

Mariam Ali S A Al-Maadeed
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The Sustainable University of the Future

Reimagining Higher Education and
Research



Springer

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Foreword by Prof. Pam Fredman

Knowledge and understanding, acquired thanks to quality higher education teaching and learning, research and community engagement are essential for our societies to thrive. The coronavirus pandemic has come with a strong call for true transformation of the sector, and many HEIs have been faced with challenges to deliver on their promise due to lack of capacity to move to remote teaching and learning and innovative ways to carry out research under unforeseen circumstances. This has also called for new teaching pedagogies to be developed. Universities have put considerable emphasis on developing new, more innovative models, and on challenging their own boundaries.

Moreover, as also underlined by the UNESCO Futures of Education Report, a new “social contract for education” has been called for as some of the past educational shortcomings and in particular the social inclusion imperative need to be addressed. Research and innovation are key cornerstones of such a new social contract for education. Higher education needs to be more student centered and at the same time better connected to the grand sustainable development challenges of our time.

The digital transformation of teaching and learning, research, and even community engagement can help find new solutions to the challenges the sector and society face. It offers new opportunities to connect people and disciplines across the globe and, when done well, offers unique opportunities to develop novel solutions to issues that call for original approaches. Technology can help support the new learning processes called for, and when used appropriately, it can help tailor to the needs of individual learners while also offering to connect them to larger groups of learners. This calls for mechanisms that will help the academic staff to acquire new competencies for them to use to develop innovative learning opportunities.

This collection of chapters published in this book provides a true contribution to the existing body of knowledge and is of special interest to those who are interested in the transformation of the university and its development in the future.

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Pam Fredman

Foreword by Prof. Sheikha Abdulla Al-Misnad

Higher education has a long history of a permanent capacity for adaptation and innovation. However, at this critical historical moment, where the world is at cross-roads, reimagining the future of higher education is more essential than ever. At a smaller timescale, the world of education experienced challenges during the recent pandemic period that no one could have imagined. The pandemic had taught us that change at scale is possible, and ongoing organizational, technological, and pedagogical changes have been initiated by higher education institutions. Indeed, higher education needs to be more open, more inclusive, and more resilient. A roadmap for a new era of education is necessary to go beyond the challenges of our current systems toward a sustainable future. It requires our most creative capacities, with the imagination and innovation needed.

This book provides opportunities to the members of academic institutions and governmental agencies to better understand the current mutations and explore their implications on higher education and on how to reimagine the university of tomorrow.

Former President of Qatar University (QU)
Doha, Qatar

Sheikha Abdulla Al-Misnad

Preface

This book titled “Sustainable University of the Future: Re-imagining Research and Higher Education” represents a set of important-needed topics to address nowadays. Such an inspiring title discusses the requirements imposed by the rapid changes on higher education institutions that have pushed them to reconsider their traditional policies and plans and adopt more sustainable and modern programs and tools, which keep pace with transformations and anticipate the next challenges. In addition, it expands opportunities and options for faculty members and students, transcending boundaries and distances.

The “Sustainable University of the Future” must play its role in sustainable development, despite the current regional and international challenges. The universities in the new era need to be transformed to lead and adopt the new changes in the world.

Furthermore, the adventure of Industry 4.0 is already assuming its rhythm in today’s business environment and agendas. Companies are deeply changing their working processes, which pose major challenges as they require proactive adaptation to the digital culture, particularly regarding their workforce’ skills and competencies. Hence, it is critical that industries and universities join efforts and take an active role in preparing the next workforce and, simultaneously, support the current one through lifelong learning and continuous training. This should be done by bringing together actors such as businesses, universities, public authorities, and students to address the existing gap in higher education and cocreate innovative and multidisciplinary solutions adjusted to the current and upcoming challenges of the digital era.

The book has twelve chapters, covering some of nowadays needs:

The first chapter investigates the various methods of localizing sustainability in achieving the SDGs in the university context with a case study from the Gulf region. It shows how a higher degree of transition toward sustainability may potentially allow the university to adopt a more proactive role in tackling sustainability issues and putting SDGs into practice on the societal level.

Chapter “Leveraging Eruptive Technologies and Systems Thinking Approach at Higher Education Institutions” focuses on predictive learning analytics and systems

thinking approaches at HEIs, to create sustainable future universities. It suggests that adopting a perspective system to problem situations provides a more helpful framework for representing the real world than the reductionist, discipline-based one. The chapter demonstrates how these techniques could unlock actionable intelligence from statistical analysis of student data combined with other traditional data sources like demographics or academic success to make actionable decisions regarding students, learning and course design, and institutions.

Chapter “Reimagining Continuing Professional Development in Higher Education—Toward Sustainability” states that the importance of Continuous Professional Development (CPD) in higher education with respect to promoting sustainable education lies in the concept of collaboration. The use of CPD transformational models such as implying action research and transformation model within HEIs would promote sustainability in terms of improved teaching and research. It states that the transformational model of CPD is a gist of all other models of CPD, as it provides power to the teachers so that they can determine and exercise their own learning pathways.

Chapter “Re-designing Higher Education for Mindfulness: Conceptualization and Communication” deals with redesigning higher education for mindfulness and contributes to the literature by forming new models of mindful consumption definitions of current generations. As its findings may expand to the following generations, it proposes suggestions to redesign higher education in order to comply with the needs of the youth to overcome the barriers against mindfulness and to realize behavior change.

Chapter “Preparing Future-Fit Leaders for the Sustainable Development Era” presents a framework, a model, and an application example from practice to guide HEIs implementation of education for sustainable development. It introduces three action principles that would guide curriculum development and implementation—cultivating capabilities, curating knowledge, and connecting networks—and promotes adaptation and collaboration that underpin individual and collective transformations.

Chapter “Changes Required in Education to Prepare Students for the Future” deals with changes required in education to prepare students for the future. It highlights potential uses for technology in early and mid-level education, and how technology-focused instruction can replace or be given alongside the existing educational framework. It also explains that by focusing on what society needs and wants as we transition to smart cities, we can adjust the educational system to produce graduates with education in these subjects. It concludes by offering solutions for maintaining relevancy and sustainability in the proposed educational projects.

Chapter “Humanising Higher Education: University of the Future” explains that it is essential to bring about a balance between the utilitarian and mechanistic structure aimed at employment, innovation, high-tech, and market value and a structure characterized by sympathy, empathy, compassion, and values that humanize life. Likewise, the key performance indicators (KPIs) must be rightly balanced with KIP (key intangible performance), things that cannot be measured in the conventional and structured way. It is stated that there can be nothing more important to civilization

than to bring the soul back into education as the interaction between human beings and advanced technology shares the global stage for the better of humanity and for mercy to all.

Chapter “Social Science and Humanities in Future University” looks into the debate regarding social sciences and humanities in future universities. Through the appraisal of existing arguments, contentions, and challenges, the chapter studies how social sciences and humanities can survive the lull that is being experienced in academia. The challenge of image faced by social sciences, the issue of job opportunities, and the actual impact experienced and exerted by social sciences are some of the main issues highlighted in the course of the chapter.

Chapter “Impact of the Industry 4.0 on Higher Education” highlights the impact of Industry 4.0, not only on technology advancements but also on people in the workforce. It insists on how HEIs must properly train students in order to better adapt to such changes and on the fact that the innovation and entrepreneurship management skills of the students should be developed through the restructuring of future university programs. Finally, it shows how a new leadership mindset and governance can be crucial to tackle the challenges associated with education 4.0 and harness the future benefits of IR 4.0 while protecting humanity from potential threats carried by technology.

Chapter “University-Industry Transformation and Convergence to Better Collaboration: Case Study in Turkish Food Sector” shows, through a Turkish case study, that university-industry cooperation in higher education is not a choice anymore but a necessity for the future of the universities. This is not an issue to be overlooked by simple legislative barriers or formal practices. It explains how the parties should use a definite and clear will to create an effective and functional institutional cooperation structure. Technology centers stand out as extremely efficient and indispensable applications that need to be developed.

Chapter “Sustainable Development Goals Through Interdisciplinary Education: Common Core Curriculum at University of Hong Kong” presents, through a case study in Hong Kong, how academics can utilize SDGs as broad, holistic, and flexible frameworks to frame, contextualize, and comprehend the series of issues, challenges, and complexities. It also shows the implications regarding the incorporation of SDGs into the university curriculum. Such implications are the prioritization of SDGs in accordance with the unique contexts and features of the curriculum, the consideration of their interlinkages in the planning and designing stages of curriculum and courses, and the need for some realistic and concrete means to bridge these goals with the curriculum and courses.

Chapter “Implementing the Sustainable Development Goals (SDGs) in Higher Education Institutions: A Case Study from the American University of Beirut, Lebanon” describes the steps taken by a university in Lebanon to formulate a strategic plan for the implementation of SDGs in domains such as research and education in the age of Industry 4.0, sociocultural impact operations, governance, and external leadership. The implementation components follow steps such as rallying forces around SDGs and launching the vision, connecting the university to SDG

networks, promoting SDGs initiatives on campus, reporting and increasing the university ranking on SDGs, and dreaming the future!

This book is an excellent resource for anyone involved in research and higher education systems. It will be essential for academics, researchers, education specialists, students, governmental agencies, and industry sector, who want to understand the evolution of research and higher education systems around the world, and how it will change the society.

We would like to thank the authors and the reviewers for their valued contributions and efforts.

Our thanks also go to Qatar University Research Forum and to the ANDD Academic Network for Development Dialogue (in cooperation with ESCWA United Nations Economic and Social Commission for Western Asian and ACUNS Academic Council on the United Nations System) for their continuous support. This book has been presented during a roundtable at ACUNS 2022 in Geneva, for which we thank all the participants for their valuable contribution.

Doha, Qatar

Mariam Ali S A Al-Maadeed
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About the Editors



Mariam Ali S A Al-Maadeed is Vice-President for Research and Graduate Studies and Professor of Physics and Materials Science at Qatar University. Prof. Mariam has been leading the research and graduate studies strategies, programs, and developments since 2016. She played a major role in developing research and graduate programs, as well as fostering and strengthening national and international relations within this field. She is also the holder of the Leadership Excellence Award for Women from the conference and exhibition of engineering for the Middle East in 2015. Prof. Mariam is currently chairing the Academic Network for Development Dialogue, a new UN initiative related to implementing the SDGs within universities of the region and leading the initiative of the university transformation.



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Nathalie Younan is a project manager at the Vice-President Office for Research and Graduate Studies. She deals with research and education innovation and leads the annual Research Forum on the University of the Future. Nathalie has a notorious experience related to higher education institutions' transformation models and has built a solid international network of university decision-makers on the topic. She holds Master and Bachelor degrees from EPFL Ecole Polytechnique of Lausanne, Switzerland.

Universities of the Future as Catalysts for Change: Using the Sustainable Development Goals to Reframe Sustainability – Qatar University as a Case Study



Esmat Zaidan, Emna Belkhiria, and Cesar Wazen

Abbreviations

ANDD	Academic Network for Development Dialogue
CCE	Community Service and Continuing Education Center
DESD	Decade for Education for Sustainable Development
ESCWA	Economic and Social Commission for Western Asia
GCC	Gulf Cooperation Council
HEIs	Higher Education Institutions
ISOCARP	The International Society of City and Regional Planners
MDGs	Millennium Development Goals
MIA	Museum of Islamic Art
MOU	Memorandum of Understanding
MRV	Measuring, Reporting and Verifying
QICCA	Qatar International Center for Conciliation and Arbitration
QNDS	Qatar National Development Strategy
QNV	Qatar National Vision
QSTP	Qatar Science and Technology Park
QU	Qatar University
SDGs	Sustainable Development Goals

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SESRI	Social and Economic Survey Research Institute
SMRC	Sidra Medical and Research Center
SSD2019	Science for Sustainable Development 2019
THE	Times Higher Education
UAV	Unmanned Aerial Vehicle
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

1 Introduction

Human activities have given rise to significant perturbations of natural processes, further causing harm to socioecological systems and inevitably contributing to the current environmental crisis. With the growing environmental, economic, and social issues globally, the world is quickly approaching a tipping point that poses a threat to planetary boundaries. Over the next few decades, the Earth's natural ecological systems could reach a "point of no return" if necessary measures are not undertaken to curb greenhouse gas emissions and promote and foster environmental stewardship on a global level. The Sustainable Development Goals (SDGs) of Agenda 2030 were established and adopted by 193 UN member states in 2015 to establish a plan of action for the next 15 years. The global sustainability agenda consists of a set of goals and aims to achieve sustainable development on a global scale by 2030 with the key targets of poverty eradication, preservation of the planet, and establishing prosperity for societies worldwide (United Nations Sustainable Development Summit, 2015).

Sustainability has become a national vision for most countries in a world increasingly characterized by global impacts, modern risks, and unstable, uncertain, and complicated conditions [2, 39]. The SDGs play the role of a compass by providing a transformative development framework for the transition to inclusive and sustainable societies and to building effective, inclusive, and accountable institutions that ensure access to education and information.

Considering the main consumers and creators of information concerning sustainable development issues of their countries and beyond, higher education institutions (HEIs) are catalysts for a more equitable society and sustainable development in their pursuit of sustainability. Consequently, the contribution of HEIs to sustainable development rooted in the national visions of their countries and in the global sustainability agenda largely depends on the alignment of their policies and strategies with the national visions of their countries and their adaptation of the SDGs strategically [40]. Doing so enable them to be more responsive to the needs of their immediate communities with respect to the implementation of the development plans, national visions, and the SDGs. To attain such alignment and to achieve a transformative agenda, pedagogic innovation and research should meet the priorities of the wider stakeholder community in its quest for sustainability. Thus, HEIs play a vital role as change agents considering the need to connect their communities with the external communities that they serve and with which they interact locally,

nationally, and internationally. On the one hand, a HEI campus, as a major community within cities, possesses unique characteristics associated with energy, the environment, society, and the economy. Due to their dynamic energy use and available onsite resources, such campuses can interact with their surrounding environment and work toward achieving the goals of the key performance indicators of smart transformations toward a sustainable post-carbon agenda. On the other hand, being rooted at the local level and connected at the global level, HEIs are leading scientific and technological advances based on a global research agenda to educate future leaders and citizens and to deliver the knowledge needed for the successful implementation of the SDGs.

This chapter aims to explore the transformative role of HEIs in achieving the SDGs in academia and research to establish a sustainability culture that will influence the next generation. It provides insights into the policies and strategies that a university could adopt to better align with the SDGs and to link the university community with the external communities with which the university interacts and that it serves. Furthermore, the chapter reflects on and draws conclusions about the voyage toward sustainability at a strategic level, using the SDG framework toward delivering sustainable development and creating a balance between community-integrated smart campuses and teaching and learning strategies to contribute to the transition to sustainability. The chapter uses Qatar University (QU) as a case study.

2 New Role of Higher Education Institutions

Studies related to universities and colleges as organizations have developed over the past five decades [45, 47, 49]. The study of institutions has been one of the concerns of social research, in which institutions are seen as a functional necessity of complex societies [13, 51]. The traditional purpose of higher education, per Humboldt's idea of a university [2], was to pursue impartial truth via research and teaching [29]. Universities were "places which sought knowledge for its own sake, as part of an educational ideal which molded the personality of the cultivated man" [28]. Some expansion of the core missions of universities can be observed, with attentiveness to community and growth of knowledge economy, public engagement, and national development added to research and teaching [11, 27]. Another feature of the Humboldtian model was that universities must maintain a distance from the outer world to serve as society's critical conscience [3]. The role of HEIs has expanded over time, along with a growing body of knowledge that has pushed HEIs to participate in the sustainability agenda by integrating sustainability into their processes, vision, and systems [5, 41].

Currently, sustainability is observed as part of universities' missions, program curricula, and institutional policies, in addition to outreach and engagement initiatives [37]. Other practices include research, collaboration, data reporting and analysis, and, in some cases, the reduction of greenhouse gas emissions [5].

Different from any type of organization, HEIs, with their dedication and aim to increase knowledge, skills, awareness, and values, represent one of the most important vehicles toward sustainability.

However, this role requires a dramatic and systematic change at all levels, with a need for awareness and shared responsibility [4]. Investigating the new role of HEIs in achieving sustainability given the complex factors that surround the higher education ecosystem's interactions will facilitate understanding of the trends and patterns in sustainable development played by HEIs.

3 Sustainability and Higher Education: Strategizing Sustainability and Localizing the SDGs.

The sustainability transition implies an undergoing process of fundamental change in production and consumption patterns in reaction to imminent sustainability challenges. The water and energy sectors are confronted with fundamental restructuring in light of increased resource depletion, emerging risks, and international sustainability goals [1]. Some examples of the overarching sustainability challenges include depletion of groundwater resources, air pollution, greenhouse gas emissions, management of risks and accidents in the Gulf waters, and impacts of energy and water production on marine ecosystems, reducing large consumption footprints or improving water use efficiency in urban settings. In response to these environmental and sustainability challenges, key sectors, such as water and energy, are undergoing technological renewal to achieve a greater degree of sustainability [40]. Today, sustainability is extremely important, with the use of SDGs as a key instrument to direct action in a world characterized by unstable, uncertain, and complex conditions. Universities also play a crucial role as drivers of change.

In contrast, achieving the targets of the Agenda 2030 goals requires a strong intent from those involved in the community sphere to pave the way toward a sustainable future by changing the current trends of development. As such, society can play a key role in pressuring the government and offsetting corporate interests, which are providing a refuge to the status quo. Consequently, it is of the utmost importance to effectively educate the public on the underlying factors and consequences of the environmental crisis, as well as to formulate mechanisms to effectively manage corresponding challenges [21]. Since HEIs are locally embedded into their communities, as well as globally connected, through close collaboration with faculty, students, alumni, and the surrounding stakeholder community, they can provide significant opportunities to achieve the targets of the SDGs [12, 31]. Universities play a vital role in the effort to achieve the targets of the SDGs. Specifically, HEIs can save students from being burdened by a feeling of detachment and hopelessness arising from the current unprecedented situation, while encouraging the acquisition of key skills and ideals of harmony between nature and human beings [26].

Higher education can provide innovative new solutions for the world, addressing the key issues of our time and age as revealed in the SDGs (United Nations Sustainable Development Summit, 2015; [31]). In fact, since the Rio Summit in 1992, HEIs have been working on sustainability-related challenges through the implementation of Agenda 21 [26]. Being at the center of technological and scientific advances, global research initiatives, and the creation of professionals and future leaders, universities provide key expertise and knowledge in every sector and function as anchors in the communities that they serve on both the national and international levels. These agendas provide a plethora of opportunities for researchers and HEIs to contribute both academically and practically to the various overlapping aims of these agendas. A mixture of technical, scientific, administrative, and political support is required for every nation interested in addressing the issue of SDG localization with respect to national development priorities. A collective and shared approach is required to stay within the territory of the SDGs' all-encompassing and bottom-up approach. Of key importance is the idea that the SDGs represent an agenda for development that should be adopted and implemented by both developed and developing nations alike [21].

Education for sustainability became a key concept after the United Nations' Decade for Education for Sustainable Development (DESD) 2004–2015. This concept was followed by massive efforts from various countries to incorporate DESD into their policies and processes. In addition, additional attention was paid to higher education as a key player in promoting sustainable development [43]. Utama et al. [34] defined five strategies that might enable key initiatives that could further fast-track the process of localization of SDGs for HEIs. These strategies encompass improvements in HEI quality, equity, environment, research and innovation, and partnerships on both the global and local levels. Aside from the broader SDG agenda, there is a particular SDG (SDG 4) that is directed at HEIs [21]. This particular SDG consists of ten targets and several corresponding indicators.

Universities can help to pave the way for a shift toward a more equitable society and a better world by implementing the SDGs at a strategic level in search of sustainability and as a mechanism for forming close ties of higher education with business, industry, community partners, health care, and entrepreneurs [12]. Through its emphasis on education, Agenda 2030 can open doors for a transformative shift toward sustainability for HEIs [26]. Agenda 2030 comprises an SDG dedicated exclusively to education (*SDG 4: Quality Education*) and a corresponding target that defines education for sustainable development (target 4.7) while emphasizing the key engagement of sustainability education with the other 16 SDGs [32].

This emphasis allows HEIs to communicate key insights and best practices to important stakeholders. Consequently, through the SDGs, the world aims to achieve the remaining targets of the Millennium Development Goals (MDGs) by 2030. The SDGs are recognized as a cocreated strategy of action for global citizens, the world, and the nation's wealth [33]. HEIs are imperative to addressing sustainable development challenges by exceeding training development and skills acquisition and advancement [21]. HEIs must not be restricted to producing exceptional educators; instead, they should also seek to “uncover ground-breaking research and connect

services to communities” [18: 418] because HEIs tend to stay in neutral territory in the eyes of various stakeholders and are considered to be among the important hubs for social, economic, and other types of development in any country [34]. In this regard, HEIs are incentivized to formulate management systems grounded in the values communicated in the 17 SDGs.

4 SDG Localization in the Curriculum, Research, Outreach, and Campus

HEIs are currently involved in a multitude of measures to advance sustainability. These measures include embedding sustainability matters into the curriculum, research, and the physical campus and engaging in outreach activities. For example, a survey conducted in 167 universities from various parts of the world on the integration of the Agenda 2030 SDGs with sustainability teaching indicated that lectures are the most prevalent method of integrating the various aspects of sustainability [15]. However, other measures that could directly influence society seem to be less prevalent, such as those tailored to improving the capacities of educators to teach and encourage students to construct sustainable futures and foster an ecosystem for inter- and multidisciplinary research to address highly sophisticated problems [48]. Researchers have also found that measures to attain sustainability in the university setting are mainly centered around operational activities and technological solutions, such as the creation of green spaces and landscapes across campuses. In comparison, efforts aimed at encouraging HEIs to consider behavioral and cultural issues in the organizations themselves are usually nonexistent but considered imperative to a shift toward sustainability [26].

With the primary aim of quickly tracking the localization of the SDGs in HEIs, the chapter combines both conceptual and case study-based insights into the localization of the SDGs. The following sections are devoted to identifying how HEIs can strategize the SDGs within curricula, teaching, and learning, as well as research and development, along with overall SDG localization outside the highlighted dimensions.

4.1 Teaching and Learning Space

Tandon [30] proposed several feasible measures that could be implemented by HEIs to incorporate SDGs into the pedagogy and learning sphere. Tandon [30] recognized the main pathways as the development of curricula, introduction of new courses, and interactive pedagogy. The underlying argument with the development of the curriculum is that the current syllabi and curricula can be further adjusted to improve new perceptions from the SDGs not considered in old curricula. From the

perspective of interactive pedagogy, the teaching of numerous SDGs might occur outside the confines of traditional lecture venues and can be practically shown to function within community settings [21]. For example, agricultural science departments in HEIs could engage with their surrounding communities to provide education on organic farming and traditional food conservation practices that conform to the values shared in SDG 2.

Business schools, for example, can facilitate translating the SDGs into practical and workable solutions that resonate with the surrounding communities. Consequently, this goal would require integration of the SDG agenda into the curricula of schools of business. Such incorporation would be vital for a future in which it likely will be possible to share a common worldview that working within the SDGs is a license to function and operate. The SDGs could also be utilized as an avenue for business schools to facilitate external stakeholders, helping them with SDG localization in their own activities [21]. Weybrecht [38] suggested a mechanism for sustainability engagement, which included four steps: (1) setting the scene; (2) integrating (embedding, collaborating, and contributing); (3) identifying unique avenues of engagement; and (4) providing an empowering ecosystem. This mechanism could potentially require important stakeholders, such as governments, corporate leaders, and United Nations agencies, to provide support in shaping future leaders that would help to achieve the aims of the SDGs [19].

4.2 SDG Localization in the Research and Development Space

Research in HEIs has played a considerable role in addressing sustainability through numerous projects and research advancements and via the integration of sustainability principles into practices [41]. HEIs have created research capacities and promoted innovation and interdisciplinary research around the SDGs [5].

Recent work on SDG baselines [17, 20, 42] (Nhamo et al., 2020) has indicated that several countries lack acceptable baselines for measuring, reporting, and verifying (MRV) SDG progress. Additional findings from this work are on significant gaps in data for the indicators devised for MRV that entail big data. Three practical ways in which HEIs can cause research and development to have a more effective impact in understanding SDGs are suggested. These ways encompass: (1) framing locally usable research; (2) coproducing knowledge through partnerships; and (3) learning new competencies [30].

Students and faculties are equally incentivized to formulate policy and highly relevant research questions. Given the unique types of governance systems between nations, research questions related to the SDGs should seek to define and address issues from the global, regional, and national settings. For example, numerous questions could emerge, such as how can research conducted in HEIs addresses issues of extreme weather events arising from climate change, as well as teaching and learning for the SDGs [20].

5 The Evolution of the State of Qatar as an Education Hub

Higher education is imperative in the shift toward a knowledge-based society, and it has held a key position in developing and establishing Qatar as an education hub. The government perceives education as an integral tool for modernization of the nation, diversification of an economy dependent on oil and gas, and cementing the international competitiveness of its citizens. Consequently, the educational sector has been experiencing swift transformation and development through a top-down approach. The effective development and transformation of Qatar's educational sector have been orchestrated by the Qatari leadership through careful and systematic measures. Recognizing the need for more effective action, the Qatari government commissioned RAND in 2001 to examine the educational system and recommend reform solutions to address the system's deficiencies [6]. The objective was to create an education system that would provide young people with the necessary skills to participate more actively in the nation's economic and social systems [6]. RAND's analysis pinpointed the existing system's strengths and flaws and recommended two primary reform priorities: enhancing the education system's core aspects through a standards-based system and developing a system-changing plan to address the system's overall deficiencies [16]. According to the RAND evaluation report, Qatar's education system was restrictive and lacked standards and international benchmarks. Another major weakness identified by the analysis was a lack of vision for the development of the educational sector, which originated from the extremely centralized Egyptian model for education [7]. In addition, there was little consideration given to other models or strategies to construct a high-quality education system that met the needs of stakeholders [7]. Furthermore, development within the education system was piecemeal without considering the whole system as one cohesive unit, and the Ministry of Education suffered from a poor hierarchical organizational structure that did not encourage innovation and reform [7]. The Qatari leadership then transformed the educational system into a new national educational system based on RAND's recommendations to improve the quality of teaching and raise student achievement [16]. Within the Qatari leadership, Sheikha Mozah Bint Nasser Al Missned has been instrumental in the development of Qatar's education sector [6]. The Qatar Foundation was established in 1995 with Sheikha Mozah as the head of its board of directors [6]. The Qatar Foundation is a nonprofit organization that houses and guides various centers and programs centered around education, innovation, and research, with the key aim of unlocking human potential and fostering social development [22]. More recently, the Qatar National Vision (QNV) 2030 has played a pivotal role in shaping the nation's educational sector. Launched in 2008, QNV 2030 positions education as a key pillar for social development in Qatar. The Ministry of Education and Higher Education intends to continue to provide financial and human resource support for educational development as part of its long-term strategy [23]. Consequently, Qatar has initiated efforts in the following aspects [23]: