

---

## The next wave of sustainable planning: green neighbourhood assessment systems

---

Mehmet Doruk Özügül\*, Tuba İnal Çekiç and  
Ayşegül Özbakır

Faculty of Architecture,  
Department of Urban and Regional Planning,  
Yıldız Technical University,  
Barbaros Street, 34349, Beşiktaş, Istanbul, Turkey  
E-mail: dozugul@yahoo.com  
E-mail: tinal@yildiz.edu.tr  
E-mail: aozbakir@yildiz.edu.tr

\*Corresponding author

**Abstract:** Since the 1970s, seeking solutions for global environmental problems have been on the agenda of both national and international debates where quantifying and measuring 'sustainability' have been an emerging foci. Within this perspective, analysis of areas through new methods and measurable parameters is among recent research fields in both academia and practice. To this end, in the literature, studies on 'green building rating and assessment systems' aiming more liveable places through less carbon emissions and more environmentally friendly construction materials gained significant importance. Among such rating systems, leadership in energy and environmental design (LEED) and building research establishment environmental assessment method (BREEAM) are the two well-known 'building' rating systems both in the literature and practice. On the other hand, these parameters based on the 'building' scale are now on the pursuit of 'neighbourhood' or even 'regional' scale applications. The subject of re-questioning these rating systems with the focus of 'neighbourhood' level rather than only 'building' scale is a new research field in the literature with few cases in practice. Having started in the early 1990s, the UK-based BREEAM and US-based LEED systems have responded to these needs by formulating BREEAM-communities and LEED-ND (LEED-neighbourhood design) in 2007. This paper aims to perform a comparative analysis of the parameters covered by assessment systems (LEED-ND and BREEAM-communities) through literature survey and evaluate how they can contribute in urban planning studies with an emphasis on the state of these assessment systems in Turkey.

**Keywords:** LEED-ND; BREEAM-communities' green neighbourhood assessment systems; sustainability.

**Reference** to this paper should be made as follows: Özügül, M.D., Çekiç, T.İ. and Özbakır, A. (2014) 'The next wave of sustainable planning: green neighbourhood assessment systems', *Int. J. Environment and Sustainable Development*, Vol. 13, No. 2, pp.109–125.

**Biographical notes:** Mehmet Doruk Özügül is an Associate Professor in the Department of Urban and Regional Planning of Yıldız Technical University, Istanbul, Turkey. His current scientific research and teaching involve sustainable urban development, ecological planning, environmental impact assessment and evaluation methods for urban planners.

Tuba İnal Çekiç is an Assistant Professor at Department of Urban and Regional Planning of Yıldız Technical University, Istanbul, Turkey. She obtained her PhD in Regional Planning Division in 2009 at the same university. Her main fields of scientific interests are social capital, rural and regional development.

Ayşegül Özbakır is an Associate Professor of City and Regional Planning at Yıldız Technical University, Istanbul, Turkey. Her specialisation fields are geographic information science (GIScience) and remote sensing, quality of place and quality of life, quantitative analysis methods, environmental and natural resource economics, green building and neighbourhood assessment systems, fuzzy logic and digital divide.

## 1 Introduction

Since the 1970s, seeking solutions for global environmental problems has been on the agenda of both national and international debates. As a result of these discussions, quantifying and measuring ‘sustainability’ – a term defined for the first time by Brundtland Report in 1987 – have led these debates in the following years. Searching for such operational tools is addressed by two different levels within the fields of architecture and urban planning. First one is, setting conditions for ‘healthy urban environments’ stated by the ‘Declaration of the United Nations Conference on the Human Environment’ in Stockholm, 1972 and ‘Second United Nations Conference on Human Settlements (Habitat II)’ in Istanbul, 1996. Second level of efforts is focusing into creating standards for buildings. In relation, planning of existing built-up areas as more healthy and liveable places is a major task of many social, physical and economic transformation projects. However, the recent urban transformation projects hold two types of problems. One is keeping ‘standard solutions and applications’ for different types of areas and second is handling ‘sustainability’ in an abstract way rather than using quantifiable methods. For these reasons, analysis of such areas through new methods and measurable parameters are among recent research fields in both academia and practice. To this end, in the literature, studies of ‘green building rating and assessment systems’ aiming more liveable places through less carbon emissions and more environmental friendly construction materials gained significant importance. Among such rating systems, leadership in energy and environmental design (LEED) and building research establishment environmental assessment method (BREEAM) are the two common ‘building’ rating systems both in the literature and practice, especially in the UK and USA. On the other hand, these parameters based on the ‘building’ scale are now on the pursuit of ‘neighbourhood’ or even ‘regional’ scale applications. In such arguments, topics as;

- 1 smart location and linkage
- 2 neighbourhood pattern and design
- 3 regional priorities require the contribution of ‘planning’ discipline (United States Green Building Council, 2009).

The subject of re-questioning these rating systems with the focus of ‘neighbourhood’ level rather than only ‘building’ scale is both a new research field in the literature and

very few cases exist in practice. Having started in the early 1990s, the UK-based BREEAM and USA-based LEED systems have responded these needs by formulating BREEAM-communities and LEED-neighbourhood design (LEED-ND) in 2009. Although there are many buildings received certificates through such rating systems in the world, there are very few examples of 'green neighbourhoods' (for example 'The Athletes' Village' and 'BBC's Media City UK'). Furthermore, it is also clear that the 'green neighbourhood' literature lacks 'new local parameters and assessment techniques'.

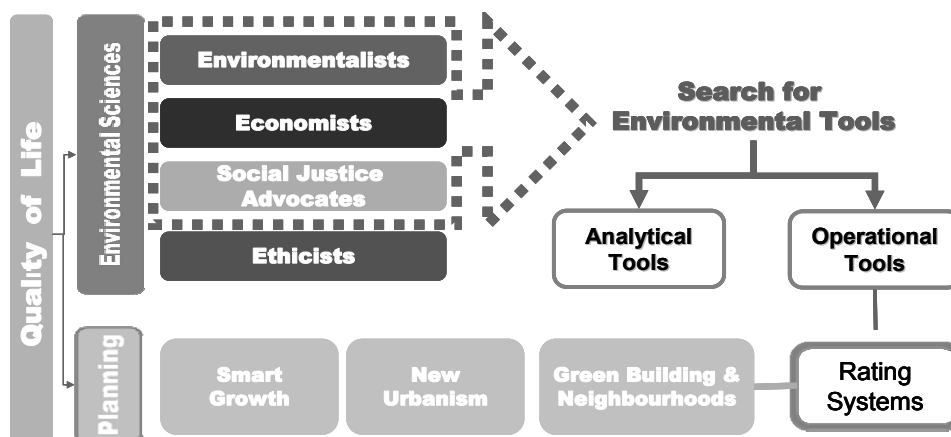
This paper aims to perform a comparative analysis of the parameters covered by assessment systems (LEED-ND and BREEAM-communities) mentioning the current literature and evaluate how they can contribute in urban planning studies also examining the position of these assessment systems in Turkey.

### 1.1 Background of green neighbourhood assessment systems

As it is very well known, sustainability is a quite broad issue both in theoretical and in practical terms. Based on literature, four major topics can be structured under which most of the sustainability arguments could be classified. They are 'environmentalist', 'economists', 'social justice advocates' and 'ethicists' (Wheeler, 2004). Moreover, the foundation of New Urbanism is the New Urbanist Charter, which outlines the principles behind the movement such as walkable streets, compact development, mixed use, sufficient density. Similarly, 'smart growth' is about thoughtfully considering where and how growth occurs, so that we support and revitalise our existing communities, particularly centre cities and older suburbs, with the goal of preserving open space and natural resources as well as mentioning social equity/justice (Burton, 2001). New smart growth developments are compact, transit and pedestrian oriented, with a greater mix of housing types and affordability levels, and are predominantly mixed use (Talen, 2003, Jenks and Burgess, 2000).

In practical terms among these four concepts, three of them are in search of environmental tools: analytical and operational rating systems which are the foci of this paper are covered through operational tools (Figure 1).

**Figure 1** Relationship between rating systems and environmental sciences and planning



Source: Developed by the authors depending on Wheeler (2004)

Figure 2 shows the most popular analytical and operational environmental tools. While life-cycle assessment, environmental input/output and cost and benefit analysis are covered by analytical tools, rating systems are defined as operational tools like environmental performance evaluation and environmental labelling.

**Figure 2** Environmental tools (see online version for colours)

The most popular analytical environmental tools:	The most popular operational tools:
<ul style="list-style-type: none"> <li>▪ life-cycle assessment (LCA),</li> <li>▪ material flow accounting (MFA),</li> <li>▪ material intensity per service unit (MIPS),</li> <li>▪ cumulative energy requirements analysis (CERA),</li> <li>▪ environmental input/output analysis (IOA),</li> <li>▪ environmental risk assessment (ERA),</li> <li>▪ checklists for eco-design, life-cycle costing (LCC),</li> <li>▪ total cost accounting (TCA)</li> <li>▪ cost benefit analysis (CBA).</li> </ul>	<ul style="list-style-type: none"> <li>▪ the environmental management systems (EMS),</li> <li>▪ environmental audits,</li> <li>▪ environmental performance evaluation (EPE),</li> <li>▪ environmental labelling,</li> <li>▪ eco-design,</li> <li>▪ green procurement,</li> <li>▪ total quality environmental management (TQEM)</li> <li>▪ <u>the Rating Systems.</u></li> </ul>

Rating systems are environmental and management tools focusing on the construction sector and targeting to sustainability, as well as to economic and social benefits. Such systems incorporate the experience and knowledge obtained from other environmental methodologies.

In that sense, most rating systems are based on the concept of life-cycle analysis. They also include the energy audit part and extend this philosophy to other environmental issues, such as water conservation, waste management, etc.

Rating systems are actually scoring systems, designed to evaluate new and existing buildings, based on a selected standard for environmental performance. Based on current and future requirements' checklist for neighbourhoods, these systems enable planners and architects to envision a sustainable future for cities. Furthermore, the major contribution of these ratings systems to the municipalities is to ensure minimum level of environmental impact both for the buildings and neighbourhoods.

On the contrary, these certification systems are criticised for limiting creative and innovative thinking of spatial design. However it should also be noted that, although there is a consensus on sustainable development, there is not a common way of understanding the principles of sustainable neighbourhood design and forms. In view of that, rating systems provide an initial setup of basic rules for sustainable neighbourhoods.

## 2 Green neighbourhood assessment systems

Green building assessment and rating systems aiming more liveable places through less carbon emissions and more environmentally friendly construction materials gained

significant importance all over the world. Building Research Establishment (BRE) in UK and United States Green Building Council (USGBC) in USA have led the green building movement in Europe and USA stretching back over 15 years. Table 1 shows assessment systems which operate in several countries. Among such rating systems, LEED and BREEAM are the two common ‘building’ rating systems both in the literature and practice.

**Table 1** Assessment systems in the world

<i>Country</i>	<i>Assessment system</i>
Australia	GreenStar
England	BREEAM
Finland	PromiseE
France	HQE
Germany	DGNB
Italy	ProtocolloItaca
Japan	Casbee
Korea	GBTTool
Netherlands	EcoQuantum, BREEAM
New Zealand	GreenStar NZ
Portugal	LiderA
South Africa	GreenStar SA
Spain	VERDE, LEED
Sweden	EcoEffect
USA	LEED

These rating systems are commonly aiming to provide inspiration to find innovative solutions that minimise the environmental impact of buildings, a tool for reducing running costs and a standard that demonstrates progress towards environmental objectives for developers and designers.

On the other hand, these parameters based on the ‘building’ scale are now on the pursuit of ‘neighbourhood’ scale applications. The subject of re-questioning these rating systems with the focus of ‘neighbourhood’ level rather than only ‘building’ scale is both a new research field in the literature with very few cases in practice. Although there are many buildings received certificates through such rating systems in the world, there are very few examples of ‘green neighbourhoods’.

Having started in the early 1990s, BREEAM and LEED systems have responded these needs by formulating BREEAM-Communities and LEED-ND in 2009. Table 2 summarises the basic information about LEED and BREEAM green neighbourhood assessment systems. BREEAM has been initiated in 1990 in UK and LEED followed it with a new context in 1998 in the USA. Both of them recently revised their neighbourhood assessment systems in 2009.

**Table 2** LEED-ND and BREEAM communities

<i>Rating systems</i>		<i>LEED-ND</i>	<i>BREEAM communities</i>
Country		USA	UK
Initiated		1998	1990
Certificate association		USGBC	BRE
Certification phases	Stage 1	Conditional approval of a LEED-ND plan.	1 Registration of BREEAM communities ‘compliant assessment framework’
	Stage 2	Pre-certified LEED-ND plan.	2 Interim BREEAM communities certificate – completed at the outline planning stage (OPS)
	Stage 3	LEED-ND certified neighbourhood development	3 Final BREEAM communities certificate – completed at the detailed planning stage (DPS)
Levels of certificate		Certified/silver/gold/platinum	Pass, good, very good, excellent, outstanding

**Table 3** Comparison Items for LEED-ND and BREEAM communities

Comparison item	LEED-ND	BREEAM communities
Size of development	<ul style="list-style-type: none"> <li>• Min 2 buildings</li> <li>• Max 320 acre-half a square mile</li> </ul>	<ul style="list-style-type: none"> <li>• Small (up to 10 units)</li> <li>• Medium (11–500 units)</li> <li>• Large</li> </ul>
Land use/function	<ul style="list-style-type: none"> <li>• Single</li> <li>• Mixed</li> </ul>	<ul style="list-style-type: none"> <li>• Domestic</li> <li>• Mixed use</li> <li>• Non-domestic</li> </ul>
Type of development	<ul style="list-style-type: none"> <li>• Appropriate for varying types new development, infill projects etc</li> </ul>	<ul style="list-style-type: none"> <li>• New developments</li> <li>• Regeneration projects</li> <li>• Other (subject to confirmation with BRE global)</li> </ul>
Assessment method	-	<ul style="list-style-type: none"> <li>• Sustainability appraisals (SAs)</li> <li>• Environmental impact assessments (EIAs)</li> <li>• Strategic environmental assessments (SEAs)</li> </ul>
Scope of assessment	<ul style="list-style-type: none"> <li>• Creation of compact, walkable, vibrant, mixed-use neighbourhoods with good connections to nearby communities.</li> </ul>	<ul style="list-style-type: none"> <li>• To provide a credible and holistic environmental, social and economic sustainability label for development projects in the built environment</li> <li>• To set criteria and standards surpassing those required by regulations and challenge the market to provide innovative solutions that address the sustainability objectives of development projects</li> </ul>

Both rating systems have three phases for certification and levels of certificate. Although they differ in details, certification processes have some limitations for application. Table 3 shows the comparison items for LEED neighbourhood design and BREEAM communities. They define minimum and maximum development sizes and land uses. Both of them are appropriate for varying types of development including regeneration projects, infill developments, new developments etc. Furthermore they have put forth provision of environmental sustainability as the scope of assessment.

Besides the similarities between rating systems LEED-ND is designed straight forward while BREEAM has a more complex system. While LEED-ND uses some existing standards for rating, BREEAM mostly defines its own mandatory criteria. On the other hand, BREEAM is concerned about social impact assessment, community engagement, local employment and knowledge sharing, while LEED-ND does not include social and economic issues directly.

**Table 4** Issues covered in LEED-ND and BREEAM-communities

<i>Rating system</i>	<i>Category</i>	<i>Issues</i>
LEED-ND	Smart location and linkage	Smart location, imperilled species and ecological communities, wetland and water body conservation, agricultural land conservation, floodplain avoidance
	Neighbourhood pattern and design	Walkable streets, compact development, connected and open community
	Green infrastructure and buildings	Certified green building, minimum building energy efficiency, minimum building water efficiency, construction activity pollution prevention
	Innovation and design process	Innovation and exemplary performance LEED® accredited professional
	Regional priority	Regional priority credit
BREEAM communities	Climate and energy	Flood management, energy and water efficiency, renewable energy, infrastructure, passive design principles
	Place shaping	Site selection, defensible space, active frontages, green space, secured by design, housing density
	Community	Social impact assessment, community engagement, sustainable lifestyles, facilities management, mixed of use, affordable housing
	Ecology	Maintaining/enhancing habitat, green corridors, ground pollution, contaminated land, landscaping schemes
	Transport	Walkable neighbourhoods, cycle networks, provision of public transport, green travel plans, construction transport
	Resources	Land use and remediation, material selection, waste management, construction management, modern methods of construction
	Business	Inward investment, local employment, knowledge sharing, sustainable charters
	Buildings	BREEAM buildings, code for sustainable homes, ecohomes

Table 4 examines the categories of BREEAM communities and LEED-ND respectively. Issues covered by rating systems indicate the mandatory and prerequisite criteria for possible credits. LEED-ND has five main categories: smart location and linkage, innovation and design process, green infrastructure and buildings, neighbourhood pattern and design and regional priority which emphasises the importance of local conditions. LEED-ND defines the prerequisites and possible credits using existing standards like Ashrae, or standards of organisations like Federal Emergency Management Agency (FEMA), International Society of Arboriculture (ISA). BREEAM communities has eight categories with its own definitions and mandatory for credits. Climate and energy, place shaping, ecology, transport and resources are the categories which are mentioned in LEED under different titles but concerning parallel principles for designing communities. However business and community categories emphasise social and economic awareness of BREEAM-communities.

Although both assessment systems are quite common in the world, LEED is the dominating one in terms of the number of certified projects. While there are 15.674 LEED certified projects including green buildings, BREEAM certified projects are nearly six times less (2837 projects). One reason for this difference could be explained by LEED's more practical online registration process. Besides the fact that, LEED has a more systematic and accessible data, this great difference is why this article specifically summarises USGBC's LEED registrations database from now on (USGBC, 2013).

**Table 5** Distribution of all LEED registrations according to owner types – 2012

<i>Owner type</i>	<i>Number</i>	<i>%</i>	<i>Cumulative %</i>
Government and under government use (federal, state)	7,943	15.6	47.7
Educational (public)	1,814	3.6	
Religious	97	0.2	
Local government	4,555	9.0	
Corporate (public)	4,964	9.8	
Community development corporation	128	0.3	
Non-profit organisation	4,743	9.3	
Investor	2,603	5.1	48.5
Profit organisation	13,403	26.4	
Individual	1,563	3.1	
Corporate (private)	6,272	12.3	
Educational (private)	790	1.6	
More than one owner type	189	0.4	3.8
Other and unknown	1,750	3.4	

The amount of ever registered LEED projects is 50.814 and the same number is 324 for LEED-ND projects until 2012. When the whole LEED registrations are analysed according to their owner types, a balance between public sector, public corporations and non-profit organisations (47.7%) and private sector initiatives, is observed (Table 5). Within the private sector projects the most significant figure belongs to profit organisations, private corporations and investors while federal and state government projects lead in the non-private applications (Figure 3). On the other hand, for LEED-ND certified projects (that are cumulated in the USA and Canada – Figure 5) demonstrate a

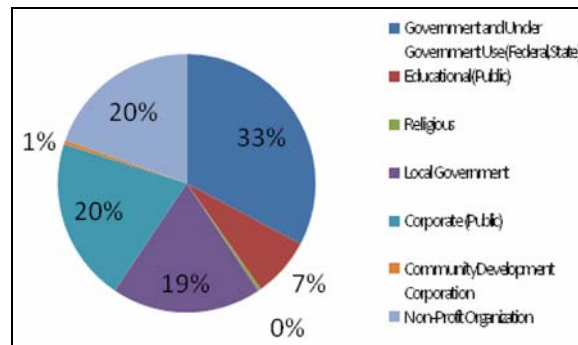


different character. For these projects private sector plays a dominant role with approximately 68%. Having 62 certified projects, profit organisations are the main actors within private sector initiatives. Besides this, projects owned by local governments (12 certified projects) and non-profit organisations (12 certified projects) also gain importance (Table 6) comparing to the character of the whole set of LEED registrations.

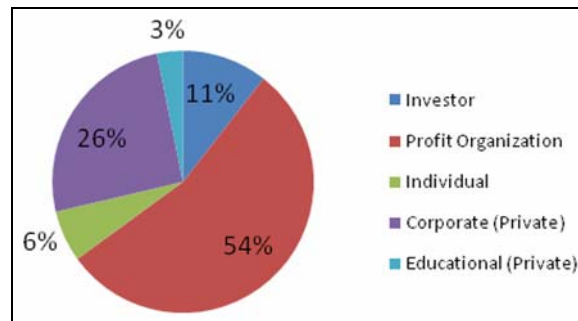
**Table 6** Distribution of LEED-ND certified projects according to owner types – 2012

Owner type	Number	Cumulative %
Government and under government use (federal, state)	1	22
Local government	12	
Corporate (public)	1	
Non-profit organisation	12	
Investor	3	67,8
Profit organisation	62	
Individual	7	
Corporate (private)	8	
Other and unknown	12	

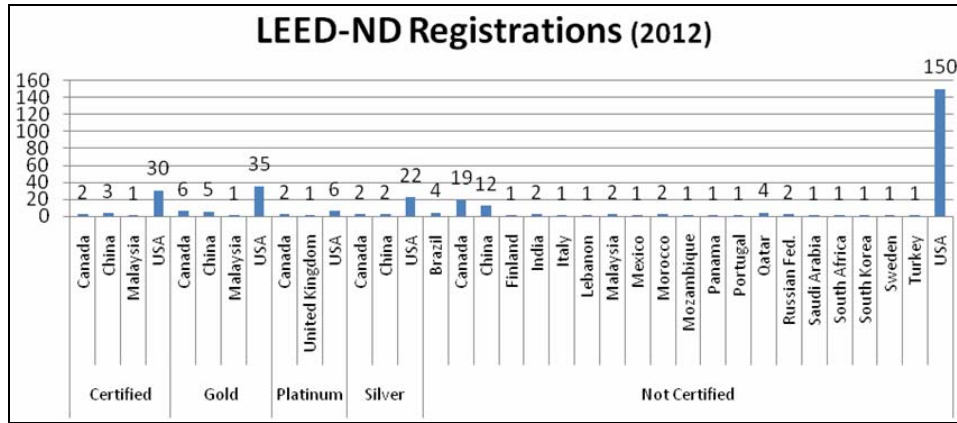
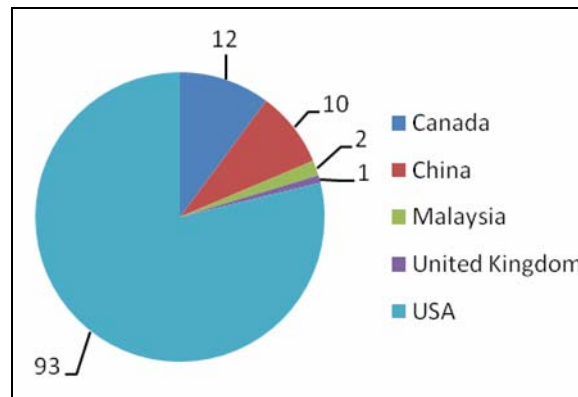
**Figure 3** Distribution of ever registered (a) non-private and (b) private LEED projects due to owner types – 2012 (see online version for colours)



(a)



(b)

**Figure 4** Distribution of ever registered LEED-ND projects due to nation states and certification type – 2012 (see online version for colours)**Figure 5** Distribution of certified LEED-ND projects due to nation states – 2012 (see online version for colours)

### 3 Interrelation of planning and green neighbourhood assessment systems

Starting from the 1990s there has been a significant increase in attention towards ‘green buildings’ as an emerging research area for architecture. On the contrary, this field remained almost virgin for urban planners up to early 2000s. Most of the writings on green neighbourhood assessment systems aim to describe the content, function and meaning of these systems (Gowri, 2004; US Green Building Council, 2007, 2009; Ben-Joseph, 2009; Xiaoping et al., 2009). Evaluations on green neighbourhood assessment system practices, analysing some success and failures of these systems in specific cases and critiques seem to become popular in the near future (Browne and Frame, 1999; Theaker and Cole, 2001; Hoffman and Henn, 2008; Wyly and Hammel, 2008; Garde, 2009; Retzlaff, 2010). Also it is obvious that there is a quite insufficient number of articles linking these assessment systems to urban and regional planning in a

comprehensive sense (Retzlaff, 2009a, 2009b). But it seems to be a fruitful field of study for the near future.

Considering much of the current literature, two main questions arise for urban planners:

- 1 What can planners or planning offer to these assessment systems?
- 2 What can be the related emerging issues for planning?

Planning could offer several solutions and gateways for these assessment systems in terms of overcoming some of the critiques. The success of green neighbourhood assessment systems depends on some factors such as; policy building both at national and local levels, legislation, and detailed analysis on the social and economic structures as well as shaping the physical environment. Theaker and Cole (2001) mention that local governments are best authorities which are equipped and experienced on implementing such systems. In addition to this, Retzlaff (2010) highlights the importance of national guidance on green buildings from the comparison of the Dutch and US experiences. Ali and Al Nsairat (2009) discuss the rigidity problematic of these systems on the Jordan case and suggest SABA as a national assessment system which is adopted due to the local ecological and socio-economic varieties like water and energy efficiency as the most important items of this national assessment system. There is strong evidence in Allen and Potiowsky's (2008) study that the economic activities related to the green buildings form a growing economic cluster in Portland case which also shows that the success of these systems necessitate a better understanding of the economic nature of regions and cities.

Since planning covers most of the sustainability issues that operates across a wide range of scales from regional and citywide to urban design applications with a comprehensive prospect. Therefore planning might serve these assessment systems to be more comprehensive and consistent.

These assessment systems might be more inclusive with the support of planning and planners. For a more inclusive content; urban infill applications, conservation and rehabilitation in the historical urban landscapes, site selection and neighbourhood design are some important topics. Involvement of issues like regional and local policies, place-based properties, (national) legal issues, public participation, and social structure might broaden the existing context of these systems.

As Retzlaff (2009a, 2009b) argues, planners might help to overcome some financial problems in the implementation phase (like providing incentives for large scale projects) so that such projects could be more affordable. A better understanding of some dimensions of the existing urban planning agenda may be critical for more healthy applications. Related agenda can be summarised as follows; urban conservation, urban renewal and urban rehabilitation projects, housing preferences for several sub-groups of inhabitants, the nature of the economic activities (sub-sectors) and existing planning approaches like 'ecological planning' (Retzlaff, 2009a, 2009b).

Issues relating with the second question will be discussed under four main topics which are policy and legislation, design, tools/techniques and critiques.

In accordance with the first topic; green-policies in regional and urban studies, evaluation of current policies and practices, incentives (structural-like density and height bonuses and financial – such as lower impact fees, qualifying for tax increment financing) would be some of the emerging issues (Retzlaff, 2009a, 2009b).

While energy efficiency in neighbourhood design, rethinking zoning principles and design guides are the relevant design issues, re-considering EIA and SEA techniques, related software and place-based criteria recommendations for these systems seem to be the basic discussion fields in terms of tools and techniques.

Mentioning the effects and consequences of the application of these systems, several critiques might be expected in the future urban planning agenda. These are;

- application costs
- lack of social context
- market-based character
- the rigidity which causes missing the local socio-cultural and economic diversities.

Such a rigidity not only concludes with missing these varieties, but also might bind the essential determinants of the formation or design of a qualified urban space like; diversity, randomness, creativity and freedom.

Also these systems might be labelled as reductionist approaches and market-oriented tools of ‘eco-gentrification’ (Wyly and Hammel, 2008). Or in other words, gentrification problematic would find a new ‘legitimate argument’ for itself and accelerate in the urban environment. In addition to these critiques, Browne and Frame’s (1999) work shows that green buildings’ contribution to the energy efficiency remains marginal when the attitudes and behaviours of the occupants of these buildings do not change. So they argue that *green buildings need green occupants*.

**Table 7** Green neighbourhood assessment systems in literature

<i>Subject</i>	<i>Frequency in literature</i>	<i>Some references</i>
Description (content, function and meaning) of green neighbourhood assessment systems and their comparison	Frequent	Gowri (2004), US Green Building Council (2007, 2009), Ben-Joseph (2009) and Xiaoping et al. (2009)
Green building economies (regional scale)	Rare	Allen and Potiowsky (2008)
Evaluations on practice	Moderate	Theaker and Cole (2001), Garde (2009) and Retzlaff (2010)
Discussion of place-based solutions, local parameters and flexibility issues	Rare	Ali and Al Nsairat (2009)
Comprehensive evaluation on their relevance to planning	Rare	Retzlaff (2009a, 2009b)
Critiques	Moderate	Browne and Frame (1999), Hoffman and Henn (2008) and Wyly and Hammel (2008)

All of the above-mentioned theoretical issues are categorised and evaluated in Table 8 under five dimensions as the probable forthcoming discussion fields for urban planning. These dimensions are physical, organisational, social, economic and ecological. Green neighbourhood systems would cause several reflections over planning, cities, the

social content of the built environment and natural environment both in positive and negative terms. Since each sub-topic has ‘political and legislative’ and ‘practical’ contexts, causes or consequences, these reflections are also grouped and summarised according to their relevance to policy and practice.

**Table 8** New directions of discussion

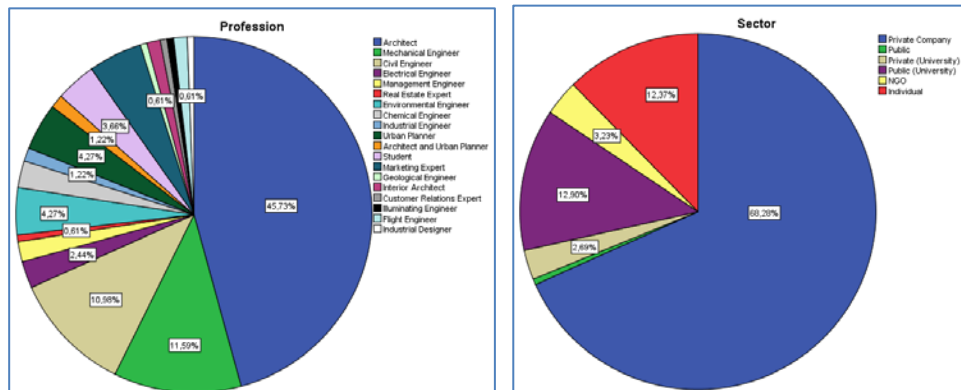
<i>Probable reflections of the ‘green neighbourhood assessment systems’ agenda</i>		
	<i>Policy and legislation</i>	<i>Practice</i>
Dimensions	Physical	Laws on construction, urban planning, urban transformation projects etc.
		Preparation and content of plans, sustainable transportation plans, urban conservation, urban renewal and urban rehabilitation projects for existing urban fabric, urban infill applications
		(Both national and local) design guidelines
		Zoning principles, application of design principles, site selection
	Organisational	Coordination of (national, regional and local) public policies and free market wills
		A new agenda for regional development agencies, NGO’s third party organisations and public private partnerships etc.
		Reorganisation of local administrations
		New specialists in the public sector, new directions in plan approval process
	Social	(Affordable) housing policy
		High costs, eco-gentrification
		Policies on social justice
		Seeking equality of opportunity
		Policies on education and social capital
		Enhancement of environmental awareness, sustainable lifestyles
	Economic	Funding and fiscal legislations
		Redistribution of incentives and tax discounts
		New investment and employment policies on advancing markets like eco material production and marketing, construction sector etc.
		New global economic linkages, eco-clusters including industry and services, distribution of inner-city economic activities (in terms of mix-land use), new job opportunities, specialisation in design offices, accredited professionals and privileged offices
	Ecological	National environmental policies and related laws
		Ecologically oriented planning/habitat protection plans, natural resource management
		EIA bylaws
		EIA, SEA applications, tools and indicators
		Energy law
		Energy efficient buildings

#### 4 The state of assessment systems in Turkey

When the ‘green building and neighbourhood’ practice and literature analysed in developing countries such as Turkey, it is observed that there are not any rating systems but few buildings exist that received certificates through LEED or BREEAM. Nevertheless, Turkey Green Building Association has been founded to support the efforts in development of ‘sustainable building sector’ in 2007. The association has been granted Emerging Member Status with the World Green Building Council (WGBC) in 2009 and still serves as an institution to create and accelerate the ‘green building movement’ in Turkey. In addition, the association is working to establish a local assessment tool for green buildings.

The Turkish Green Building Association (ÇEDBİK) organises educational programmes, develops pilot projects with government and universities and conducts lobbying activities to increase public awareness about the necessity of green building while also encouraging the building industry to develop along principles of sustainability. It has certified approximately 200 accredited professionals (mostly from private sector) and architects present 40% of the accredited professionals while civil and mechanical engineers form the second largest group (Figure 6).

**Figure 6** LEED/BREEAM education attendees by profession and sector 2011 (see online version for colours)



Although 24 buildings were certified by LEED and 24 by BREEAM, the prevalence of LEED certification system stands out in practice with 146 applications. Registrations are clustered in four metropolitan cities which are Istanbul (72 projects), Kocaeli (13), Izmir (10) and Ankara (6) that is the capital city of the Republic of Turkey. With an increasing number of registrations since 2009, private sector dominates the process with a percent of 76.7. Only one of the registrations is for LEED-ND in Turkish case, while ‘new construction’ projects form 50% of the whole registrations and followed by ‘core and shell’ and ‘interior design’ projects. Of the 24 certified projects analysed, 15 are gold, 7 are silver and only 2 are platinum as certified buildings (Table 9).

**Table 9** Distribution of all LEED registrations according to owner types in Turkey – 2012

<i>Owner type</i>	<i>Number</i>	<i>%</i>	<i>Cumulative %</i>	<i>Certified</i>
Government and under government use	4	2.7	23.3	0
Educational (public)	1	0.7		1
Corporate (public)	17	11.6		3
Community development corporation	2	1.4		0
Non-profit organisation	10	6.8		0
Investor	14	9.6	76.7	2
Corporate (private)	89	61.0		17
Educational (private)	9	6.2		1

On the other hand, energy performance of buildings directive which came into force in December 2008, avoiding the consumption of energy is one of the steps have been taken in the direction of the legal framework. In addition, a turn through ecological production is seen on construction sector and production of water and energy efficient construction materials enrolls a rapid build-up. While above mentioned process indicates the development of green design and production; an economy and a cluster in this path has not occurred yet.

Moreover, ‘green neighbourhood assessment tools’ are not analysed in the Turkish literature nor are they applied in real life. However, there is no prevalence of green neighbourhood assessment systems on urban planning field; it seems to be one of the important issues of near future with its positive and negative aspects.

This new agenda suggests a more painful process especially in developing countries and their cities where planning system is not completely institutionalised. Turkish case also shows that, housing based construction sector is the main determinant of economic productivity of most cities. Without doubt, this will produce a legitimate discourse that will be acceptable and offer new opportunities for housing sector and local governments in both brown fields and transformation areas. However, it can be easily estimated that this produced ‘new’ and ‘green’ communities in the cities will create new ‘winners’ and ‘losers’. At this point, as well as the economic and ecological opportunities and improvements offered by these applications, it should be seen as a necessity to shape assessment systems to the context of location-specific conditions, produce a fair share value and to take measures to protect the rights of existing users.

There emerges a final question worth-mentioning which is; ‘What is different for developing countries?’ especially for Turkey in our case. For now, it could be foreseen that;

- excessive informality – both in economy and in terms of settlement character
- growing inequality of incomes
- lacking human capital
- inabilities of planning in orienting spatial growth

are some characteristic features of these countries. Because of these properties green neighbourhood assessment system applications might end with such consequences in the Turkish case;

- these projects might serve to (or could only be afforded by) high-income groups
- this would increase displacement in the urban transformation applications
- they surely will create privileged experts (with certificates), design/planning offices and firms (especially in terms of eco-construction material production) which will affect the current market.

And also since the adaptation of the private sector will take time, with these applications a dependent economy might be created.

## 5 Conclusions

Approximately for half a century, sustainability has both been a hopeful and a polemical issue. It is obvious why to protect the nature, but it is questionable how to protect and to what extent. Green neighbourhood assessment systems serve this aim by answering the latter questions especially focusing into the built-up environment as inductive approaches. In other words deductive policy statements are meeting with inductive precautions with the help of green neighbourhood assessment systems.

These systems are evolving in terms of their technical measuring capacity, relevance to local demands and linkages to urban planning. Thus, adaptation of national policies, legislations and practices are emerging topics within physical, organisational, social, economical and ecological dimensions as central discussions for urban planning.

A brief comparison of LEED projects highlights a major difference of Turkish experience. Private sector projects are dominating the green building applications with a new marketing strategy. The main question still remains as a central issue. Will it be possible for wider user groups to achieve to live in environmentally friendly build-up environments? Or will it be a privilege for high income groups to afford such living conditions as a minority?

## Acknowledgements

This research has been supported by Yıldız Technical University Scientific Research Project Coordination Department, Project Number: 2011-03-02-KAP02, Project Name: 'An urban sprawl typology proposal within the framework of green neighbourhood assessment systems and place based values'.

## References

- Ali, H.H. and Al Nsairat, S.F. (2009) 'Developing a green building assessment tool for developing countries – case of Jordan', *Building and Environment*, Vol. 44, No. 5, pp.1053–1064.
- Allen, J.H. and Potiowsky, T. (2008) 'Portland's green building cluster: economic trends and impacts', *Economic Development Quarterly*, Vol. 22, No. 4, pp.303–315.
- Ben-Joseph, E. (2009) 'Commentary: design codes: trends in cities, planning and development', *Urban Studies*, Vol. 46, No. 12, pp.2691–2702.
- Browne, S. and Frame, I. (1999) 'Green buildings need green occupants', *Eco-Management and Auditing*, Vol. 6, pp.80–85, John Wiley & Sons.



- Burton, E. (2001) 'The compact city and social justice', *Housing Studies Association Spring Conference Proceedings*, Housing, Environment and Sustainability, University of York, 18–19 April 2001.
- Garde, A. (2009) 'Sustainable by design?: insights from US LEED-ND pilot projects', *Journal of the American Planning Association*, Vol. 75, No. 4, pp.424–440.
- Gowri, K. (2004) 'Green building rating systems: an overview', *ASHRAE Journal*, Vol. 46, No. 11, pp.56–59.
- Hoffman, A.J. and Henn, R. (2008) 'Overcoming the social and psychological barriers to green building', *Organization and Environment*, Vol. 21, No. 4, pp.390–419.
- Jenks, M. and Burgess, R. (2000) *Compact Cities: Sustainable Urban Forms for Developing Countries*, Spon Press, London.
- Retzlaff, R. (2010) 'Developing policies for green buildings: what can the United States learn from the Netherlands?', *Sustainability: Science, Practice and Policy*, Vol. 6, No. 1, pp.28–38.
- Retzlaff, R.C. (2009a) 'Green buildings and building assessment systems: a new area of interest for planners', *Journal of Planning Literature*, Vol. 24, No. 1, pp.3–21.
- Retzlaff, R.C. (2009b) 'The use of LEED in planning and development regulation: an exploratory analysis', *Journal of Planning Education and Research*, Vol. 29, No. 1, pp.67–77.
- Talen, E. (2003) 'Measuring urbanism: issues in smart growth research', *Journal of Urban Design*, Vol. 8, No. 3, pp.195–215.
- Theaker, I.G. and Cole, R.J. (2001) 'The role of local governments in fostering 'green' buildings: a case study', *Building Research and Information*, Vol. 29, No. 5, pp.394–408.
- United States Green Building Council (2007) Neighbourhood Development System, Pilot Version, the Congress for the New Urbanism, Natural Resources Defence Council and the U.S. Green Building Council, Washington.
- United States Green Building Council (2009) LEED 2009 for Neighbourhood Development, the Congress for the New Urbanism, Natural Resources Defence Council, and the US Green Building Council, Washington.
- United States Green Building Council (USGBC) (2013) [online] <http://www.usgbc.org/LEED/Project/RegisteredProjectList.aspx> (accessed 14 January 2013).
- Wheeler, S. (2004) *Planning for Sustainability: Creating Liveable, Equitable and Ecological Communities*, p.28, Routledge, New York.
- Wyly, E. and Hammel, D. (2008) 'Commentary: urban policy frontiers', *Urban Studies*, Vol. 45, No. 12, pp.2643–2648.
- Xiaoping, M., Huimin, L. and Qiming, L. (2009) 'A comparison study of mainstream sustainable/green building rating tools in the world', *International Conference on Management and Service Science Proceedings*, Wuhan, China, 16–18 September, pp.2784–2789.