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Review Article

# Sustainable Communities, Neighborhoods, Cities and Their Criteria

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## Abstract

*We have 8 years to 2030, when the promises and targets of sustainable development and smart growth are expected to be achieved at global level, the agenda items about sustainability remain urgent. Sustainable development and smart growth are more important than ever. The managers of the Sustainable and Smart concepts are local governments that own urban units and can make more critical decisions due to scale permits, rather than the changing policies of states. Considering the point reached, it can be observed that the concepts of sustainable neighborhood, community and city are based on different foundations in the light of assessment tools and models, although the urban terminology that develops with the concept of sustainability is often used to support each other. It can even be said that its sustainable indicators are close to smart city criteria rather than sustainability criteria. In this study, sustainable neighborhood, community and city criteria, the mentioned urban units were determined, defined, and interpreted through 18 assessment tools, guidelines, standards, and models in total.*

**Keywords:** Sustainable Neighborhoods and Communities, Sustainable Cities, Criteria

## 1. Introduction

On January 23, 2021, the former president of the United Nations Economic and Social Council (UNECOSOC), Munir Akram, tweeted celebrating the 75th anniversary of the council's "service to global humanity" [1].

One of those service is sustainability and the issues of climate change and environmental problems, which came into our lives with the Stockholm Conference in 1972, were taken to a new dimension with the decision of the Brundtland Report in 1987 that they are global, not regional [2]. However, these problems have still not been resolved in this 50-year period [3]. Many decisions are made, many agenda reports are prepared, but unfortunately there is insignificant action in global scale. There is no clear action other than

"We have to do it". In this regard, one of the rare political authorities that put action plans in motion is the European Union. But we do not know how sufficient the decisions taken and implemented by the Union on a global scale are sufficient. Because the problem is not continental, it is global [2].

The European Green Deal and the European Climate Law which were adopted in 2019 and 2020, respectively are big steps for European Policy of becoming a climate-friendly continent and a great example for many countries in the world [1]. However, this 8-year process until 2030, will prove how feasible Europe's policy is. The world has entered a solemn period with renewed agendas and plans with the beginning of 2021 and the states that signed the 2015 Paris Climate Agreement need to prepare a road map to keep global warming at a certain rate [4]. However, the 46th American President Biden's, who took office in January 2021, decision of support the Paris Agreement that two-term former President Obama supported and Trump withdrew support previous term [5], and Norway's, A European Country, granting 61 sea exploration permits to 30 oil companies, [6] shows that states can exit the agreements at any time and enter into these agreements at any time, or behave exactly the opposite of an issue on which these agreements are affiliated. . These seem like a proof that, in a global sense, one cannot go further than the "we have to" part. Experts say that although some critical thresholds have been crossed for the health of the planet, a healthier and more sustainable world globally is still not a dream [7]. Only now, a conscious sustainability service needs to be put into action and the decisions taken should not change according to the administrations.

Although all these negative inferences, the development and growth of the issues highlighted by the reports and the agenda day by day, the inclusion of Sustainable Development and Smart Growth in emergency action plans, and the work of all participants on these two concepts has raised the public awareness [8-9]. In particular, it is important to present reporting and agenda items in statistical and data terms. When the Sustainable Development Goals is read the following data draws attention and raise awareness of the society about the issues [10]:

- The rate of slum in the urban area increased by 24% in 2018, 90% of covid 19 is in cities.
- Only half of the world can properly access public transport (500-1000km) in 2019.
- Air pollution in cities caused the premature death of 4.2 million people in 2016.
- 47% of the population in the world can reach open green areas within 400m walking distance.

Thus, it has gained a sustainable neighborhood, city and community perspective in urban and social sense [11]. These three terms appear as three terms that are interconnected or even interchanged from time to time, sometimes working with the term smart city [12]. The problem is that the concepts of sustainable communities, cities and neighborhood do not have a precise criterion as in the concept of smart city, which sometimes shows that the designed model may be lacking in terms of management, security, communication

and wellbeing, and definitional differences and confusion come into play here [11, 12, 13].

Looking at the indicators of most sustainable city rating tools or models, it stands closer to smart city and smart criteria rather than sustainability criteria [14-15] even ISO Sustainable Cities and Communities Committee takes all of them in one approach such as ISO 37120 Indicators for city service and quality of life which contains both smart city and sustainable city standards ISO 37122 and ISO 37123, respectively [16-17]. The indicators of sustainable communities and sustainable neighborhood tools, models and guidelines are closer to the sustainability criteria [18]. Is it necessary to change definitions or to have a decisive criterion?

In this period approaching 2030, while States make their own sustainable development and smart growth decisions, the global solution to follow in the footsteps of governments and society at urban scale depends on how sustainable and smart a city and urban society are. The role of local governments is more important from this perspective because the well-being of residents and the city seems to depend on sustainable and smart decisions. In this study, 18 sustainable urban unit strategies and guidelines, including 8 sustainable cities, 8 sustainable neighborhoods, 1 sustainable city-district assessment tools and models and ISO 37120 Standard were examined. In the light of these models, guidelines and tools, the criteria and definitions of sustainable urban units are determined and interpreted.

## **2. Materials and Methods**

In this study, first of all, a deep literature research was conducted. In addition, a comparative analysis was made in line with the standards, guidelines and models, which can be describe as ecolabels, of the 3rd party authorities. The indicators of the community and city model, standard and assessment tools were examined. It is foreseen that this study will be a step towards achieving the criteria required for the creation of sustainable urban unit concepts to the usual criteria as in the smart city concept. Grounded theory and comparative analysis are the methods followed in this article.

## **3. Sustainable Neighborhoods/Communities, and Sustainable Neighborhoods Criteria**

Neighborhoods, which are generally considered as the smallest, basic planning and management unit of urban areas, are considered as a unique part of urban areas with their different sociological characteristics, although their surface areas and density of living vary [19].

Community is used to define the neighborhood citizens in general, but in many studies this term identifies neighborhoods or other urban units [18, 20]. For this reason, many neighborhoods eco-labels use the term “Sustainable Community” in the literature. There

are also guidelines and projects that use the term “Positive Energy District” (PED) lately [19, 21]. Some definitions about Sustainable Neighborhood and Community are shared in Table 1.

Table 1. Sustainable Neighborhood and Community Definitions

Definition	Reference
<i>“The concept of a “sustainable community” does not describe just one type of neighborhood, town, city or region. Activities that the environment can sustain, and those citizens want and can afford may be quite different from community to community. Rather than being a fixed thing, a sustainable community is continually adjusting to meet the social and economic needs of its residents while preserving the environment’s ability to support it.”</i>	[22]
<i>“Decent, affordable homes, a diverse and inclusive community, access to jobs and services, the chance to get engaged in and make a difference to a community in which people want to live and work, now and tomorrow.”</i>	[23]
<i>“A sustainable community manages its human, natural, and financial capital to meet current needs while ensuring that adequate resources are available for future generations.”</i>	[24]
<i>“Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all.”</i>	[25]
<i>It is a small-scale urban area within a city that contains social, economic and environmental imperatives. It is a sustainable unit that constitutes the social and economic well-being of the region with its longevity, reduced environmental impact, location and physical character.</i>	[26]

Many of these definitions seem to support each other, and it has been underlined that the sustainable neighborhood concept has a valid definition throughout the literature and that this memory should be within an ongoing social, economic, and environmental framework. There are many sustainable neighborhood models, neighborhood sustainability assessments (NSA) tools or standards around the world. While some are the spin-offs of green building certifications, some are just guidelines developed on the neighborhood community and urban unit [27]. There are many indicators and application schemes of these indicators in various basic topics. Although many NSA tools, which are the spin-offs of the Green Building Assessment (GBA) Tool, are members of WGBC, the indicators and application schemes of NSA tools are mostly different [19]. The reason for this is that although there are some limited studies in the literature on this subject, there is no literatureized sustainable neighborhood criterion based on it. Table 2 shows the main headings of 9 NSA Tools and Sustainable Community Models [28].

Table 2. Main headings of NSA Tools and Sustainable Community Models

<i>NSA Tool / Sustainable Community Models</i>	<i>Urban Unit</i>	<i>Main Headings</i>
<i>BREEAM</i>	<i>Communities</i>	<i>Governance</i>
		<i>Social and Economic Wellbeing</i>
<i>CityLab</i>	<i>Neighborhood</i>	<i>Resources and Energy</i>
		<i>Land Use and Ecology</i>
		<i>Transport and Movement</i>
		<i>Safety</i>
		<i>Service Range</i>
		<i>Places</i>
		<i>Travel Habits</i>
		<i>Trustful Community</i>
		<i>Mixture Of Dwellings</i>
		<i>Climate Impact</i>
		<i>Flood Risk</i>
		<i>Energy Use in Building</i>
		<i>Air Quality</i>
<i>Acoustic Environment</i>		
<i>Stormwater Purification</i>		
<i>Indoor Environment</i>		
<i>Residual Waste</i>		
<i>Biodiversity</i>		
<i>Site Specific Indicators</i>		
<i>Greenship Neighborhood</i>	<i>Neighborhood</i>	<i>Land Ecological Enhancement</i>
		<i>Movement and Connectivity</i>
		<i>Water Management and Conservation</i>
		<i>Solid Waste and Material</i>
		<i>Community Wellbeing Strategy</i>
		<i>Building and Energy</i>
<i>BEAM Plus Neighbourhood Assessment Tool</i>	<i>Neighborhood</i>	<i>Innovation and Future Development</i>
		<i>Community Aspects (CA)</i>
		<i>Site Aspects (SA)</i>
		<i>Materials And Waste Aspects (MWA)</i>
		<i>Energy Aspects (EA)</i>
		<i>Water Aspects (WA)</i>
		<i>Outdoor Environmental Quality (OEQ)</i>
<i>Innovations And Additions (IA)</i>		
<i>2030 Palette</i>	<i>All Scale-District</i>	<i>Completed Streets</i>
		<i>District Center</i>
		<i>Residential Densities</i>
		<i>Shared Streets</i>
		<i>Street Networks</i>
		<i>Street Width and Orientation</i>
<i>Built Green Communities</i>	<i>Communities</i>	<i>Transit-Oriented Development</i>
		<i>Site Selection</i>

		<i>Site Design + Transportation</i> <i>Construction Operations</i> <i>Education + Community Stewardship</i>
<i>Living Community Challenge</i>	<i>Communities</i>	<i>Place</i> <i>Water</i> <i>Energy</i> <i>Health and Happiness</i> <i>Materials</i> <i>Equity</i> <i>Beauty</i>
<i>Green Building Council Italy Quartieri</i>	<i>Neighborhood</i>	<i>Site Location and Links</i> <i>Organization and Planning of Neighborhood</i> <i>Infrastructures and Sustainable Buildings</i> <i>Innovation in Design</i> <i>Regional Priority</i>
<i>CASBEE-UD</i>	<i>Neighborhood</i>	<i>QUID1 Environment [1.1 Resource, 1.2 Nature (greenery and biodiversity), 1.3 Artifact (building)]</i> <i>QUID2 Society [2.1 Impartiality/Fairness, 2.2 Safety/Security 2.3 Amenity]</i> <i>QUID3 Economy [3.1 Traffic/Urban structure/3.2 Growth potential/3.3 Efficiency/Rationality]</i> <i>LUD1 [CO<sub>2</sub> emissions from traffic sector]</i> <i>LUD2 [CO<sub>2</sub> emissions from building sector]</i> <i>LUD3 [CO<sub>2</sub> absorption in green sector]</i>

Social, environmental and economical imperatives must be overcome for sustainable development. Therefore, it can be said that sustainability has 3 basic criteria [29], but an urban unit is a multi-faceted unit that shows development and change with its residents. So, they cannot be measured by just 3 criteria. NSA Tools and models also show that a broader regulation of criteria is required. Identifying and deciding on indicators is a difficult process. Because it is predicted whether the desired level will be reached in line with the determined indicators [18]. Although some limited studies have also added institutional criteria to Social, Economic and Environmental criteria [18, 24, 27, 30], they are inadequate for the identified main topics. In a few other studies, the number of criteria was increased, or different criteria was determined with different perspectives planning [11, 31]. However, the criteria determined in a certain concept should always be simple, understandable [18] and do not conflict with each other. In addition to social, economic, environment and institutional dimensions, design dimensions should be also considered as criteria. Data collecting and mobility issues can be handled as some indicators of these 5 dimensions.

#### 4. Sustainable City and Sustainable City Criteria

Many urban movements and terms that fit the sustainability concept have emerged by the Eco-Urbanism movement that emerged in the 1980s. One of these terms is sustainable city. Terms such as green city, eco-city, and resilient city are terms that can correspond to the definition of sustainable city [19, 32]. Just like in sustainable neighborhoods, there are many guidelines, models and assessment tools for cities [33, 34].

Like sustainable neighborhood, the definitions of and sustainable city in the literature also are similar to each other. Definitions of these concept are demonstrated in Table 3. However, the definitions are more complex and contain more conditions. Moreover, sustainable neighborhoods model and assessment tools also have main headings and indicators connected to these titles that are similar and differ from each other like NSA tools.

Table 3. Definitions of Sustainable City

Definition	Reference
<i>"Eco-City is the urban environmental quality and livability which possess the following characters: compact, mixed-used developments, low-energy transportation, renewable energy generation and a reduced overall ecological footprint"</i>	[35]
<i>The city where production conditions can be maintained at all times and that strikes a balance in urban areas, environment, employment, social infrastructure and transportation while providing development.</i>	[33]
<i>"An eco-city builds on the synergy and interdependence of ecological and economic sustainability, and their fundamental ability to reinforce each other in the urban context"</i>	[36]
<i>Cities shaped by smart growth which has social, economic and environmental aspects.</i>	[37]
<i>"To create a sustainable urban environment, it is crucial to measure and assess policies, infrastructure, socio-economic factors, resource use, emissions and any other processes that contribute to and profit from the city's metabolism, prosperity and quality of life."</i>	[38]

Although it is stated that Sustainable City criteris are also the same as the sustainable neighborhood criteria as social, environmental, economic and institutional imperatives [39] sustainable city models and asesment tools have indicators corresponding to more criteria. In fact, mostly these indicators are more in line with the indicators of smart living, smart people, smart mobility, smart environment, smart governance, smart economy and smart data sustainable city models added by Sharifi in 2019 [40]. In fact, ISO has gathered



the sustainable and smart city standards for sustainable development in urban societies under the same roof as ISO 37120 [16]. The main titles of 10 city assessment tools and models including ISO 37120 are shown in Table 4 [28].

Table 4. Main headings of Sustainable city assessment tools and models

<i>Sustainable City Assessment Tools/ Models</i>	<i>Main Headings</i>
ISO 37120	Economy Education Energy Environment and climate change Finance Fire and Emergency Response Governance Health Housing Population and social conditions Recreation Safety Solid Waste Sport and culture Telecommunications Urban Planning Transportation Urban/local agriculture and food security Urban planning Wastewater Water
2030 Palette	Heat Island Mitigation New Growth Areas Parks Urban Bikeways Urban Retrofit Urban Infill
European Green Capital Award	Air Quality Noise Waste Water Nature and Biodiversity Sustainable Land Use and Soil Green Growth and Eco-innovation Climate Change: Mitigation Climate Change: Adaptation Sustainable Urban Mobility Energy Performance Governance

<p><i>Cascadia Scorecard 2006</i></p>	<p><i>Health Economy Population Energy Sprawl Wildfire Pollution</i></p>
<p><i>AHURI National Cities Research Program Strategic Agenda</i></p>	<p><i>Population Community &amp; Place Indigenous Perspectives Economy Housing In Urban Policy Built Environment &amp; Design Land-Use &amp; Development Infrastructure Transport Environmental Sustainability Digital Transformations Governance &amp; Planning</i></p>
<p><i>The 2020 City Clean Energy Scorecard</i></p>	<p><i>Local Government Operations Community-Wide Initiatives Building Policy Energy And Water Utilities Transportation Policies</i></p>
<p><i>Global City Indicators Program</i></p>	<p><i>Competitiveness Creativity Greenhouse Gas Governance Recreation &amp; Culture Social Capital Subjective Well-Being Total Energy Use Urban Accessibility Water Quality</i></p>
<p><i>Sustainable Urban Development Assessment (SUDA)</i></p>	<p><i>Energy Education Agriculture Housing Culture Governance Health and safety Land use Waste Transport Utilities Environment</i></p>

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<i>Urban Sustainability Framework (USF)</i>	<i>ENABLING DIMENSION 1: Governance and Integrated Urban Planning ENABLING DIMENSIONS 2: Fiscal Sustainability OUTCOME DIMENSION 1: Urban Economies OUTCOME DIMENSION 2: Natural Environment and Resources OUTCOME DIMENSION 3: Climate Action and Resilience OUTCOME DIMENSION 4: Inclusivity and Quality of Life</i>
<i>CASBEE City Manual</i>	<i>Q1. Environmental Aspects (Q1.1 Nature Conservation, Q1.2 Local Environment, Q1.3 Resource Recycling, Q1.4 CO2 Sinks) Q2. Social Aspects (Q2.1 Living Environment, Q2.2 Social Services, Q2.3 Social Vitality) Q3. Economic aspects (Q3.1 Industrial Vitality, Q3.2 Financial viability, Q3.3 Emissions trading) L1. CO2 emissions from energy sources (L1.1 Industrial sector, L1.2 Residential sector, L1.3 Commercial sector, L1.4 Transportation sector) L2. CO2 emissions from non-energy sources (L2.1 Waste disposal and others)</i>

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Looking at the indicators of the model and assessment Tools, it is seen that they are more compatible with smart city criteria. Considering that developing technology and news gathering tools, Sustainable Development and Smart Growth are considered together, the definitions of Smart city and Sustainable city should be considered together in this context.

## 5. Conclusion

World political, economic, and social authorities and 3rd participants have continued to make decisions against climate change, hunger and inequality for nearly 50 years. Unfortunately, none of these decisions matter unless they are implemented. Literature studies where analysis of which benchmark or indicator is better show that even though there is a mass that cares about sustainable development and smart growth, the turning point that will mobilize humanity will be the point where we move from "we have to do it" to "we did it!".

As we approach 2030, it should be understood that what matters is not how much we have done, but that we have started doing something. It should not be forgotten that the important thing is to reach sustainable development and smart growth goals, order and objectivity in urban scale.

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