

# LITERATURE REVIEW OF THE CHALLENGES OF SUSTAINABLE HIGHER EDUCATION INSTITUTIONS IN THE MIDDLE EAST: CATEGORISATION OF CHALLENGES AND PROPOSED REMEDIES

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## ABSTRACT

*The purpose of this study is to enhance our understanding of the challenges facing the implementation of sustainability in Higher Education Institutions (HEIs), with special interest in developing economies and the Middle Eastern context. In terms of the study's methodology, we follow an exploratory literature review approach where relevant publications on the issue of sustainability challenges in Higher Education have been thoroughly reviewed and relevant data are extracted from each paper contributing to answer the research question about the challenges facing HEIs in adopting sustainability. More than 150 studies on sustainable HEIs have been identified and scanned to assess their relevance. Those found to relate to the issue of sustainability challenges were read and analysed. The final number of studies used for our literature review is 46. Several challenges emerge from the literature review analysis. Most importantly is the absence of organisational culture that embraces and promotes sustainability among the members of the HEI. Other challenges include the lack of a unified conceptualisation of sustainability, the lack of a universal audit and reporting system to monitor the implementation of sustainability, and the scarcity of resources to encourage sustainable orientation. We have identified 55 different challenges, and categorised them in 3 main categories/dimensions, namely, Holistic/ epistemological challenges, Administrative, funding, and assessment challenges, and Campus, Faculty, Curriculum & Research challenges. Corresponding remedies for each category are presented based on literature suggestions.*

*This study is limited by its context, that is the literature of sustainability in HEIs and the perceived challenges and obstacles facing sustainability adoption. Future research needs to take advantage of the limitations of our research and to empirically investigate hypotheses/propositions by qualitative, quantitative, or mixed methodologies. Future studies could focus on developing theoretical frameworks for assessing and evaluating implementation of sustainability orientation in HEIs. Additionally, propositions to overcome the challenges facing HEIs in their endeavours to adopt sustainable operations and suggesting solutions and remedies to those challenges are of particular interest to academics and practitioners alike. The challenges facing HEIs in becoming sustainable received little attention, especially in Emerging Economies and the middle eastern region. This scarcity of studies provides an opportunity for valuable contribution to relevant literature.*

**Keywords:** Sustainability, Higher Education Institutions, Challenges, Literature Review, Middle East.

## INTRODUCTION

Sustainability has become a prominent subject in the 21<sup>st</sup> century. On September 2015, the United Nations has proposed 17 sustainable development goals (SDGs) (Figure 1) for transforming the world by 2030. SDGs have replaced the 8 Millennium Development Goals (MDGs) adopted in 2000 to guide for action the development until 2015. Those SDGs aim to counter several economic, societal, ecological, and political challenges facing our world. The goals include:



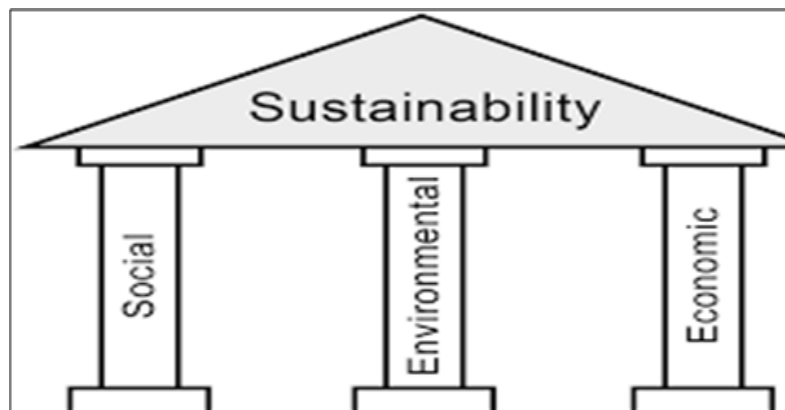
**FIGURE 1**  
**UN SUSTAINABLE DEVELOPMENT GOALS**

Organisations from all economic sectors find themselves more compelled than any other time to adopt sustainability in their strategies and executive plans than ever before. Higher Education Institutions (HEIs) are no different especially with the 4<sup>th</sup> SDG promoting Quality Education. HEIs are also claimed to play a pivotal role in supporting other SDGs (Urbanski & Leal Filho, 2015; Aleixo et al., 2018; Aminpour et al., 2020). Promoting sustainability and achieving SDGs face many challenges among which is the lack of consensus on how sustainability is conceptualised and articulated. One of the earliest conceptualizations of sustainability is Brundtland Commission of the United Nations' (1987) definition of sustainability as *"meeting the needs of the present without compromising the ability of future generations to meet their own needs"*. The current research is exploratory in nature. It seeks to review the literature to identify the most stressing challenges facing implementation of sustainability in HEIs in the middle east, primarily by adopting a desk research methodology using secondary data produced in the relevant literature. This research also aims to identify possible remedies and solutions to overcome such challenges as well as providing future research guidelines.

## LITERATURE REVIEW

The notions of sustainability, sustainability performance, and sustainable development have been receiving scholarly and practical attentions on a local, regional, and international scales during the last decade. As natural resources are increasingly endangered and depleted following decades of irresponsible industrial consumption, the need for sustainable orientation, among organisations from all economic sectors is inevitable. Global challenges require innovative and creative thinking of sustainability (Leal Filho, 2009; Casarejos et al., 2017).

The three pillars of sustainability (Figure 2) have been actively integrated in the literature (Kidd, 1992; Robinson, 2004; Lozano, 2006; 2011; Waas et al., 2011; Jung et al., 2019) which is economic, social, and environmental, also known as the 3 P's (profit, people, and planet). These pillars have historically been used as a foundation of the development of sustainability, but they still remained ambiguous in terms of meaning prioritization, and implementation (Aminpour et al., 2020).



**FIGURE 2**  
**THE 3 PILLARS OF SUSTAINABILITY**

As noted earlier, HEIs have a paramount task in knowledge generation and spreading. They are the frontiers in promoting new cultures, new ways of living and thinking in order to reverse the severe impact of predatory consumption by individuals as well as organisations. The international community has started to shed the light on sustainability implementation as early as 1970s in Stockholm Declaration of Human Environment in 1972. Since then, more than 25 other international initiative and recommendation have been presented, 20 of which had Education or Higher Education as their primary relevance. For example, The Tbilisi Declaration (1977); Swansea Declaration (1993); Koyoto Declaration (1993); Declaration of Barcelona (2004); and most recently the Torino Declaration on Education and Research for Sustainable and Responsible Development (2009). These initiatives and declarations basically aimed at incorporating the concepts, principles, and recommendations on sustainability into HEIs policies, operations, teaching and research, and institutional system (Lozano et al., 2013; 2015; Lozano, 2015; Casarejos et al., 2017).

Notably, in addition to providing quality sustainability education to future generations, HEIs also need to be sustainable themselves in their primary operations, i.e., teaching and research, campus community and administrative structures (Corcoran & Wals, 2004; Mian et al.,

2020). Being sustainable in higher education goes beyond being simply green. Hooey et al. (2017) note that while the environment is an essential element of sustainability, the society as well as economic growth is also important. A sustainable HEI must embrace economic issues, social equity, in addition to ecological concerns. Easily said than done, HEIs find themselves facing numerous challenges in transforming into sustainable organisations. While the literature is absolutely scant regarding challenges facing HEIs in the middle east, many scholars have attempted to uncover those challenges in other locations in the western and developed economies, the Asia-pacific region, and other emerging economies.

Scanning sustainability literature reveals that sustainability challenges in HEIs starts at a philosophical (epistemological) level (Sterling, 2004; Modvar & Gallopin, 2005). For example, Sterling (2004) argued that sustainability is not just another subject to be added to an overloaded curriculum. Rather, sustainability should be thought of as an entrance to an alternative view of curriculums, of pedagogy, of organisational transformation, of policies and particularly of ethos. Moreover, the effects of unsustainability on the current and future opportunities are so significant that the response of higher education should not only limit by the “*integration of sustainability*” into higher education, because this is a restricted and adaptive response. We need to see the relationship the other way around: that is, the necessary transformation of higher education towards the integrative and more whole state implied by a systematic view of sustainability in education and the society at large (Sterling, 2004). The other level of challenges facing adoption of sustainability in higher education is on a rather practical level. In this regard, Velazquez et al. (2005) studied the factors which influence sustainability in HEIs in Mexico. Based on a literature review of studies published between 1990 and 2002, they suggested that 18 factors (Table 1) that affects the effectiveness of sustainability initiatives in HEIs.

1	Lack of awareness, interest, and involvement
2	Organisational structure
3	Lack of funding
4	Lack of support from university administration
5	Lack of time
6	Lack of access to data
7	Lack of training
8	Lack of opportune communication and information
9	Resistance to change
10	Profit mentality
11	Lack of more rigorous regulations
12	Lack of interdisciplinary research
13	Lack of performance indicators
14	Lack of policies to promote sustainability on campus
15	Lack of standard definitions of concepts
16	Technical problems
17	Lack of designated workplace
18	The “ <i>Machismo</i> ”

Source: Velazquez et al. (2004)

Most of these factors are common and aligned to suggestions from other scholars, i.e., lack of funding, organisational structure, lack of awareness, interest and involvement. The last

factor, the “*Machismo*” is defined in their paper as a Latin American central concept that affects female sustainability leaders. Because they are women, they suffer from lack of confidence in leading an initiative. They claim that women have to spend more energy, time, and resources than their male counterparts. The “*Machismo*” has developed in more recent literature from other regions to refer to inequality, and genderism pertaining to the societal pillar of sustainability and reflected in the UN’s SDGs no. 5: promoting gender equality.

Leal Filho (2007) discussed some of the problems he observed in his seminal cross-sectional work on HE sustainability between 1999–2007 in European countries. He noted an improvement in perceptions of sustainability regarding 4 problems/challenges affecting HEIs sustainability transformation.

The 4 problems based on the perceptions of the interviewees in Leal Filho (2007) are:

1. 23% find sustainability is too abstract in 2007, down from 37% in 1999
2. 31% find sustainability is a too broad a concept, down from 40%
3. 7% thought that the issue is not important, down from 16%
4. 9% thought that sustainability bears little links with the curriculum, down from 12.

More recently, Hooley et al. (2017) list 5 obstacles/challenges to initializing sustainability in higher education based on their study of universities in the State of Kansas, USA. These obstacles are:

### **In Terms of the HEI’s Level**

The concept of sustainability is not clearly understood. This is where some stakeholders perceived sustainability as a concept focusing on ecological issues, while others had a general perspective concerned with other societal and economic elements (Urbanski & Leal Filho, 2015; Hooley et al., 2017).

Programme implementation in sectors/departments throughout the HEI. This is where sustainability orientation programmes are implemented across departments, units, and sectors within the institution to become truly sustainability oriented. The problem with providing such programmes is the lack cross-sector initiatives necessary to adopt new approaches necessary to achieve campus-wide results. The challenge here is that administrative and operations staff may be unwilling to support members of staff or students in these initiatives (Hooley et al., 2017).

### **In Terms of Curriculum Development and Course Delivery**

Faculty members are usually responsible for the development of sustainability curriculum. This means that they will not only perform their teaching and research tasks, but also will reach out beyond their own disciplines to liaise with other faculty members in different disciplines to develop a multidisciplinary structure necessary for the establishment of a profound sustainability curriculum. Several obstacles face faculty members especially when the existing systems challenge their ability to develop unorthodox course content and delivery systems. Faculty members frequently face inability or unwillingness of administration to work effectively, which will often discourage sustainability curriculum development initiatives (Hooley et al., 2017).

### **In Terms of Faculty Members**

After developing a sustainability curriculum, faculty members are often burdened with overloads to carry out their own discipline/department commitments in addition to the new

courses related to sustainability, particularly if funds are not allocated to recruit new faculties devoted to the newly emerged curriculum. Moreover, faculty find themselves urgently needing additional resources to develop their own skills to match the newly established curriculum (Hooey et al., 2017).

### In Terms of Funding

Raising funds for newly established sustainability programmes might be challenging. Even when faculty members, administrative staff, and institutional systems are passionate about developing sustainability programmes, funding opportunities are usually linked to predetermined programmes. Donations from former students are usually given to their former departments (Hooey et al., 2017).

### Political and Economic Challenges

If the importance of sustainability is not understood and acknowledged by political and economic bodies, many barriers to sustainability-related endeavours would arise. Hooey et al., (2017) note that in the United States, the effects and influences of obstacles to the adoption of sustainable practices differs among states, dependent on the domestic and local economic, political, and societal conditions.

In a similar vein, Casarejos et al. (2017) identify 4 key topics/dimensions that foster sustainability in HEIs organisational environment including the administrative, sociocultural, academic, and operational topics (Table 2). It is rational to argue that lacking these dimensions would pose challenges to HEIs sustainable orientation and performance. Each of these dimensions includes key topics. The following table, adopted from Casarejos et al. (2017), tracks the dimensions and their key topics and the origin from which they were formulated.

Dimension	Key topics	Formulated from
Administrative	Governance, Transparency, Planning, Monitoring, Reporting, Assessment, Budgeting, Investment innovation	AASHE (2016); Lozano et al. (2013); (2015)
Sociocultural	Social equity, Gender equality, Awareness, Engagement, Altruism, Wellbeing, Outreach, Affordability, Holistic thinking	
Academic	Curriculum, Research, Interdisciplinary approach, Intercultural dialog, Innovation and transferability, Collaboration	
Operational	Water, Energy, Food, Materials, Waste, Grounds and biodiversity, Climate change, Resilience	

Source: Casarejos et al. (2017)

Similarly, Hussain et al. (2019) categorize 10 main themes of sustainable development drivers based on the earlier work of Wright (2004); Lozano et al. (2013). These themes/drivers are not isolated from the 4 dimensions proposed by Casarejos et al. (2017). Hussain et al. (2019) put the following themes:

1. Curricula,
2. Research,
3. Operations,
4. Outreach & collaboration,
5. Universities collaboration,
6. Assessment & reporting,
7. Trans-disciplines,

8. Institutional framework,
9. Sustainable development through campus experiences, and
10. Educate the educators

**Table 3**  
**MAJOR WEAKNESSES OF SUSTAINABILITY ASSESSMENT TOOLS**

Assessment tool	Major weaknesses
Federation's state of the campus environment	Little use of the term sustainability Small sample within each HEI
Sustainability Assessment Questionnaire	No mechanisms for comparison or benchmarking Difficult for large universities to complete
Auditing instrument for sustainability in Higher Education	Hard to understand No consideration for motivations and motives
Higher Education 21's sustainability indicators	Hard to assess and compare Indicators may not reflect the significant important elements
Environment Workbook and Report	Focused on the eco-efficiency of operations Hard to collect and analyse information No consideration for motivations and motives
Greening Campuses	Difficult calculations and comparisons Focus on Canadian community colleges Resources out of date
Campus Ecology	Environmentally focused (i.e., not sustainability) No longer "state of the art"
Environmental performance survey	Operational eco-efficiency focus Neglect of sustainability and cross-functional initiatives
Indicators Snapshot/Guide	Operational, eco-efficiency focus, with little reference to processes, motivations, benchmarking and sustainability
Grey Pinstripes with Green Ties	Not sustainability-specific Neglects decision-making processes and operations
EMS Self-assessment	Operational eco-efficiency focus

Source: Shriberg (2002)

The 10 themes/drivers could be also perceived as challenges and even drivers/triggers. Notably, the only emergent theme in Hussain et al. (2019) work is the one related to assessment & reporting. In this regard, other challenge facing the development of sustainability is lacking the tools to measure and assess organisational sustainability performance. In HEIs, there are a few scattered assessment tools that are used to measure sustainability performance, but without universal consensus on their pursuance. One of the most recognised tools is the Sustainability Tracking, Assessment, and Rating System (STARS) introduced by the Association for the Advancement of Sustainability in Higher Education (AASHE) to develop a standard method for tracking sustainability progress for US and Canadian colleges and universities (Urbanski & Leal Filho, 2015). STARS participants have grown steadily since 2009 when STARS was first introduced. Urbanski & Leal Filho (2015) praise STARS which was launched in 2009 for being a transparent, self-reporting framework for HEIs. The system works by measuring sustainability performance in academics, operations, and administration, by using pre-specified parameters. STARS participation has grown steadily since 2009 with 300 rated HEIs participating in 2014. Since the release of STARS 2.0 in 2013, HEIs outside the USA and Canada gained access to participate in Stars raising the total number of participants in 2021 to more than 1000 HEIs. Among the 1000+ participants, only 6 Arab HEIs are listed. Other measurements include the Sustainability Tool for Auditing University Curricula in Higher Education (STAUCH) in

addition to other ad hoc measurements such as GreenMetric and Global Reporting Initiative (GRI). Earlier, Shriberg (2002) summarized the strengths and weaknesses of as much as 10 cross-institutional sustainability assessment tools. Table 3 depicts the major weaknesses of the 10 assessment tools as they pertain to challenges and obstacles facing HEIs sustainability development.

Notably, many of the assessment tools examined in Shriberg (2002) study are outdated and no longer used; giving way to other widely spread emergent assessments such as the STARS, STAUCH, and GreenMetric. Lately, Salleh et al. (2020) suggest 3 generic categories of challenges pertaining to promoting sustainable development and practice in higher education in their study of Malaysian HEIs. These are the lack of involvement, lack of funding, and lack of policy. HEIs should commit time and professional resources for sustainable development to overcome the lack of involvement challenge (Aleixo, 2018; Salleh et al., 2020). Lack of funding was stressed by Leal Filho et al. (2009; 2018a; b) as a major challenge because the systematic change towards sustainability is usually associated with substantial expenses. As for the lack of policy, Franco et al. (2018) warn that weak procedures could undermine the shift towards sustainable development.

Similarly, Mian et al. (2020) conduct SWOT analysis to identify challenges and opportunities for university sustainability adoption in relation to industry 4.0 (4<sup>th</sup> industrial revolution focusing on system integration, mechanisation, decentralisation, and cyber-physical systems). In addition to the positive sides identified in the form of Strengths and Opportunities, we summarize the negatives represented by the Weaknesses and Threats as they pose continuous challenges for contemporary HEIs sustainability adoption. 11 Weaknesses and 7 Threats are depicted in (Table 4).

<b>Weaknesses</b>	Less coordination Lack of funded projects Low collaboration Lack of specialised staff Absence of programmes/seminars Poor awareness	Lack of multidisciplinary teams No inclination to develop own systems Lack of strategies University participation Increased dependence on IT
<b>Threats</b>	Technology acquisition rather than developing Security issues Intangible roadmap Absence of planning commissions	Huge investments Lack of expertise Employee fear and concerns

Source: Mian et al. (2020)

As for the solutions and remedies for the challenges mentioned above, several scholars (for example, Leal Filho et al., 2007; Velazquez et al., 2005; Pavlova, 2007; 2008; Makraki, 2007; Ryan et al., 2010; Lozano, 2011; 2013; Hooey et al., 2017; Hamid et al., 2017; and Mian et al., 2020) have suggested actions to overcome many of the challenges faced by HEIs in their transformation to sustainability. The suggestions include:

1. Inclusion of Social Responsibility (SR) in the institutional strategy, vision, mission, and values;
2. Updating curriculum to include the latest trends in sustainability including the social, economic, and ecological concepts;



3. Encourage sustainability research projects, and promotion of societal, economic, and ecological sustainability issues in inter-disciplinary studies;
4. The development of stakeholder partnerships including the government, non-governmental organisations, and industrial partnerships to promote outreach;
5. Sustainable institutional operations, with thorough monitoring, assessment and reporting schemes;
6. Staff development and rewards;
7. Student opportunities;
8. Cultural inclusivity;
9. Knowing and understanding sustainability problems/challenges;
10. Increasing and promoting awareness about sustainability through projects;
11. Fulfil the eco-design principles;
12. Work according to the priorities of sustainable development practices;
13. Sustainability is a uniting theme, can build bridges between various local, regional, and global stakeholders;
14. Acknowledge, and contribute, to universal declarations on sustainability;
15. Voluntarily participate in Sustainability Assessment Initiatives.

Following the previous review of literature on sustainability of HEIs and the most common challenges faced by this important sector, we can confidently claim that no previous studies have tackled the challenges facing HEIs in the Arab World. As noted earlier, with more than 700 universities, 450 million inhabitants, and 22 countries, the Arab world have many opportunities to capture in terms of sustainability, and also faces numerous challenges to overcome including political, economic, and societal ones. HEIs in the Arab world have a long path to cross to become sustainable. All of the challenges identified above are relevant to the Arab world context. Arab HEIs face the same challenges as their benchmarks in the Western developed societies and even more with political unrest, poverty, and social transformations burdens.

## METHODOLOGY

In order to answer the study's fundamental question about what are the challenges facing HEIs in adopting sustainability orientation, we conduct a systematic literature review of published peer-reviewed research, conference proceedings, and textbooks. A literature review promotes theoretical developments by pointing out directions for future research (Webster & Watson, 2002).

The selection of published work on sustainability challenges in HEIs is carried out through a search for several keywords including "sustainability", "higher education", "university", "challenges", and "obstacles". 4 academic databases are used to identify a pool of relevant publications including Ebsco ([www.ebsco.com](http://www.ebsco.com)), Emerald Insight ([www.emerald.com](http://www.emerald.com)), Scopus ([www.scopus.com](http://www.scopus.com)), and ProQuest ([www.proquest.com](http://www.proquest.com)). These are among the top academic databases that have global recognition. The search criteria used excluded sustainability publications on other sectors than Higher Education. The timeframe of the literature review focused on publications between 2000-2020. Important work that dated back than the year 2000 was also considered. Our aim in this study, reflected in the research question is to identify the most common challenges faced by HEIs in adopting sustainability, with specific attention paid to the Arab world. We aimed at supporting our academic institutions and community in implementing sustainability efficiently, and effectively in search of fulfilling an important UN SDG.

A total of 961 publications are initially identified and subjected to an initial scanning process where abstracts are analysed and, when necessary, the complete text. After excluding publications that appeared in more than one database, and those focused on other context than sustainability challenges in higher education. A total number of 46 studies are used in our literature review analysis. This analysis includes identification of the research methodology adopted in each study, categorisation of studied according to a concept-centric approach (Webster & Watson, 2002) and the findings/results of each study. The results of the literature analysis are categorised, summarised and depicted in Table 5. We propose 3 generic domains/dimensions to encompasses a total of 55 challenges/obstacles identified in the literature analysis. Table 5 also depicts proposed solutions and remedies to support HEIs overcoming each domain of challenges.

## DISCUSSION AND CONCLUSION

As noted earlier, no previous publications studied sustainability challenges in HEIs in the middle eastern region. The majority of studies were applied to the developed, developing, emerging, western, Asian, and Latin contexts, but we could not identify a single study tackling our research topic in middle eastern HEIs. The study's findings captured in Table 5 are based on research conducted throughout the world.

The first set of challenges identified are categorised under the "Holistic/epistemological" domain and it includes a total of 9 challenges such as the philosophical perception of sustainability, the lack of awareness, the lack of a standardised definitions of concepts, the lack of understanding of the concept, institutional framework, poor awareness, political and economic challenges, lack of strategies, and university participation in sustainability initiatives. Based on the literature analysis, suggestions for remedies of these challenges include the inclusion of social responsibility in the institutional strategy, development of stakeholder partnerships, and promoting sustainability awareness.

The second set of challenges are categorised under the "*Administrative, funding, and assessment*" domain which included a total number of 27 challenges related to the organisational structure, organisational functions and operations of the HEI. Possible solutions to overcome these challenges include the introduction of sustainable institutional operations, cultural inclusivity, acknowledgment and contribution to universal declarations on sustainability, and voluntary participation in sustainability assessment initiatives.

Finally, the third set of challenges are categorised under the "*Campus, faculty, curriculum, and research*" domain. This domain included 19 challenges pertaining to campus academic life including curriculum and research development, staff training, and interdisciplinary collaboration. Possible remedies for these challenges include updating curriculum to include the latest trends in sustainability, encourage interdisciplinary research projects on sustainability, staff development and rewards, and promoting sustainability awareness.

This study provides a novel contribution to knowledge as it is among few that categorise and group diverse sustainability challenges into 3 main domains. To the best of our knowledge, the study is among the first to attempt to identifying sustainability challenges in HEIs in the Middle East.

<b>Table 5</b>		
<b>SYNTHESIS AND CATEGORISATION OF KEY CHALLENGES, DOMAINS, AND SUGGESTED REMEDIES</b>		
<b>Domain</b>	<b>Key challenges/obstacles/problems</b>	<b>Suggestions for remedies</b>
<b>Holistic/ epistemological challenges</b>	1. Philosophical (epistemological) perception of Sustainability	1. Inclusion of Social Responsibility (SR) in the institutional strategy, vision, mission, and values; The development of stakeholder partnerships including the government, non-governmental organisations, and industrial partnerships to promote outreach; 3. Knowing and understanding sustainability problems/challenges; 4. Increasing and promoting awareness about sustainability through projects/activities; 5. Sustainability is a uniting theme, can build bridges between various local, regional, and global stakeholders; Acknowledge, and contribute, to universal declarations on sustainability; . Voluntarily participate in Sustainability Assessment Initiatives.
	2. Lack of awareness, interest, and involvement	
	3. Lack of standard definitions of concepts	
	4. The lack of understanding of the concept of sustainability	
	5. Institutional framework	
	6. Poor awareness	
	7. Political and economic challenges	
	8. Lack of strategies	
	9. University participation	
<b>Administrative, funding, and assessment challenges</b>	1. Organisational structure	1. Sustainable institutional operations, with thorough monitoring, assessment and reporting schemes; 2. Cultural inclusivity; 3. Knowing and understanding sustainability problems/challenges; 4. Increasing and promoting awareness about sustainability through projects/activities; Design and produce products in accord with eco-design principles; 6. Work in accord with sustainable development practices; Acknowledge, and contribute, to universal declarations on sustainability; . Voluntarily participate in Sustainability Assessment Initiatives.
	2. Lack of support from university administration	
	3. Lack of time	
	4. Resistance to change	
	5. Profit mentality	
	6. Lack of more rigorous regulations	
	7. Lack of performance indicators	
	8. Lack of policies to promote sustainability on campus	
	9. Lack of designated workplace	
	10. The “ <i>Machismo</i> ” / genderism	
	11. The need to implement programmes across units/sectors within institutions	
	12. Administrative	
	13. Sociocultural	
	14. Operational	
	15. Technical problems	
	16. Less coordination	
	17. Intangible roadmap	
	18. Absence of planning commissions	
	19. Increased dependence on IT	
	20. Technology acquisition rather than developing	
	21. Security issues	
	22. Funding	
	23. Lack of funding	
	24. Lack of funded projects	
	25. Huge investments	
	26. Assessment & reporting	
	27. No inclination to develop own systems	
<b>Campus, Faculty, Curriculum &amp; Research challenges</b>	1. Lack of interdisciplinary research	1. Updating curriculum to include the latest trends in sustainability including the social, economic, and ecological concepts; 2. Encourage sustainability research projects, and promotion of societal, economic, and ecological sustainability issues in inter-disciplinary studies;
	2. Curriculum development and course delivery	
	3. Curricula	
	4. Research	
	5. Outreach & collaboration	

6. Universities collaboration	3. Staff development and rewards;
7. Trans-disciplines	4. Student opportunities;
8. Low collaboration	5. Increasing and promoting awareness about sustainability through projects;
9. Lack of specialised staff	6. Knowing and understanding sustainability problems/challenges;
10. Lack of access to data	7. Fulfil the eco-design principles.
11. Lack of training	
12. Lack of opportune communication and information	
13. Academic	
14. Faculty members	
15. Educate the educators	
16. Lack of multidisciplinary teams	
17. Lack of expertise	
18. Employee fear and concerns	
19. Sustainable development through campus experiences	

Source: Developed by the authors

## Implications and Future Research

We look forward to putting our findings to empirical validation in HEIs. Future studies are encouraged to adopt, apply, and criticise the 3 proposed domains of HEIs sustainability challenges. Developing measurement scales to capture perceptions of HE stakeholders towards each/all domains could provide valuable contribution to knowledge. Finally, future studies in the context of Middle Eastern and Arabic speaking countries are highly encouraged.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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