

Assessment Framework for Sustainable Community in the MENA Region

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ABSTRACT

The sustainable community constitutes an experience that may provide a sensible solution to the universal environment and can relatively grow to be a new civilizational pattern that is in line with the principles of sustainable development. Communities are confronted with numerous urban issues and risks that have economic, social and environmental effects on further development, especially in the MENA regions as it faces different challenges and stresses. Therefore, this paper aims to propose a sustainable assessment framework for the community in MENA region to enhance the quality of life and sustain natural resources. The paper discusses and reviews five of the community's leading sustainable rating systems namely BREEAM, LEED, PEARL, GREEN STAR and GSAS, to develop set of criteria for improving communities urban environment. The analysis process adopts a system of criteria that embraces all features of sustainability rating tools. This paper defines a methodology for developing sustainable communities, offers an in-depth overview of sustainability rating systems and can serve as a recommendation and reference to planners while assessing community in the MENA region.

KEYWORDS: Rating systems, Sustainability, Sustainable Community, Sustainable principles, MENA region.

1. INTRODUCTION

Over half of the global population today lives in urban areas instead of rural communities, and the United Nations predicts that the urban share will reach 70% by 2050 urban share is predicted by the United Nations to rise to 70% by 2050, through the rise of mega-cities of 10 to 20 million inhabitants [1]. Rapid urbanisation, exhaustion of limited reserves of non-renewable energy, water, materials and natural resources pressures will need considerably to shape urban redevelopment and the growth of new sites over the coming decades, and the issues have to be resolved efficiently to make communities more sustainable [2].

Cities are increasingly getting overwhelmed by social, economic, ecological, and cultural problems which require new strategies and innovative policies to develop the existing cities and to consider developing new cities [3]. A sustainable concept will assist in aligning and motivating communities, governments, businesses, and others with a shared goal, and will identify a basis for the development of strategies, agendas, and procedures to realize this concept [4].

Community as the planning unit of the city is considered to be the most significant urban feature which is an integral part of the solution to many challenges facing the world and ensures the economic and social sustainability in the region [5,6].

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Sustainable community development has to advocate environmentally responsible model of Communities, socially balanced population with suitable opportunities for habitats' income, diversity of use with suitable energy, mobility systems and better quality of life [7].

At urban community scale, the concentrations of people and their activities with the absence of sustainable planning and management results in intensive demands and impacts on the surrounding environment [8]. Life styles have become less healthy since our cities act and are managed in unsustainable way and threatening the stability of global ecology[9]. Current initiatives to develop new settlements didn't consider the design principles for making or upgrading efficient and sustainable urban fabric. The sustainability principles in planned Communities should be seen as an essential part of the urban development [10].

According to UN environment programme, MENA (Middle East and Northern Africa) region faces various challenges and stresses which comprise water shortage, arable land reduction, air pollution, insufficient waste management, damage of biodiversity, decline of marine resources and coastal ecosystems deterioration. Therefore, transition towards sustainability is crucial now to take place throughout the region [11].

The paper focuses on the sustainable communities' planning and discusses the different sustainable rating systems to develop a successful sustainable community assessment framework for MENA region to enhance the quality of life and improve social inclusion and national resources' management. Therefore, it was necessary to deal with the environment in a more balanced manner, especially by planners and architects, to search for designing and planning alternative solutions for new and existing urban communities by profiting from new and renewable natural energy resources.

The paper is composed of six section the introduction, then sustainability concept that covers the Sustainable community and its principles. Section 3 discusses the Sustainable community model components. Five Sustainable community rating systems are selected and reviewed in section 4. Then, in section 5 an assessment sustainable community framework for MENA region is proposed. Finally, section 6 summarises and concludes the paper.

2. SUSTAINABILITY CONCEPT

The concept of sustainability is considered more comprehensive term as it is related to development, natural and human resources, and the pattern of human interaction with the environment. Sustainability is described by Bruntland Commission Report as :”the development which meets the needs and ambitions of current generations without compromising the capability of future generations”. According to the United Nations, this is a comprehensive development which reduces the negative environment resources' impacts through applying processes which enhance the quality of life [12]. Sustainability as a concept has three interlocking pillars: environmental, social, and economic. There are benefits of achieving sustainability in each pillar, and intersections between each pair are valuable as well. However, sustainability can only be achieved through the overlap of the three pillars and the possible failure of any one of these pillars in case of not considering the other two [13].

Environmental: refers to live in the limits of natural resources by consuming resources of nature like energy, materials, fuel, water. It is important to take into account the material scarcity, the environmental damage caused by extracting these materials and whether the resource can be retained according to the principles of the circular economics. Also, It is necessary to achieve a net zero carbon consumption and reach climate-friendly principles.

Economic: needs an efficient and responsible use of cities' resources to generate a constant operating profit for supporting its activities by being responsible and making effective consumption of resources over time

Social: indicates the capacity of a city for achieving constant well-being in society. It supports the long-term preservation of community safety and health. The sustainable development is the result of the interaction between the human and the surrounding environmental factors. It provides to the human being the sufficient amount of the environmental requirements, the minimum environmental pollution, and an acceptable level of health condition necessary for a healthy living.

To maintain the balance between the built environment and natural environment, the sustainable development should cover the urban community.

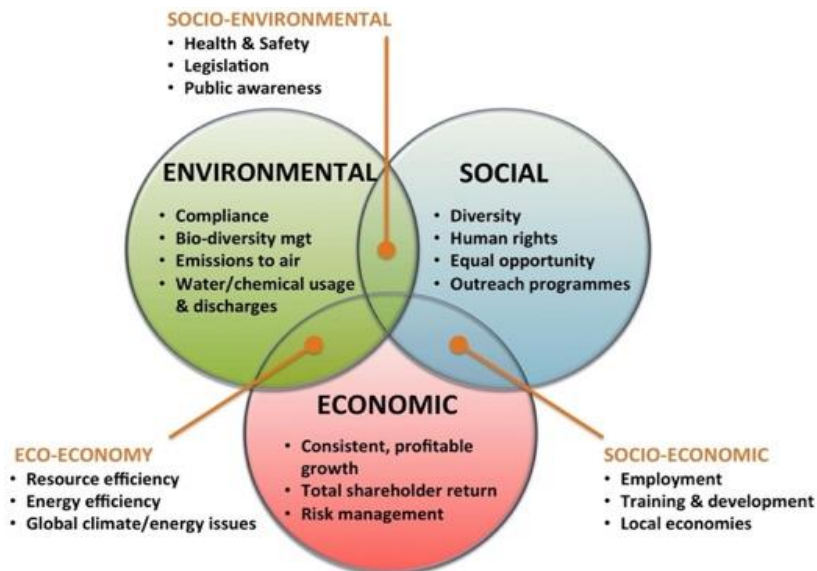


Fig. 1. The spheres of sustainability system [13]

2.1 Sustainable Community

The community is a spatial gathering that includes all the necessary elements to achieve the appropriate living for the residents and create the appropriate conditions to serve the civilized progress. Therefore, The principles of sustainability should be applied at the community level to provide an enhanced environment for community's residents [7].

The sustainable community can be considered as a module within the city which preserves the symbolic affluence of the traditional civilizational form which is based on the discussion and diversity. Therefore, it is necessary to set out obvious and permanently balances environmental, economic and social purposes before the execution of sustainable communities in order to develop the local civilized societies [14].

Sustainable community is defined as the civilizational development process on a community which satisfies the needs of the current and future residents with the contribution of high living quality, providing opportunities by the effective usage of the natural resources, environment enhancement, social cohesion, and economic prosperity[15]. According to Carley and Falk, the sustainable community is the environment that is designed to provide sufficient alternatives in order to warrant a long-term value, to use public transportation to reach work and services, to preserve and manage the community resources[16].

2.2 Sustainable Community principles

UN-Habitat international organization which supports a better civilization future recommended the basic principles of a sustainable community as follows [17]:

2-2-1- Sufficient spaces of streets and efficient streets' network: The streets network shall consist of 30 percent of the total area to develop a sufficient level of streets network which serve the vehicles, public transportation and lanes for pedestrian and bicycle. The streets network will form the civilization structure that determine the patterns of street, buildings, parking space, open areas, and natural landscapes in order to achieve a sustainable transportation.

2-3-2- Adequate High Density: Achieving adequate high density with a minimum of 15000 person for each square kilo meters, i.e 150 person / Hectare, or 61 person / acre. This principle is a direct response to the international population growth, fast urbanization, to prevent the traditional urbanization, and to strengthen the sustainable urbanization. It is necessary to realize suitable high density as it is the key of a sustainable community. The high density has economic, social, and environmental benefits as it support social services better, public open areas and the public transportation means that will increase the energy efficiency and reduce the pollution . Also, The high density community help to use the land efficiently and reduce public services costs, as it tends to reduce the costs of public services.

2-3-3- Various Land uses: At least 40% of the land space shall be allocated for Economic usage in any community, and to develop a group of convenient activities by using the lands and establishing it on a proper and flexible locations in order to adapt while the time goes by with the different markets. It is necessary to apply mixed land uses concept to create local employment opportunities, enhance the economy, decrease of cars usage, encourage walking and bicycling activities, and provide near public services.

2-3-4- Social Diversity: Providing housings with various prices and types within the communities in order to satisfy the various income gainers. Noting that all kind of possession shall not exceed 50% of the total, the purpose of this condition is enhancing the interaction and cohesion between the various social classes within the same society in order to ensure achieving the fair chances concept by providing different types of housings. The social mix and various land uses are two related matters which are enhancing each other, as the various land uses concept leads to social diversity which eventually leads to providing employment opportunities to the residents of different social backgrounds and different levels of income by living together and working in the same community which leads to the creation of diverse social network in order to achieve the smooth hirearchy of social diversity.

2-3-5- Limited Specifying of Land Uses: Limiting the use of multiple masses and communities have to not exceed 10% of the community, this principle aims to combine the uses of compatible lands in one mass or community in order to apply mixed policies for land uses, and on city level, to avoid the urban challenges that include the cities' traffic congestions, isolation, depending on cars, and other similar issues.

3. SUSTAINABLE COMMUNITY MODEL

Cities nowadays sustain themselves by relying on the carrying capability of their region. Sustainable cities aren't thus completely self-sufficient city but rather autonomous. Therefore, cities which deplete their resources become more vulnerable to pressures and stresses. Newman defined the purpose of sustainability in cities which is the decrease of natural resources used in cities and production of wastes to improve its livability and better integration into the capabilities of urban ecosystems [12].

Egan has developed the sustainable community definition which is “Sustainable communities are places where people want to live and work, today and into the future. They respond to the various desires of current and future inhabitants, their kids and other users, ensure high standards of living and offer opportunities and choices. This is achieved by using natural resources effectively, enhancing the environment, promoting social cohesion and inclusion and strengthening economic prosperity, with good amenities[18]. He suggested a sustainable wheel to understand what the community may need to do to underpin its future sustainability.

The sustainable community wheel is divided to 8 key components in figure 2. All these components have to be high quality, well designed and maintained, safe, accessible, flexible, environment-friendly and cost-effective. [18]These components and subcomponents are the following:



Figure 2: The components of the sustainable communities model [18].

- **Social and cultural:** Dynamic , inclusive and cohesive communities.
 - Identity and community involvement
 - Kindly, cooperative and supportive attitude in neighbourhoods.
 - socially involved and related life chances for persons
 - Possibilities for culture, recreation, sports and community's activities
 - Low crime rates and antisocial behaviours through communal police services.
 - Acceptance, respectful and committed to persons from diverse background and civilizations
- **Governance:** Efficient and comprehensive engagement, advocacy and control.
 - Awareness to citizenship, accountability and satisfaction.
 - Robust, knowledgeable and efficient partnership and leaderships
 - Inclusiveness community-based organizations and volunteer sectors
 - Continual enhancement throughout efficient implementation, supervision and response.
 - Tactical, innovative, illustrative, governance systems which allow individuals and organizations to be actively and effectively involved

- **Environmental:** eco-friendly living environments.
 - Protection and improvement of natural resources and biological diversity.
 - With due consideration to future generations' needs in existing actions and decisions
 - Effective utilization of current and future resources within the built environment.
 - Life in a manner which improves the positive impacts and minimizes the negative impacts of the environment
- **Housing and the built environment:** quality natural and built environment
 - Creation sense of belonging and place
 - Adequate housing spectrum, variety and affordability.
 - Multi-purpose, sustainable, and adaptable buildings.
 - Well-tended public and green areas and friendly with amenities.
 - A built environment of high-quality, well-designed by suitable size, scale, density and layout for distinguishing the community's local character.
- **Transport and connectivity:** Good transportation facilities connecting people with services.
 - Means of transport, including public transportation.
 - Services for promoting safe walking and biking locally
 - Locally available and suitable parking.
 - Communications and Internet connections broadly accessible and efficient.
- **Economy:** vibrant and diversified community economy.
 - Creation of strong jobs and businesses.
 - Broad spectrum of employment and training options.
 - Strong business community with broad economic connections.
 - Adequate lands and buildings for economic growth and adjustment.
- **Services:** comprehensive array of relevant and accessible public, private and community services.
 - People with a high level of education and training for learning throughout life.
 - Good quality of community healthcare and facilities.
 - Accessibility and affordability of diverse private and public utilities.

All these previous components should be addressed to maintain sustainable communities to improve the fields of urban development, environment quality and human wellbeing for assessing the recent and future quality of cities with the ability to support their ecosystems.

4. SUSTAINABLE RATING SYSTEMS

There are many sustainability rating systems that are related to sustainable community development. However, only limited systems are broadly recognized and truly constitute a recognizable standard for sustainability in MENA region related to their countries. In this paper five sustainable community rating systems are reviewed and chosen due to their popularity, influence and advanced technicality. The five rating systems are LEED for community Development, BREEAM for communities, Green Star Communities, Pearl community rating system and GSAS which are mentioned with their different criteria in table 1 .

LEED (Leadership in Energy and Environmental Design) is a globally recognised green building certification system, which allows a third party to verify the design or construction of buildings or communities through policies for improving the performance of all their measurement criteria. LEED

defines sustainability as the places creating that are environmentally responsible, healthful, just, equitable, and profitable [19]. In addition, BREEAM (Building Research Establishment Environmental Assessment Method) is an international leading method of evaluating sustainability for master planning projects, infrastructure and buildings measures sustainable value in a series of categories [20]. Furthermore, Green Star Communities is a worldwide known built environment rating system for sustainable buildings and communities. This rating system transforms the design, construction and operation of the built environment to enhance economy, wellbeing and the environment [21]. Moreover, The Pearl Rating System is intended to ensure the sustainability of a particular development through its life cycle from design to operation and construction. It offers design guidelines and detailed requirements for rating projects’ potential performance based on the Estidama's four pillars to create more sustainable communities [22]. The last rating system, GSAS (Global Sustainability Assessment System) which is the initial sustainable rating system that focus on the Middle East region. It is developed based on several important international rating system to create a sustainable built environment which minimises environmental impacts whilst meeting the region's unique needs and ecosystems [24]. The five previous sustainable rating systems are listed in the table (1) below.

Table 1. Sustainable Rating systems (by the researchers)

BREEAM	LEED	Green Star Communities	Pearl Community rating system	Global Sustainability Assessment System
Governance	Smart Location & Linkage	Governance	Integrated Development Process	Urban Connectivity
Social and economic wellbeing	Neighborhood Pattern & Design	Design	Natural Systems	Site
Resources and energy	Green Infrastructure & Buildings	Liveability	Livable Communities	Energy
Land use and ecology	Innovation & Design Process	Economic prosperity	Precious Water	Water
Transport and movement	Regional Priority Credits	Environment	Resourceful Energy	Materials
Innovation		Innovation	Stewarding Materials	Outdoor Environment
			Innovating Practice	Cultural & Economic Value
				Management & operations

5. A PROPOSED ASSESSMENT SUSTAINABLE COMMUNITY FRAMEWORK FOR MENA REGION

Sustainability is a mandatory concept that have to be applied in communities. Despite the importance of the sustainability in communities, there is a gap in the urban literature regarding the MENA region communities sustainability and the development of a framework for its assessment. Therefore, there is a need for a comprehensive guidance for an assessment framework for MENA region communities sustainability which links the components of the sustainable community model with the five sustainable rating systems discussed in the previous section which is divided to indicators derived from the literature of the discussed rating systems. The indicators of each rating systems are related to the community design [21,22,23,24]. This is provided in the form of a matrix as shown in table 2.

sustainability concept. This proposed framework ,as shown in table 3, clarifies and summarizes the relationships between components of the sustainable community model and the different criteria of the selected sustainable rating system to achieve the MENA region communities sustainability.

Table 2. Sustainable rating systems with sustainable community components matrix (by the researchers)

Sustainable Rating systems / Sustainable Community Components	BREEAM	LEED	Green Star Communities	Pearl Community rating system	Global Sustainability Assessment Sytem
Governance	Consultation plan	Site Design for Habitat or Wetland and	Accredited Professional	Integrated Development Strategy	GSAS Construction management plan
	Consultation and engagement	Restoration of Habitat & Water Bodies	Corporate Responsibility	Sustainable Building Guidelines	Wastewater management plan
	Community management	Long-Term Conservation Management of	Community Participation & Governance	Community-Dedicated Infrastructure	Organic & Solid waste management
	Design review	Innovation & Design Process	Engagement	Life Cycle Costing	Water systems management plan
	Innovation	LEED® Accredited Professional	Sustainability Awareness	Guest Worker Accommodation	Energy systems management plan
		Regional Priority Credits	Adaptation and Resilience	Construction Environmental Management	Refrigerants management plan
			Environmental Management plan	Sustainability Awareness	Intelligent Transport systems plan
			Innovation	Plan 2030	Information Systems Management
				Regionally Responsive Planning	Landscape maintenance plan
				Innovating Practice	Infrastructure maintenance plan
Services	Utilities	Neighborhood Schools	Waste Management services	Provision of Amenities and Facilities	Infrastructure level of service
	Delivery of services, facilities	Indoor Water Use Reduction	Peak Electricity Demand (reduction)	Community Water Strategy	Utilities provision
	Green infrastructure	Outdoor Water Use Reduction	Digital infrastructure	Water Monitoring and Leak Detection	Amenities provision
		District Heating and Cooling		Community Water Use Reduction:	Acoustic Conditions
		Infrastructure Energy Efficiency		Community Water Use Reduction: Heat	water consumption and reuse
		Wastewater Management		Community Water Use Reduction: Water	
		Recycled and Reused Infrastructure		Stormwater Management	
		Solid Waste Management		Efficient Infrastructure: Lighting	
Economy	Economic impact	Local Food Production	Employment and Economic Resilience	Regional Materials	Support of national Economy
			Return on Investment		Regional Materials
			Community Investment		
			Affordability		
			Digital Economy		
Transport and connectivity	Transport assessment	Access to Quality Transit	Access to Amenities	Transit Supportive Practices	Walkability
	Safe and appealing streets	Bicycle Facilities	Access to Fresh Food	Neighborhood Connectivity	Bikeability
	Cycling network	Walkable Streets	Accessibility and Adaptability -	Accessible Community Facilities	Transportation Load
	Access to public transport	Connected and Open Community	Transport (sustainable transport and	Community Walkability	Transportation Amenities
	Cycling facilities	Transportation Demand Management		Travel Plan	Roads and highways network
	Public transport facilities	Access to Civic & Public Space			Green Transportation
	Local parking	Access to Recreation Facilities			Intermodal connectivity
Social and cultural	Public realm	Community Outreach -Involvement	Community Development	Safe and Secure Community	Heritage & Cultural Identity
	Local vernacular		Healthy and Active Living		Stakeholder Engagement
	Training and skills		Culture, Heritage, and Identity		Public Realm
	Demographic needs and		Education and Skills Development		
Environmental	Flood Risk Assessment	Imperiled Species and Ecological	Site Sensitivity - sustainable sites	Natural Systems Assessment	Land Preservation
	Noise pollution	Wetland &Water Body Conservation	Ecological Enhancement - value	Natural Systems Protection	water body preservation
	Microclimate	Steep Slope Protection	Heat Island Effect	Natural Systems Design and Management	habitat preservation
	Adapting to climate change	Construction Pollution Prevention	Light Pollution	Reuse of Land	Sea- level rise risk
	Flood risk management	Minimized Site Disturbance	Greenhouse Gas Emissions	Remediation of Contaminated Land	desertification
	Light pollution	Rainwater Management	Potable Water Consumption	Ecological Enhancement	Rainwater runoff
	Energy strategy	Heat Island Reduction	Materials	Habitat Creation and Restoration	Heat Island Effect
	Water strategy	Solar Orientation		Food Systems	Wind Comfort
	Low impact materials	Renewable Energy Production		Outdoor Thermal Comfort Strategy	Air Flow
	Resource efficiency	Light Pollution Reduction		Improved Outdoor Thermal Comfort	Noise Pollution
	Transport carbon emissions			Community Energy Strategy	Toxic and Hazardous Substances
	Enhancement of ecological value			Community Strategies for Passive Cooling	Ambient Air Quality
	Water pollution			Energy Monitoring and Reporting	Energy Delivery performance
	Ecology strategy			Urban Heat Reduction	Primary Energy Sources
	Rainwater harvesting			Renewable Energy: Onsite	CO2 Emissions and Offset
				Renewable Energy: Offsite	Nox, Sox, and Particulate Matter
				Stewarding Materials	Recycled Materials
				Treated Timber Elimination	Materials Reuse
			Basic Construction Waste Management	Life Cycle assessment (LCA)	
			Basic Operational Waste Management	Cut and fill Optimisation	
Housing and Built Environment	Housing provision	Smart Location	Site Selection	Urban Systems Assessment	vegetation (Greenscape/Greeing)
	Land use	Agricultural Land Conservation	Site and Context Analysis	Minimum Pearl Rated Buildings Within	Parking footprint
	Inclusive design	Floodplain Avoidance	Site planning and layout	Open Space Network	Public Space
	Existing buildings and	Preferred Locations	Urban Design	Housing Diversity	
	Landscape design	Brownfield Remediation	Safe Places	Active Urban Environments	
	Sustainable buildings	Housing and Jobs Proximity	Green Buildings	Pearl Rated Buildings Within Communities	
		Compact Development		Building Water Guidelines	
		Mixed-Use Neighborhoods		Water Efficient Buildings	
		Housing Types and Affordability		Building Energy Guidelines	
		Reduced Parking Footprint		Energy Efficient Buildings	
		Transit Facilities			
		Visitability and Universal Design			
		Tree-Lined and Shaded Streetscapes			
		Certified Green Buildings			
		Minimum Building Energy Performance			
	Optimize Building Energy Performance				
	Building Reuse				
	Historic Resource Preservation				

The idea is to relate each components of the sustainable community model to the different criteria of the selected sustainable rating system discussed in section 4 above to help the planner and decision makers and provide the means by which the communities in MENA region can respond to the

Table 3. Proposed assessment sustainable community framework (by the researchers)

Sustainable Community Components	Indicators	Sustainable Community Components	Indicators
Governance	Long-Term Conservation and restoration Management	Environmental	Flood Risk Assessment & management
	Consultation and engagement		Noise pollution
	Operational Governance - Community Participation and Corporate Responsibility		Water pollution
	Site Design for Habitat or Wetland and Water Body		Adapting to climate change
	Innovation practice & Design Process		Minimized Site Disturbance
	Environmental Management plan		Light pollution - reduction
	Adaptation and Resilience		community Energy strategy
	Sustainability Awareness plan and guidelines		Water strategy and Management
	Community-Dedicated Infrastructure Basic Commissioning		Low impact materials
	Integrated Development Strategy		community Resource efficiency
	Community and Road safety plans		Transport carbon emissions
	Construction management plan		Ecological Enhancement strategy
	Guest Worker Accommodation		Life Cycle assessment
	city systems management plan		Enhancement of ecological value
	Maintenance plan		Rainwater harvesting
	Information Systems Management plan		Heat Island Effect and reduction
	Showcase of Regional & Cultural Practices		Renewable Energy Production
	Life Cycle Costing		Steep Slope Protection
	Regionally Responsive Planning		Wetland and Water Body Conservation
Services	Provision of utilities	Imperiled Species and Ecological Communities	
	Delivery of services, facilities and amenities	Solar Orientation	
	Green infrastructure	Construction Activity Pollution Prevention	
	Neighborhood Schools	Site Sensitivity - sustainable sites	
	District Heating and Cooling	Materials / Recycled Materials /reuse/Stewarding	
	Energy Efficiency	Greenhouse Gas Emissions	
	Indoor and outdoor Water Use Reduction	Natural Systems Design and Management Strategy ,assessment	
	Recycled and Reused Infrastructure	Reuse of Land	
	Community Water Strategy (consumption and reuse)	Basic/Improved Construction /operational Waste Management	
	Water Monitoring and Leak Detection	Reused or Certified Timber	
	Efficient Infrastructure	Modular Life Cycle assessment Pavement and Hardscape Cover	
	Waste Management services	Energy Monitoring and Reporting	
	Infrastructure level of service	Community Strategies for Passive Cooling	
	Acoustic Conditions	Wind Comfort/Air Flow	
	Digital infrastructure	Outdoor Thermal Comfort Strategy	
	Peak Electricity Demand (reduction)	Organic/Hazardous Waste Management	
	Economy	Economic impact	Food Systems
		Local Food Production	Natural Systems assessment and Protection
		Employment and Economic Resilience	Habitat Creation and Restoration
Regional Materials		Remediation of Contaminated Land	
Support of national Economy		Land / water body/habitat Preservation	
Return on Investment		Sea- level rise risk	
Community Investment		desertification	
Affordability		Air quality	
Digital Economy		Cut and fill Optimisation	
Incentive Programs		Microclimate	
Transport and connectivity	Transport assessment	Housing and built environment	Energy Delivery performance
	Safe and appealing streets		Historic Resource Preservation and Adaptive Reuse
	Cycling network and Bicycle Facilities		Smart Location
	Access to public transport		Agricultural Land Conservation
	Access to Quality Transit		Floodplain Avoidance
	Access to Civic & Public Space		Brownfield Remediation
	Access to Recreation Facilities		Housing and Jobs Proximity
	Walkable Streets and Community Walkability		Compact Development
	Transportation Demand Management		Urban Design
	Accessible Community Facilities and Amenities		Mixed-Use Neighborhoods
	Access to Fresh Food		Housing Types and Affordability
	Connected and Open Community		Reduced Parking Footprint
	Accessibility and Adaptability		Transit Facilities
	Neighborhood Connectivity		Visitability and Universal Design
	Sustainable transport and movement		Tree-Lined and Shaded Streetscapes
	Travel Plan		Certified Green Buildings
	Transit Supportive Practices		Minimum and Optimize Building Energy Performance
	Transportation Load		Building Reuse
	Transportation Amenities		Land use
	Green Transpotation		Inclusive design
Intermodal connectivity	Existing buildings and infrastructure		
Roads and highways network	Landscape design		
Public transport facilities	Sustainable buildings		
Local parking	Safe Places		
Social and cultural	Public realm	Site Selection and Context Analysis	
	Local vernacular	Site planning and layout	
	Community Outreach and Involvement	Housing provision and Diversity	
	Community Development	Energy Efficient Buildings	
	Healthy and Active Living	Building Water Guidelines	
	Culture, Heritage, and Identity	Active Urban Environments	
	Safe and Secure Community	Urban Systems Assessment	
	Stakeholder Engagement	Vegetation	
	Training and skills	Open Space Network	
	Education and Skills Development	Parking footprint	
	Demographic needs and priorities	Preferred Locations	
			Public Space

5. CONCLUSIONS

Sustainable community development is defined as creating and maintaining healthy environment bases on the efficient usage of the natural and environmental resources. Now a day, applying the concept of sustainability to community and cities is necessary to solve urban problem. As MENA region face different stresses and challenges, there are a crucial need to transit this region to sustainable one. Sustainability in communities could be achieve through implementing different basic principles of sustainable community which are necessary for enhancing the high-density urban growth and achieving the maximum lands efficiency. Also, these principles improve the land uses and provide streets networks to facilitate the walking, cycling and decrease the usage of cars. Furthermore, sustainable community principles provide housing needs and enhance local employment, production, and consumption. Furthermore, this paper presents the sustainable community model components, and discuss and review five well-known sustainable rating systems for communities which are chosen due to their popularity, influence and advanced technicality. The paper determined the similarity and differences between the five rating systems in respect of the main goals of the community sustainability to propose an assessment sustainable community framework for MENA region.

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إطار عمل لتقييم المجتمعات المستدامة بمنطقة الشرق الأوسط

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الملخص

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يشكل المجتمع المستدام تجربة قد توفر حلاً مهماً للبيئة عالمياً ويمكن أن تنمو تدريجياً لتصبح نمطاً حضارياً جديداً يتماشى مع مبادئ التنمية المستدامة. تواجه المجتمعات العديد من القضايا والمخاطر الحضرية التي لها آثار اقتصادية واجتماعية وبيئية خاصة في مناطق الشرق الأوسط حيث تواجه تحديات وضغوط مختلفة. لذلك، يهدف هذا البحث إلى اقتراح إطار تقييم مستدام للمجتمع في منطقة الشرق الأوسط لتحسين نوعية الحياة والحفاظ على الموارد الطبيعية. تناقش الورقة وتحلل خمسة أنظمة تصنيف مستدامة بارزة للمجتمع وهي BREEAM و LEED و PEARL و GREEN STAR و GSAS، لتطوير مجموعة من المعايير لتحسين البيئة الحضرية للمجتمعات و يتبنى عملية المراجعة نظاماً من المعايير يشمل جميع مميزات أدوات التصنيف المستدامة. يحدد البحث منهجية لتطوير مجتمعات مستدامة ويركز على أدوات التصنيف المستدام ويمكن أن تكون توصية ومرجعاً للمستخدمين عند تقييم المجتمع في منطقة الشرق الأوسط.

الكلمات الدالة: الاستدامة، المجتمع المستدام، أنظمة التصنيف، المبادئ المستدامة، منطقة الشرق الأوسط.

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