

Our Common Gulf Cities: agenda for equitable AEC industries for sustainable urban development

Our Common
Gulf Cities

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Abstract

Purpose – This paper delves into the critical role of women in the domains of architecture, engineering, construction and urban planning, particularly within the context of the United Nations sustainable development goals (SDGs) and the imperative of achieving gender parity. Concentrating on the Gulf Cooperation Council (GCC) countries, this paper explores the profound importance of women as essential contributors to urbanisation and sustainable development. It scrutinizes the existing gender disparities within the architecture, engineering and construction (AEC) industries; evaluates prevailing women empowerment indices in diverse sectors; and presents a strategic framework for harnessing women's engagement to cultivate inclusive and sustainable urban cultures in the GCC. This conceptual paper introduces an actionable framework that can serve as a guiding agenda for empowering women in the AEC sectors by incorporating their socio-cultural, economic and ecological contributions towards creating sustainable cities.

Design/methodology/approach – Centring its focus on Gulf Cities, this paper employs a comprehensive approach to examine the current gender disparities within the architecture, engineering and construction sectors. It probes potential barriers and advocates for leveraging women's participation to foster inclusive and sustainable urban development in the GCC. The study introduces the Women's Empowerment Index (WEI) for the Gulf AEC industry elucidating how these measures are translated into a tailored framework.

Findings – The paper presents a practical framework that provides actionable guidance for engaging various stakeholders, including governments, academia and industry players, to empower women within the AEC industries. An "Agenda for equitable AEC industries for sustainable urban development: Our Common Gulf Cities" is culminated in a Women Empowerment Index for the AEC Industry (WEI-AEC) designed to serve as a guidance tool to monitor progress within industry, governments and academia.

Research limitations/implications – Future research endeavours could advance the framework by conducting institutional support analyses, multi-stakeholder collaboration studies and practical testing of the framework within real-world scenarios.

Practical implications – The findings of this study can guide and influence a diverse range of initiatives, including policy development, educational strategies, corporate endeavours, awareness campaigns, capacity-building programs, skill enhancement initiatives and knowledge exchange among the Gulf Cooperation Council countries.

Originality/value – This conceptual paper introduces a practical framework that can serve as a roadmap for implementing the study's potential to shape policies, educational programs and corporate initiatives aimed at advancing both gender equality and the development of sustainable cities.

Keywords Architecture, Policy, Equity, Sustainable urban development, AEC industry

Paper type Conceptual paper

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Introduction

Whilst composing this article, the 2023 Nobel Prize in Economics was awarded to economic historian Claudia Goldin for her ground-breaking research uncovering the root causes of change and shedding light on the remaining gender gap. At the same time Tom Ravenscroft's article on NEOM's Exhibition as a side event at Venice's Biennale 2023 commenting on "Neom's Unwelcome Presence in Venice Reinforces the Need for Radical Change" (Ravenscroft, 2023). The photograph in question, labelled as "Pioneering Architects, Designers, and Urban Visionaries" by Neom, presents a group of esteemed architects, including prominent figures like Peter Cook (86 years old), Massimiliano Fuksas (79 years old) and Jean Nouvel (77 years old). Notably, within this assembly of 23 distinguished individuals, the only female presence is Italian architect Doriana Fuksas. Consequently, this arrangement results in a composition that is 96% male, seemingly lacking in diversity and adding to Goldin's data bank of gender gaps in the workforce.

So these selection of architects are now commissioned to design a new city that is destined to be the home for 9 million inhabitants (Neom, 2023) within a very young Saudi Arabia, where 63% of the 32.2 million Saudis is under age 30, half of them women, and only 2,500 graduands (1.7% of the overall female) in architecture, engineering and construction (AEC) industries (General Authority for Statistics, 2020). As stated in the Saudi Vision 2030 document, "Saudi women are yet another great asset. With over 50% of our university graduates being female, we will continue to develop their talents, invest in their productive capabilities and enable them to strengthen their future and contribute to the development of our society and economy" (Kingdom of Saudi Arabia, 2021).

Consequently, female employment participation could increase the GDP across the MENA region by 57%, or as much as \$2.0tn (PWC, 2022). Given the socioeconomic and political importance of increasing women's participation in the workforce but also the concerns of sustainability and liveability of future Gulf Cities this conceptual paper pays attention to relating the role of women within the AEC industries and their impact on sustainable urban development within the Gulf Region through those steps:

Relating to sustainable development goal (SDG) 5: where are the women? In a region like Saudi Arabia, which, like all Gulf countries, boasts a youthful population, where women constitute 52% of the populace, the author explores the absence of women in this context of AEC, supported by factual data.

SDG 11: sustainable cities: what are the benefits of an equitable approach? The author highlights the absence of local and regional participation in the decision-making processes concerning the future of Gulf cities, underscoring the need for a socio-cultural adaptive framework for achieving the sustainable development goals (SDGs).

SDG 5 x 11: agenda to work on Gulf future cities together: Acknowledging the significant progress made in gender equity and women's empowerment in various industries and sectors, the author explores strategies for integrating these advancements into sustainable cities, architecture, engineering and urban planning. This leads to developing an "Agenda for equitable AEC industries for sustainable urban development: Our Common Gulf Cities".

Gender and gulf cities

The current state of gender parity in AEC industries for Gulf cities is examined in [Table 1](#) taking into account key indices like the Human Development Index, the Gender Inequality Index and the Global Gender Gap Index for the Gulf Countries of KSA, UAE, Qatar and Oman.

Human development index (HDI [1])

The HDI of the GCC countries varies, with the UAE having the highest HDI score of 0.911, followed by Saudi Arabia and Bahrain, both with an HDI score of 0.875, Oman has an HDI

score of 0.816 and Qatar has an HDI score of 0.855. The highest ranking has Switzerland with 0.962 and the lowest score of 190 countries has Chad with 0.394.

Gender inequality index (GII [2])

According to the [World Economic Forum's 2023](#) Global Gender Gap index (GGGI), out of the 156 countries measured, Saudi Arabia was ranked at 147, Oman at 145, Kuwait at 143, Qatar at 142, Bahrain at 137 and the UAE at 72. Although no country has yet achieved full gender parity, the top nine countries (Iceland, Norway, Finland, New Zealand, Sweden, Germany, Nicaragua, Namibia and Lithuania) have closed at least 80% of their gap ([World Economic Forum, 2023](#)).

Global gender gap index (GGGI) [3]

Despite some symbolic reforms by Gulf governments, many GCC countries have remained at the bottom of the Global Gender Gap Index for years and are projected to continue doing so.

In the Gulf Region, the United Arab Emirates (UAE) generally leads in various gender and human development indices, displaying higher levels of gender equality and human development. All the countries in the region have strong scores for educational attainment, health and survival. A trend towards higher gender inequality, mainly concerning economic participation and political empowerment, is apparent, with Qatar and Oman lagging. Increased educational attainment is just the next step to getting these well-educated women into the labour force across the Gulf countries.

The higher gender equality and empowerment scores in the UAE and KSA suggest a more conducive environment for women to pursue STEM careers in the AEC industries. These countries have made progress in addressing barriers and promoting gender equality in education, workforce participation and leadership roles. However, it's essential to continue efforts to bridge any existing gender gaps and create even more inclusive and supportive environments for women in these fields.

Gulf government reforms and visions

The GCC countries have launched initiatives to promote female participation and improve conditions across the labour sector. For instance, Bahrain, Saudi Arabia and the UAE have introduced ground-breaking reforms that are allowing women to more fully participate in economic activities, as they also support equal treatment for women in their personal ([Worldbank, 2021](#)).

Many Gulf nations have already instituted several socioeconomic blueprints with deadlines that coincide with the 2030 UN SDGs:

- (1) Saudi Arabia's Vision 2030 achieved by 2020 (e.g. increased women's participation in the workforce from 22% to 33.2%, women-owned SMEs by 16 percentage points from 22% to 38%). Reforms have been introduced to support women's access to financial services and to improve wages, jobs and improved working conditions, as well as

	KSA (%)	UAE (%)	Qatar (%)	Oman (%)
Human Development Index (HDI)	87.5	91.1	85.5	81.6
Gender Inequality Index (GII)	24.7	4.9	22	30
Overall Global Gender Gap Index (GGGI) [% parity]	63.7	71.2	62.7	61.4
Economic Participation and Opportunity, Subindex	52.1	53.6	50.8	48.8
Educational Attainment, Subindex	98.6	98.8	98.2	95.7
Health and Survival, Subindex	96.4	96.3	94.7	96.1
Political Empowerment, Subindex	7.7	36.3	7.1	5.1

Source(s): Created by author

Table 1.
Key indices Gulf region
and gender

making the dismissal of pregnant women illegal and guaranteeing payment of salaries during maternity leave (Kingdom of Saudi Arabia, 2021). Additionally, the New Urban Agenda adopted by the Kingdom in 2022 also highlights an increase of women's participation in the labour market and mentions programmes such as the Human Capability Development Program and the Equal Opportunity Grants Program to excel opportunities in the industries (Ministry of Municipal, Rural Affairs and Housing and Kingdom of Saudi Arabia, 2022).

- (2) Qatar's National Vision 2030 (supporting: Increased and diversified participation of Qataris in the workforce, increased opportunities and vocational support for Qatari women; bolstering women's role in society and empowering them to be active community members; enhance women's capacities and empower them to participate fully in the political and economic spheres) (Planning and Statistics Authority, 2023).
- (3) Oman 2040 Vision: A Decent and Sustainable Life for All targeting a cohesive and vigilant society that is socially and economically empowered, especially women (Oman Vision, 2040 Implementation Follow-up Unit, 2020).
- (4) UAE 2031 vision: An inclusive and cooperative society, built on the values of tolerance and generosity (We the UAE, 2031, 2023); and the UAE's Federal Decree Law No. 33, which protects women from labour market discrimination and provides maternal and childcare benefits and resources to working women (FAO, 2021).

Global gender parity index (GGPI) and women empowerment index (WEI)

Existing indices measuring the gender gap and women empowerment can help identifying the relevant sectors where additional measures as explored in this paper could subsequently be added to measure women empowerment in the AEC industries.

The WEI focuses solely on women, measuring their power and freedoms to make choices and seize opportunities in life. The GGPI evaluates the status of women relative to men in core dimensions of human development and exposes gaps in parity between women and men (United Nations, 2023b).

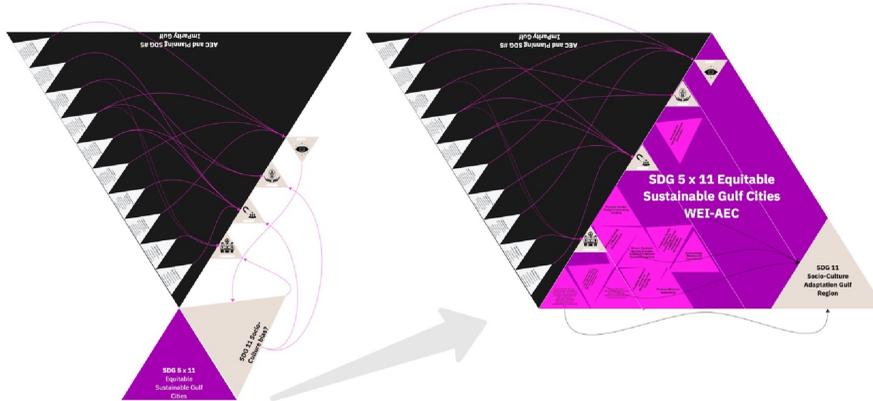
Other global initiatives that need to be mentioned in the context of women empowerment in the realm of Urbanism, Cities and Governance are the following:

- (1) UN-Habitat: "Women-led Cities: Supporting and Enhancing Creative Multilateralism of Diverse Women's Leadership of Businesses, Cities and Grassroots Organizations to Address Inequality and Gender-Based Violence and Make Cities Safe, Inclusive, Resilient and Sustainable" (*Women-Led Cities, 2023*).
- (2) UN-Habitat's Her City toolbox empowers women to make significant improvements in urban development (UN-Habitat, 2022).
- (3) OECD TOOLKIT FOR MAINSTREAMING AND IMPLEMENTING GENDER EQUALITY focussing on strengthening governance and accountability for gender equality as a means to improving the gender-responsiveness of public policy (OECD, 2018).

Specificities towards the AEC industries are attempted to be narrowed down in this paper as a workable tool considering relevant global indices relevant to achieve a structure of the proposed framework of which the results can feed into the established indices.

Approach for WEI in the AEC industries

The approach presented in Figure 1 for formulating an agenda for women's empowerment in the AEC industries involves a multi-step process. Firstly, it identifies the factors contributing



Source(s): Created by author

Figure 1.
Equitable sustainable
Gulf cities study
approach

to gender disparity (denoted by the black triangle). These challenges are aligned with stakeholder groups outlined in internationally recognized frameworks, such as the United Nations Women’s Empowerment Index (WEI) and the Global Parity Index (GPI), depicted in Figure 2. Further the underrepresented purple triangle for “equitable sustainable Gulf cities SDG 5x11” is expanded into solutions (pink triangles Figure 1) to mitigate the identified challenges and inspired through the UNESCO STEM and Gender Advancement Working Paper (UNESCO Institute for Statistics, 2016). This concept paper goes on to provide a detailed account of how these metrics can be adapted and applied to the context of Gulf societies. This adaptation is aimed at informing an agenda for fostering equitable and sustainable Gulf cities, referred to as the WEI-AEC for “Our Common Gulf Cities”.

Driving forces for imparity in the AEC

The existing conditions for imparity (as depicted Figure 3 as an overview of driving forces) in the AEC workplace can be described in the following statements, that for this study relates to the Science, Technology and Innovation Gender Objectives List as published by the UNESCO Institute for Statistics (2016), is translated in to the AEC applicable objectives and arranged according to responsible stakeholder role (government, academia and industry) as identified in both empowerment indexes WEI and GGPI:

- (1) *Traditional gender roles:* Deep-rooted cultural norms and traditional gender roles have historically confined women to domestic spheres. These norms often hinder women’s participation in fields that are traditionally seen as male-dominated in the AEC industries in the Gulf Countries where predominately male guest workers and expats are involved.
- (2) *Stereotypes and bias:* Gender stereotypes that associate men with technical skills and leadership positions can discourage women from pursuing careers in AEC. Biases and misconceptions about women’s capabilities and commitment to these demanding fields can affect hiring decisions and limit career advancement.
- (3) *Educational barriers:* Unequal access to education and limited opportunities for women to pursue STEM (Science, Technology, Engineering and Mathematics) education can hinder their entry into AEC fields. This can result from societal

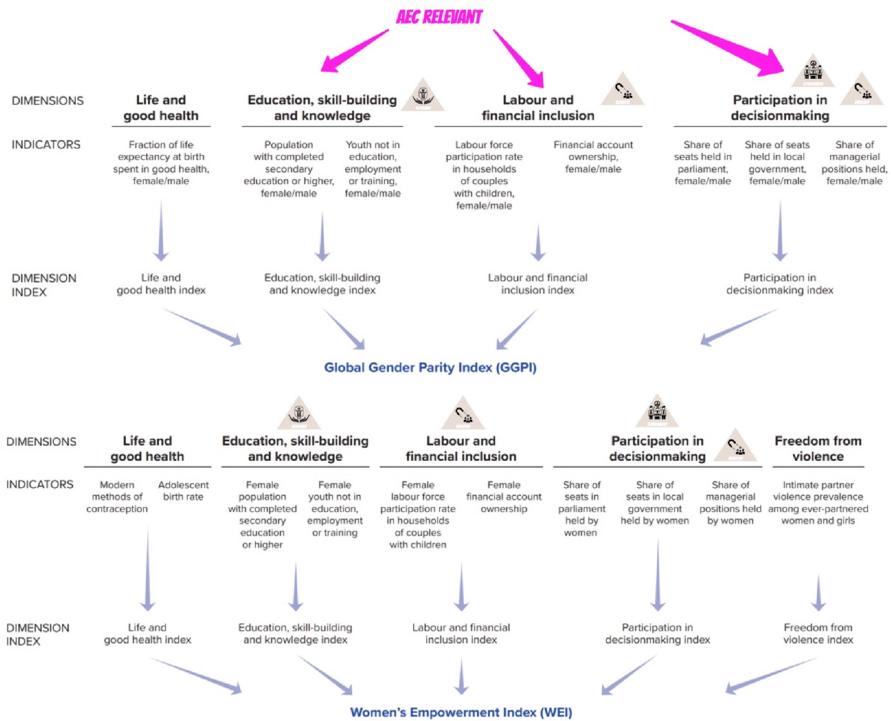


Figure 2.
UN women empowerment indices and AEC relevance

Source(s): Created by author

expectations or inadequate support for women in STEM education. Women Graduated in STEM Fields as a Percent of All Students Graduated in Gulf Universities during SY 2016–2017: Oman 39%, Qatar 22%, KSA 4% and UAE 35%. The Women Percentage Share in Labour Force versus STEM Education in 2016 are Oman 13% of 68% graduates, Qatar 14% of 52% graduates KSA 16% and 38% graduates, and UAE 12% and 65% graduates (Islam, 2019).

- (4) *Workplace culture*: Male-dominated workplace cultures may perpetuate an environment that is less inclusive for women. This can manifest in various forms, such as unequal pay, lack of flexible work arrangements and limited mentorship opportunities.
- (5) *Lack of role models*: The scarcity of visible female role models occupying leadership positions can discourage young women from envisioning themselves in such roles. Role models play a pivotal role in inspiring and motivating women to pursue careers in the field of AEC and aim for leadership positions. In previous years, figures like Zaha Hadid have been the sole recognizable role models in the Arab world. However, there are reasons for optimism with emerging role models like Suad Amiry (Palestine), Hend Almatrouk (Kuwait), Sumaya Dabbagh (UAE, KSA), Nadia Habash (Jordan, Palestine), Dana AlAmri (KSA) and many others who are waiting for wider recognition and promotion. These role models can also serve as community enablers and collaborators within larger firms, breaking away from the notion of strictly adhering to the “starchitect” mentality.

Driving Forces for Imparity in the AEC



Source(s): Created by author

Figure 3. Driving forces for inequality in the Gulf AEC industry

- (6) *Societal expectations:* Societal expectations often place women under pressure to prioritize family responsibilities over their career aspirations, leading to significant effects on their decision-making. Striking a balance between work and family life can pose challenges, especially in demanding industries like AEC. Interviews with stakeholder groups of young women aspiring to careers in architecture and urban planning in Oman (ArchitectESS inauguration in 2019) have revealed that these expectations persist, particularly within Muslim cultures. Women often face societal expectations, particularly after completing their education, but are hesitant to address them in the workplace. Consequently, it is noticeable that many of the significant consultancies operating in the Gulf region are influenced by Western business culture that might be reluctant or unaware to implement societal needs of Arab-Muslim cultures specific to the Gulf region.
- (7) *Lack of networking opportunities:* Networking and professional development play a significant role in career growth. Women may have fewer opportunities to network and connect with influential figures in AEC industries and decision-making circles.
- (8) *Implicit bias and discrimination:* Implicit biases against women can influence recruitment, promotion and evaluation processes, leading to unequal opportunities and pay. Discriminatory practices can further hinder women's progress. As the MEA study ([Gender Discrimination Prevalent in Middle East Architecture Firms, Study Finds – Middle East Architect, 2019](#)) describes 57% of the women who completed the survey (practicing in the MENA region) said they had experienced sexual discrimination in meetings with clients, contractors, engineers, planners and other architects. Biases and discrimination may be subject beyond STEM related professions and be prevalent in societal and cultural structure. Especially in the Gulf region it has to be noted that the parity level has increased over the last year but is still quite low (see [Figure 4](#)) based on the findings of the UNESCO Institute for Statistics [UIS \(2019\)](#).
- (9) *Lack of policies and support:* Inadequate policies and support systems, such as childcare facilities or maternity leave, can discourage women from pursuing careers and leadership roles in AEC.
- (10) *Institutional barriers:* Based on societal biases as well as on legal implications such as unequal rights (divorce, financial services, access to land, access to justice and freedom of movement ([World Economic Forum, 2023](#)) industries and organizations) may lack proactive efforts to address gender diversity and inclusion, perpetuating the status quo.

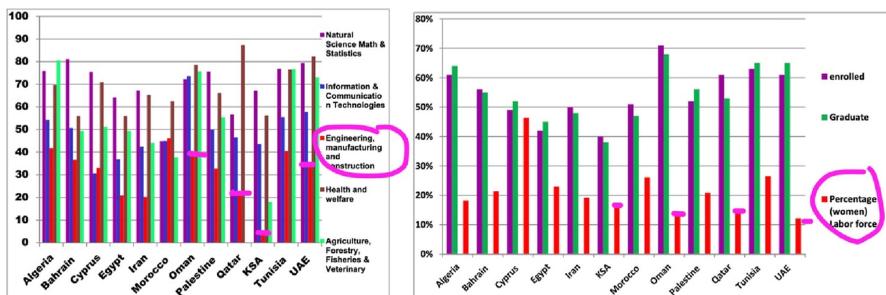


Figure 4. Stem graduands (left) and labour force (right) Middle East adapted from Islam (2019)

Source(s): Unesco Institute for Statistics (UIS, 2019) creative commons Attribution-Sharealike 3.0 IGO license

SDG benefits of equitable gulf city making

“Women bring a different perspective to design and architecture” – Sumaya Dabbagh (Middle East Architect, 2018).

The significance of achieving sustainable urban development, in particular SDG 11 (Our World in Data team, 2023) in Gulf Cities, is intertwined with inclusive planning teams that integrate the socio-cultural context. Hence the following explores the interplay between gender equity and sustainable development under the targets of SDG Goal 11:

- (1) Target 11.1 Safe and affordable housing: Women’s involvement in urban planning and development promotes social equity and can ensure that housing developments consider the specific needs and preferences of women and their families. It helps address historical inequalities, ensures marginalized voices are heard and promotes inclusive policies that benefit everyone, particularly vulnerable and underserved communities.
- (2) Target 11.2 Affordable and sustainable transport systems: Women’s participation in the AEC workforce ensures that the design and planning of urban transport systems are inclusive and considerate of women’s specific needs, such as safety, accessibility and social infrastructure but will also highlight restrictions of shared public space based on socio-cultural requirements of women, who may have specific transportation needs, especially in societies where women’s mobility can be restricted.
- (3) Target 11.3 Inclusive and sustainable urbanization: Equitable planning teams enhance urban planning management by introducing gender-sensitive policies and practices adequately adjusted to the cultural circumstances of the regions as well. So specific planning and implementation can be achieved for local projects and communities beyond global framework application.
- (4) Target 11.4 Protect the world’s cultural and natural heritage: Inclusive teams ensure that the perspectives of all relevant communities and stakeholders are considered when making decisions about the preservation and interpretation of cultural heritage sites.
- (5) Target 11.5 Reduce the adverse effects of natural disasters: Inclusive teams consider critical infrastructure and essential services in the context of different community needs, crucial for vulnerable and marginalized groups.
- (6) Target 11.6 Reduce the environmental impacts of cities: Gender equity in the AEC industry can lead to more environmentally sustainable practices. Women often bring a strong environmental consciousness and can drive efforts to reduce environmental impact in construction and urban development.
- (7) Target 11.7 Provide access to safe and inclusive green and public spaces: Inclusive planning teams bring multifaceted expertise towards designs to accommodate diverse cultural practices, while remaining safe and welcoming to all members of society.

Forming “Our Common Gulf Cities” action framework

Learning from the barriers as discussed above and aiming at contributing to a WEI geared for specifically to the architecture, engineering, construction and planning of cities, the following actionable framework is proposed to engage women empowerment initiatives for a fair share of contributions over a life-time in the AEC industries. The approach follows the UNESCO STEM

and Gender Advancement Working Paper (UNESCO Institute for Statistics, 2016), incorporates previous analysis and adapts it to the GCC and the AEC. The specific actions of this agenda aim to ensure that gender equality, equity and inclusivity are actively reached and promoted within the architecture, engineering and urban planning sectors, from policy design, via education to implementation. By actively involving and considering the perspectives of women professionals in these fields, policies can better address the unique challenges and opportunities they face, ultimately leading to a more equitable and inclusive industry.

Education and academia

1. Engage girls and young women in STEM primary and secondary education, as well as in technical and vocational education and training.
 - 1.1. *Promote careers in architecture, engineering and urban planning*: Inspire girls and young women to explore careers in architecture, engineering and urban planning by fostering interest, providing comprehensive knowledge about these professions and offering role models and mentors who are successful women in these fields.
 - 1.2. *Integrate gender perspectives in educational content*: Ensure that educational content in architecture, engineering and urban planning, including teacher training, curricula, pedagogical methods and teaching materials, incorporates a gender perspective. This includes addressing gender-related topics and challenges within these fields.
 - 1.3. *Promote gender-sensitive teaching approaches*: Encourage gender-sensitive teaching approaches in STEM education, particularly in architecture, engineering and urban planning. This involves facilitating hands-on training, experiments and practical learning experiences that appeal to girls and young women.
 - 1.4. *Foster gender balance among educators*: Actively work towards achieving a gender balance among educators and teachers within these fields, ensuring that girls have access to female role models in their education.
 - 1.5. *Ensure gender equality in school-to-work transitions*: Promote gender equality in the transition from school to the workforce in architecture, engineering and urban planning. This includes providing equal opportunities for girls to explore higher education and pursue careers in these fields.
2. Attraction, access to and retention of women in STEM related AEC in higher education at all levels.
 - 2.1. *Promote careers in architecture, engineering and urban planning*: Inspire girls and young women to explore careers in architecture, engineering and urban planning by fostering interest, providing comprehensive knowledge about these professions and offering role models and mentors who are successful women in these fields.
 - 2.2. *Integrate gender perspectives in educational content*: Ensure that educational content in architecture, engineering and urban planning, including teacher training, curricula, pedagogical methods and teaching materials, incorporates a gender perspective. This includes addressing gender-related topics and challenges within these fields.
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3. Promote the gender dimension in research content, practice and agendas.

3.1. *Advance gender inclusivity in research initiatives*: Establish dedicated research and development (R&D) programs specifically tailored to the interests and contributions of female architects, engineers and urban planners. These programs should encompass research on gender issues within AEC programs and explore the gender dimensions within the national research agenda and portfolio.

3.2. *Integrate gender considerations into R&D project evaluation*: Ensure that gender dimensions are incorporated into the evaluation criteria for R&D projects. This should encompass evaluating how projects consider and address gender-specific aspects within architecture, engineering and urban planning.

3.3. *Promote gender-responsive research hypotheses and participant consideration*: Encourage the formulation of research hypotheses that are sensitive to gender-related factors within the fields of architecture, engineering and urban planning. Emphasize the importance of considering gender when selecting research subjects, ensuring that studies are representative of diverse populations.

3.4. *Foster gender-inclusive research dissemination and communication*: Promote research dissemination and science communication efforts that are responsive to gender dynamics. This includes outreach through science centres and museums, as well as gender-sensitive science journalism. Organize specific conferences and workshops dedicated to addressing inclusion-related issues within architecture, engineering and urban planning research. Encourage the publication of research findings that highlight inclusion-responsive and gender-sensitive practices, providing valuable insights to the broader professional community.

Industry and innovation

4. Gender equality in career progression for architects, engineers, construction and planning related professions.

4.1. *Equal access to job opportunities and recruitment processes*: Implement policies and practices that ensure equal access to job opportunities, including leadership positions, within architecture, engineering and urban planning. Establish transparent and unbiased recruitment criteria and processes that do not discriminate based on gender.

4.2. *Promotion of equal work conditions*: Enforce gender equality in remuneration, ensuring that female professionals receive equal pay for equal work; implement measures to prevent gender bias in performance evaluation criteria, including the measurement of productivity; provide safe and secure conditions for fieldwork, addressing any gender-specific safety concerns; develop and enforce robust policies and procedures to prevent and address sexual harassment in the workplace.

4.3. *Equal access to opportunities in the workplace:* Ensure that female architects, engineers and urban planners have equal access to training, conferences and professional development opportunities; promote gender diversity in research teams, networks (both national and international), expert panels and advisory groups; prevent bias in the review process for publications and patent applications; offer financial and non-financial incentives that encourage and recognize the contributions of female professionals; establish transparent systems for recognition, rewards and awards that are free from gender bias.

4.4. *Promotion of work–life balance:* Provide infrastructure (such as childcare) and adapted contracts (considering part-time, job-sharing arrangements and compressed workweeks) to enable female professionals to balance work and family responsibilities; implement flexible working hours and remote work options to accommodate the diverse needs of architects, engineers and urban planners; encourage the reduction and redistribution of unpaid care and domestic responsibilities; offer family leave options for both parents and ensure appropriate re-entry mechanisms for those returning to the workforce after a career break or family leave.

4.5. *Promote gender equality in international mobility:* Facilitate international mobility opportunities for post-docs and researchers, ensuring that female professionals have equal access; develop support mechanisms to ease women’s return to their home institutions after international assignments.

4.6. *Gender balance in leadership positions:* Promote and actively work towards gender balance in leadership positions within architecture, engineering and urban planning, including decision-making roles and research leadership.

4.7. *Transform STI institutions for gender equality:* Drive transformative changes within science, technology and innovation institutions and organizations, including adjustments to structure, governance, policies, norms and values, to achieve gender equality.

4.8. *Gender equality in professional certifications:* Ensure that gender bias is eliminated from professional certification processes, particularly in engineering, to provide equal opportunities for women in these fields.

5. Promote gender equality in science and technology-based entrepreneurship and innovation activities.

5.1. *Promote gender parity in accessing funding:* Establish industry-specific funds or grants for women-led architectural, engineering and urban planning firms; partner with professional associations to provide financial resources and mentorship for female entrepreneurs in these fields; encourage major construction and infrastructure projects to allocate a portion of contracts to women-led firms.

5.2. *Ensure equitable access to public support for women-owned enterprises:* Develop municipal or regional programs that prioritize women-owned businesses in public infrastructure and urban development projects; collaborate with industry regulators to set diversity and inclusion targets for government contracts.

Provide technical assistance and capacity-building programs specifically designed for women in architecture, engineering and urban planning.

5.3. *Enhance visibility of women entrepreneurs:* Create forums and platforms that highlight the achievements and projects of women architects, engineers and urban planners; encourage prominent women in these fields to serve as mentors and ambassadors for

aspiring female professionals; include female experts in advisory panels and decision-making bodies for city planning and infrastructure projects.

5.4. *Facilitate women's access to mentorship and training:* Establish mentorship programs that pair women architects, engineers and urban planners with experienced professionals in their respective fields.

Collaborate with universities and industry associations to offer specialized training programs tailored to women in these industries; promote women's participation in technical committees and standard-setting organizations related to architecture and urban planning.

5.5. *Promote women's networking:* Organize industry-specific conferences and networking events exclusively for women in architecture, engineering and urban planning; encourage women to join professional associations and committees related to their fields; create online communities and platforms where women can share knowledge and experiences.

5.6. *Advocate for gender-responsive innovation:* Support research and innovation projects that address gender-specific challenges in urban planning and infrastructure development; encourage design thinking and innovation workshops that include a gender perspective; incorporate sustainable and inclusive design principles into urban planning and architectural practices.

5.7. *Acknowledge women-led innovations:* Establish awards and recognition programs for women-led firms that excel in innovative and sustainable architectural and urban planning solutions; showcase women-led projects in exhibitions and publications to highlight their contributions; promote partnerships between female-led firms and public-private entities to implement innovative solutions.

5.8. *Champion gender equality in technology access:* Advocate for universal access to technology and digital tools in urban planning and architecture education and practice; promote women's participation in technology-focused roles within engineering and architectural firms.

Support initiatives that combat online harassment and discrimination in these professional communities.

5.9. *Advance gender balance in start-up workforces:* Encourage architecture, engineering and urban planning firms to adopt inclusive hiring practices and diversity targets; provide mentorship and leadership development programs to help women advance in their careers.

Governance and policymaking

6. Promote gender equity in AEC-related policy development.

6.1. Ensure that key decision-making bodies, consultative committees and expert groups involved in shaping policies within architecture, engineering and urban planning include equal representation of women and men. In architecture, appoint women architects, urban planners and construction experts to participate in policy design and decision-making. In engineering, ensure that women engineers and technical experts are well-represented in committees related to infrastructure and technology policy; in urban planning, involve female urban planners, architects and sustainability experts in the development of policies related to urban development and sustainable cities.

6.2. *Prioritize gender mainstreaming in AEC-related policy frameworks:*

Incorporate gender mainstreaming throughout the policy lifecycle in the architecture, engineering and urban planning sectors. In architecture, integrate gender considerations

into policies related to building design, accessibility and urban development. In engineering, emphasize gender diversity and inclusivity in policies governing infrastructure development, construction safety and technology innovation; in urban planning, prioritize gender-sensitive planning policies, transportation systems and community development initiatives that address the needs and safety of all genders.

All (society at large)

7. Change perceptions, attitudes, behaviours, social norms and stereotypes towards women in AEC in society.

7.1. Promote awareness of and overcome non-conscious and cultural gender biases widely expressed as gender stereotypes, among scientists, educators, policymakers, research organizations, the media and the public at large.

7.2. Promote visibility of women with STEM qualifications and in AEC careers, especially in leadership positions in governments, business enterprises, universities and research organizations.

7.3. Mainstream gender perspectives in science communication and informal and non-formal STEM and AEC education activities, including in architectural galleries, science centres, and museums.

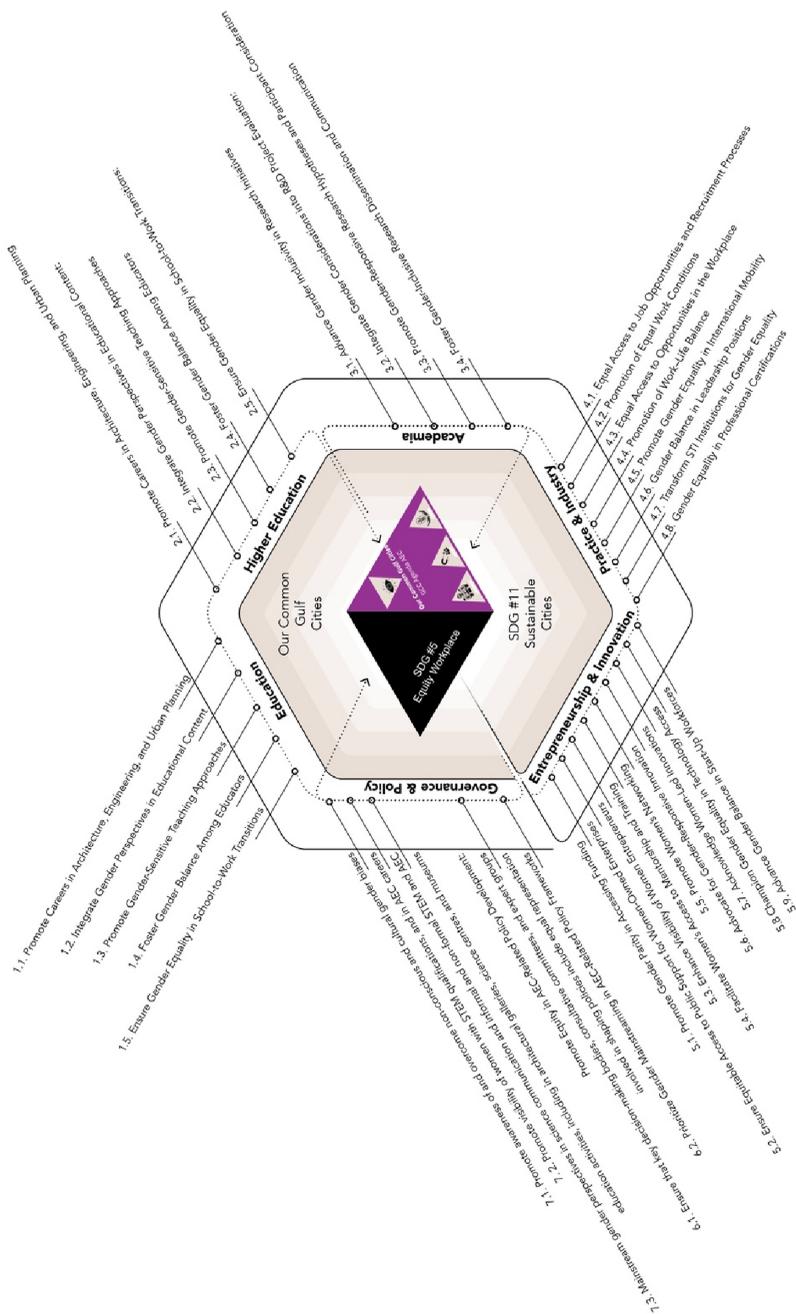
In summary the Women-Empowerment Index for AEC professions: WEI-AEC “Our Common Gulf Cities” (see [Figure 5](#)) consists of 36 sub-categories of initiatives spread over seven sectors namely society, governance and policymaking, (higher) education, academia, industry & practice and entrepreneurship & innovation.

Discussing the agenda tool WEI-AEC

This guidance tool for WEI in AEC industries serves to manage and to monitor progress and encourages the recognition of companies and projects excelling in women’s empowerment and sustainability.

Beyond some successful women’s empowerment in architecture, engineering and construction initiatives that might have not survived post-COVID-19 (such as [Tamayouz’s women in architecture award](#) that ran 2013–2020), the here proposed agenda reaches out to all stakeholders involved from education, academia, industry, governments to society to support an equitable approach to future Gulf cities.

The private sector has already initiated inspiring programs, like the “Women in Construction Drive 2022” ([Sabith, 2022](#)). These initiatives, if nurtured comprehensively from primary education to mentoring career paths, can benefit from the strategies outlined in the agenda ([Figure 5](#)). However, they must aspire to longevity and persistence beyond being merely fleeting attempts at grabbing attention or appearing as “pink-washing” – a superficial advertising ploy to put companies in the SDG limelight. In a world where sustainability efforts are sometimes dismissed as “green washing”, it needs to be ensured that raising the flag for women’s empowerment is a consistent commitment, not just the latest trendy topic. Hence the proposed WEI-AEC for “Our Common Gulf Cities” is designed to be used by various stakeholders separately (as grouped around the stakeholders as indicated in the UN GGPI and WEI), so that the sub-categories proposed here could further be added to the specifics of the GGPI/WEI in application to the AEC industries. And all sectors jointly add evaluation potential for a national index ([Figure 6](#)).



Source(s): Created by author

Figure 5.
WEI-AEC for "Our Common Gulf Cities"

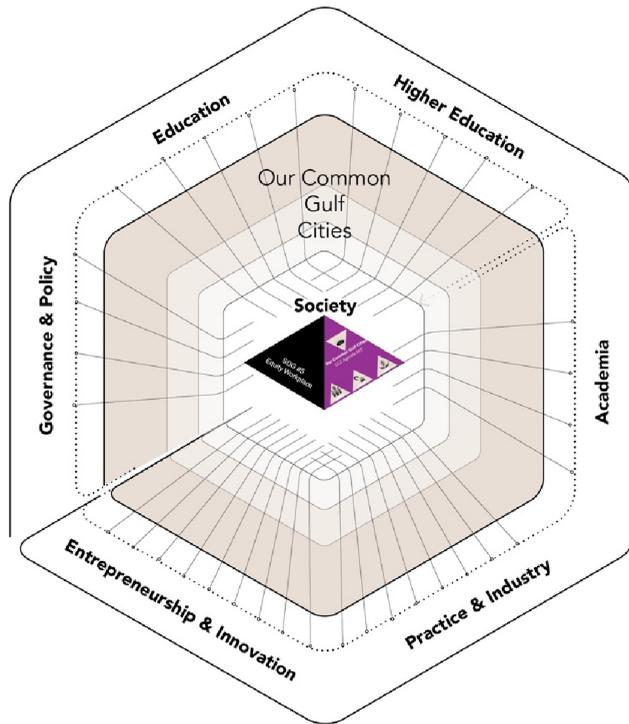


Figure 6.
“Our Common Gulf
Cities”: stakeholders
for equitable AEC

Source(s): Created by author

Limitation of the study and next steps

Future research and investigations are needed to validate the WEI-AEC agenda for “Our Common Gulf Cities” and to foster implementation:

- (1) **Data Collection:** Data on gender disparities in the AEC industry within Gulf cities provide a foundation for the proposed agenda.
- (2) **Stakeholder Engagement:** Involve key stakeholders, including industry associations, government bodies and NGOs, in the validation process. Their input and collaboration can ensure the index’s relevance and effectiveness. (Societies of Engineers, AIA, RIBA, Universities with AEC disciplines, UN-Habitat, etc.)
- (3) **Validation Workshops:** Organize workshops or focus groups with experts and practitioners in the AEC field to review and validate the index’s components, metrics, and scoring criteria. (Steering committee)
- (4) **Pilot Testing:** Implement the WEI-AEC Index on a smaller scale in select Gulf Cities to test its effectiveness and identify any practical issues in data collection and analysis.
- (5) **Refinement:** Based on the feedback and results from the pilot testing, refine the index’s methodology, weighting and scoring system to enhance its accuracy and relevance.
- (6) **Public Awareness Campaigns:** Promote the WEI-AEC Index and its objectives through awareness campaigns to garner support and participation from various stakeholders.

- (7) **Policy Recommendations:** Develop recommendations based on the index findings to drive policy changes and initiatives that promote gender equality and women's empowerment in the AEC sector.
- (8) **Capacity Building:** Invest in training and capacity-building programs to empower women in AEC, such as leadership training, mentorship and skill development initiatives.
- (9) **Regular Monitoring and Reporting:** Establish a mechanism for continuous monitoring and reporting on the WEI-AEC Index, making the results publicly available and tracking progress over time.
- (10) **Advocacy and Collaboration:** Collaborate with organizations, institutions and governments in Gulf Cities to advocate for the integration of the index into policies and practices that support women's empowerment in the AEC industry.
- (11) **Feedback Mechanism:** Create a feedback loop for continuous improvement, where stakeholders can provide input, share success stories and suggest adjustments to the index as needed.
- (12) **Long-Term Sustainability within Stakeholder Groups:** Develop a strategy for the sustainable management of the WEI-AEC Index, including funding, staffing, and governance.
- (13) **Compliance and Assurance:** Needs an unbiased, not for profit, neutral, objective institution (such as universities and dedicated research centres) to assure the qualitative and quantitative implementation and certification of the Agenda with the GCC.

Conclusion

From the initially highlighted stark disparities between the “pale-male-stale” approach to new Gulf cities, such as Neom’s “The Line”, designed to accommodate nine million people, and the glaring underrepresentation of women in the AEC workplace in the Gulf, this concept paper embarks on forming an agenda to overcome those. The remarkable educational achievements within the region underline the aim to introduce a meaningful agenda for Women Empowerment in the AEC (WEI-AEC), which would provide valuable criteria for the Gulf region to thrive in the realm of sustainable urban development, particularly in the context of SDGs 5 and 11, with a keen understanding of their socio-cultural implementations necessary for equitably designed and planned future Gulf cities. With the concurrent speed of transition from industry 4.0 to 5.0, many promising careers are on the cusp for Circular Cities (Ottmann and Skulmoski, 2021) to unite various disciplines through integrative expertise, working in harmony to implement interconnected solutions for environmental, economic and socio-cultural developments that create and host sustainable cities and human settlements for all.

However, like any well-intentioned tool, barriers exist to its successful implementation, including commitment, resource constraints, change management, policy adoption, funding, staffing and reporting. Overcoming these challenges and ensuring the success of the agenda for women's empowerment in the AEC industries, as presented here, requires meticulous planning, effective communication and persistent commitment from all relevant stakeholders that include diverse perspectives especially those of women in AEC, in the development and validation of the WEI-AEC. Much like the recent launch by the GCC Ministers of a unified Gulf Building Code, this proposed framework could be introduced through the collaborative efforts of local governments in the Gulf Cooperation Council (GCC). The proposed WEI-AEC

Agenda can support developing legislation, municipal control mechanisms, conditions and classification mechanisms for industry stakeholders while exchanging experiences, expertise and information to pave the way for equitable Gulf cities. Therefore, the Agenda for “Our Common Gulf Cities” could be adopted as a “Guide to Developing Inclusive Equitable Future Cities in the GCC”.

Moreover, the GCC could contemplate the issuance of certificates of achievement to recognize the efforts of industry players, innovation initiatives, academia, education and governments in advancing these goals.

The upcoming COP28 Local Climate Action Summit (LCAS) in the Gulf region is expected to focus on “Strengthening Local Resilience and Adaptation”, a mission that can only succeed if, in the words of Dr Mona Al Munajjed, “our society invests in all its members, women as much as men, because women are a most valuable potential resource in the development of our region, and investing in women will yield great rewards, both today and in the future” (Al Munajjed, 2011). In this shared vision of equitable and sustainable Gulf cities lies the promise of a brighter, more inclusive and sustainable future for all.

Notes

1. The Human Development Index (HDI) is a summary index that assesses countries on three dimensions: health, education and standard of living using life expectancy at birth, expected years of schooling for children and mean years of schooling for adults, and GNI per capita (United Nations, 2023a)
2. GII: It measures inequality between genders in three dimensions, with carefully chosen indicators to reflect women’s reproductive health status, their empowerment and labour market participation relative to men’s. The Gender Inequality Index combines elements of the GDI and the GEM (UNDP, 2023).
3. The Global Gender Gap Index annually benchmarks the current state and evolution of gender parity across four key dimensions (Economic participation and opportunity, educational attainment, health and survival, and political empowerment) (World Economic Forum, 2023)

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