber 2014, 64-74)

**d) Management of growth and uncontrolled expansion**

Qatar is moving in rapidity toward creating a solid ground for knowledge society. It has expanded immensely in economic activities and development projects. However, on one hand there are speed limits and on the other expansion has been described as uncontrolled. The over speed and uncontrolled expansion is potentially depleting the resources and burdening the economy particularly in view of the sharp decline in oil and gas revenues, the increase in the budget deficit, and the current Saudi-Led blockade since June 2017. These factors are derailing the country from achieving its targeted objectives and potentially lead to severe problems such as rapidly rising prices of goods and commodities, financial vulnerabilities, low and stagnant labor productivity, and environmental damage. Therefore, the challenge is how to develop and grow at a pace that is consistent with the realistic expectations of sustainable improvements in livelihoods and in the quality of life. It must target growth rates that are compatible with its capacity for real economic expansion. (General Secretariat for Development and Planning 2008, 6)

**e) Good governance**

While investigating the major challenges that face Qatar's transition toward knowledge society one can conclude that the weak governance system is the most challenging as it is almost seen in public and private sectors, and across areas and development projects. Good governance requires building strong and efficient administration and organizations, clarity and accuracy of roles and obligations, recruitment of qualified employees who possess the right skills to provide excellent services and use the infrastructure efficiently. It also entails amendments of existing acts, legislation and enactment of new modern laws in different fields such as labor, immigration, private sector, environment, business and investment, education, and patent. Providing relevant and accurate statistics and information databases in all fields are extremely important to any planning, policy making, research and development efforts. Enhancing transparency in all affairs and the culture of continuous evaluation and improvement is also critical to moving toward knowledge society. (Ministry of Development Planning and Statistics 2018, 81-102; 173-251)

**f) Balancing modernization and preservation of traditions**

Preservation of cultural traditions is a major challenge that confronts Qatar knowledge society in a rapidly globalized and increasingly interconnected world. The rapid economic and population growth have created intense strains between the traditional and contemporary features of Qatari life. Current professional work patterns and pressures of competitiveness sometimes clash with relationships that are based on traditional values such as trust and loyalty to kinship and friendship ties. Furthermore, the deep-rooted social values highly respected by society, such as generosity, and tolerance, have been challenged by the globalization of greater freedoms, wider choices and advancing individualism and personal interests that accompany economic and social progress in the modern world. For instance the American branch universities in Qatar brought their culture and educational methods and exert a strong cultural impact on the country through their graduates who are very competent in entering the work force. Yet the challenge is how to be faithful to the Vision 2030 and balance between, or possibly integrate, the qualities of modern life with the country's values and culture to ensure smooth transition toward knowledge society. Should Qatar respond positively to this challenge, its modernization approach could be an exemplary model for other societies to follow particularly in the GCC region. (General Secretariat for Development Planning 2008, 4; Weber 2014, 63)

**g) Balancing the rights of the present and future generations**

Qatar's sustainable move toward knowledge society requires a process to meet the needs of this present generation without compromising the needs of future generations. Compromising or threatening the rights of future generation to enjoy the natural resources is injustice. Therefore, the challenge is how to avoid the depletion of non-renewable resources and create new sources of renewable wealth. There are some sub-challenges related to this challenge most importantly the ineffective use of financial returns from hydrocarbon revenues especially that they are declining due to drop off in oil and gas prices. In addition, the overly aggressive economic development that could lead to economic overstress and risk, tipping the environmental scales irreversibly.

Hence, the major challenge here is choosing the development path that carefully balances the interests of the current generation with the interests of future generations. (General Secretariat for Development and Planning 2008, 5)

#### **h) Environmental sustainability**

The population rise, urban expansion, and industrial activities in hydrocarbon and petrochemicals are the main factors that affect the environmental biodiversity, cause depletion and waste of natural resources, and climate change. Qatar is world's highest per capita CO<sub>2</sub> emissions for its energy production over population reaching 40.46 tons per capita per year. It is generally admitted that any sustainable development approaches should not sacrifice the protection of environment on the account of the economic development. Development models often have negative effects on the natural environment. Environmental degradation can be reduced through investment in advanced technologies designed to minimize the damage caused by economic projects. Monitoring the sources of pollution such as the emission of carbon dioxide coming from the hydrocarbon and petrochemical industries, the huge number of means of transports, and dust coming from the construction projects as well as from the desert. Even with Qatar's best efforts, it is impossible to entirely avoid harming the environment, given a development model that primarily depends on hydrocarbon, petrochemicals and heavy industries. Qatar is already committed to enforcing international standards for environmental protection when designing and implementing its industrial projects. It is also committed to making its future path of development compatible with the environmental protection and conservation requirements and best practice. However, Qatar's efforts in protecting the environment is insufficient because it is a part of the Gulf region, which somehow forms one ecological system that is affected by the practices and activities of every country in the region. Thus, the challenge is how Qatar could do more and put better efforts to preserve the environment and encourage all of the Gulf States to make the environment paramount and effectively collaborate in protecting and conserving it. Qatar also needs to address the challenges related to sustainable management of the natural resources particularly water and the sources of renewable energy such as the solar energy. (General Secretariat for Development Planning 2008, 8-9, 30-33; Ministry of Development Planning and Statistics 2018, 122, 282-283)

## **5. Conclusions**

Qatar is a small country in geographical and population size but it is centrally located and equidistant from Europe, Africa and Asia. Despite its small size, Qatar is enjoying a good position in world's politics, media, economy and is steadily becoming a hub for quality education and international conferences. The discovery of oil and gas fields, together with the quality of leadership, especially since the post-independence era, have had immense impact on the transition from traditional Bedouin tribal community to modern society. The late H.H Sheikh Khalifa Bin Hamad Al-Thani, the Father Emir H.H Sheikh Hamad Bin Khalifa Al-Thani and the present Emir of the State H.H Sheikh Tamim Bin Hamad Al-Thani will be remembered for their immense contributions to Qatar's development and prosperity. The ratification of the Permanent Constitution in 2004 and the launch of National Vision 2030 in 2008 have laid the foundation for Qatar's transition toward knowledge society. They have also mandated the government agencies, education and research institutions to be the engine that creates and drives the change. Qatar University, which is the national university of the country, is promoting excellence in education and scientific development of the Qatari society. It is steadily becoming a hub of modern education with excellent teaching and research records, highly qualified local and international staff, and graduates. Qatar Foundation for Education Science and Community Development is the largest organization in Qatar with a higher objective of 'Unlocking Human Potential'. The large-scale investment in knowledge production and dissemination positioned QF to be a globally leading organization for excellence and innovation in research and development that brings enduring benefit to people that transcends sectarian and geographical boundaries. QF has proven its potential as the key driver of research, development and innovation through its large number of entities namely HBKU which offers diverse modern interdisciplinary programs. The IBCs of worldly renowned universities, which are producing highly qualified graduates. The QSTP and QNRF that stand at the heart of knowledge production. In addition ARC, WISE and WISH which are very important platforms for knowledge dissemination locally and internationally. Besides, ictQatar made enormous efforts toward Qatar's transition toward knowledge society particularly through digital inclusion, digital content ICT human capital, modernization of the legal and regulatory framework and telecommunications infrastructure. The construction of knowledge society obviously takes time but what could expedite the transition is the ability to identify at least the main challenges and take the appropriate action to overcome them. This research has identified eight major challenges. These challenges relate to reform and development of education and training, diversification of the economy, resolve the expatriate and workforce issues, and efficient management of growth and uncontrolled

expansion. Another set of challenges lays in good governance, balancing between modernization and preservation of traditions, balancing the needs of current generation and the needs of future generations, and sustain the environment. The possible impacts of this research are the value that it could bring in exploring Qatar’s development from traditional to modern knowledge society. It also provides the most up-to-date data and information about Qatar’s knowledge society institutions and stakeholders and explaining their role and contributions. The analysis of the specific key challenges could also be of great value to political leaders and policy makers in Qatar. Besides, the research could potentially contribute to the exploring other cases of the challenges of knowledge society especially in the GCC and the Middle East. This research is an attempt to explore the case of Qatar within the means, period and scope of the research. Therefore, future researches could focus on the systematic evaluation of Qatar’s achievements toward becoming knowledge society since the launch of the National Vision 2030. Another study could address Qatar’s response to challenges in transitioning toward knowledge society. Other imminent researches could address fundamental questions including how do Qataris acquire information and transform it into knowledge? does ICT empowered the Qataris to enhance their livelihood and contributed to the social and economic development of their community? To what extend has the state guided and coordinated

its legislative, executive and judicial branches and empowered businesses, nonprofits, academia, other non-state actors to enhance the knowledge society?

**Table 1. Qatar Foundation Key Entities**

<b>Entity</b>	<b>Established</b>
Qatar National Research Fund (QNRF)	2006
Qatar Science and Technology Park (QSTP)	2009
World Innovation Summit for Education (WISE)	2009
Annual Research Conference (ARC)	2010
Hamad Bin Khalifa University (HBKU)	2010
World Innovation Summit for Health (WISH)	2013

*Source: Qatar Foundation Entities. n.d.*

**Table 2. International Branch Campuses in Qatar**

<b>Institution</b>	<b>Home Campus</b>	<b>Field</b>	<b>Location in Doha</b>	<b>Established</b>
University College London (UCL)	UK	Museum Studies	Education City	2012
HEC Paris	France	Business	Education City	2012
North Western University	Illinois, USA	Journalism	Education City	2008
University of Calgary	Alberta, Canada		Muraykh	2007
Georgetown University School of Foreign Service	Washington DC, USA	Foreign Affairs	Education City	2005

Carnegie Mellon University	Pennsylvania, USA	Computer Science	Education City	2004
Texas A&M University	Texas, USA	Engineering	Education City	2003
Weill Cornell Medical College	New York, USA	Medicine	Education City	2001
College of the North Atlantic	Newfoundland & Labrador, Canada	Applied Sciences	West Bay	2001
Stenden University	The Netherlands	Tourism and Hospitality	Al Rumaila West	2000
Virginia Commonwealth University	Virginia, USA	Design	Education City	1998

Source: Ministry of Education and Higher Education n.d.; Powell 2014, 256

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