

THE SUSTAINABILITY OF PUBLIC HOUSING PRODUCTION IN TURKEY

TÜRKİYE'DE TOPLU KONUT ÜRETİMİNDE SÜRDÜRÜLEBİLİRLİK

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Abstract

It is difficult to say that the existing public housing applications put forward as a solution to the housing problem in Turkey has been developed with sustainable development and sustainable physical country and regional planning and urban development and architectural policies as the decision-making, programming, planning, design and implementation/construction process are directed towards a holistic goal. Considering the current situation in Turkey, a necessary document for environmentally sustainable housing and housing production reference and evaluation system is not available. The lack of an evaluation model to make reference to sustainability in Turkey, the absence of a national green building certification system that does not set the basic criteria and environmental performance evaluation is a serious shortcoming. This shortcoming is one of the important factors that hampers sustainable building and housing practices. In this study, the culture of production in public housing will be considered in the context of sustainability, sustainable urban development and sustainable architecture, which will evaluate international experiences and studies, and will discuss the possibilities for making both the mass housing production culture and the urban development sustainable.

Keywords: Sustainable Urban Development, Sustainable Construction, Public Housing Production, Sustainable Housing.

Özet

Türkiye'de konut sorununa çözüm olarak ortaya konan mevcut kamusal toplu konut uygulamalarının; karar verme, program, planlama, tasarlama ve uygulama/yapım sürecinin bütüncül bir hedefe yönelmiş olarak, sürdürülebilir kalkınma ve sürdürülebilir fiziki ülke ve bölge planlama ile kentsel gelişim ve mimarlık politikaları öngörülerek geliştirildiğini söylemek zordur. Güncel durumda Türkiye'de, sürdürülebilir toplu konut ve konut çevresi üretimi için uyulması gerekli bir referans ve değerlendirme sistemi de mevcut değildir. Türkiye'de sürdürülebilirliğe referans verecek bir değerlendirme modelinin olmaması, temel kriterlerin belirlenmemesi ve çevresel performans değerlendirmesi yapacak bir ulusal yeşil bina sertifikasyon sisteminin bulunmaması ciddi bir eksikliklerdir. Bu eksiklik, sürdürülebilir yapı ve konut uygulamalarını engelleyen önemli etkenlerden biridir. Bu çalışmada, kamusal toplu konutlarda üretim kültürü; sürdürülebilirlik, sürdürülebilir kentsel gelişme ve sürdürülebilir mimarlık bağlamında, uluslararası deneyim ve çalışmaları da değerlendiren bir yaklaşımla ele alınacak, hem toplu konut üretim kültürünün hem de kentsel gelişimin sürdürülebilir kılınabilmesine yönelik olanaklar tartışılacaktır.

Anahtar Kelimeler: Sürdürülebilir kentsel gelişme, Sürdürülebilir Yapı, Kamusal Konut Üretimi, Sürdürülebilir Konut.

Introduction

Vital details for sustainability is that way of life and standards should be adjusted according to the load-bearing capacity of the nature. Ensuring that humanity reaches this awareness has to be the most important target of sustainability. Sustainability can be defined as the ability of the environment, society or any system with continuity to be able to continue without interruption by utilizing the resources that provide the system to live, without consuming with excessive use, and by allowing the system to renew itself. The sustainable development of a system requires it to avoid using its resources to the full extent during the growth process. Because of the significant impact humanity has on our world's eco-systems, its future is largely dependent on a sustainable lifestyle choice. Sustainability can be said to be the ability of a system to keep itself alive while maintaining the necessary processes, and that this is due to the relationship between economic growth and development and the continuity of nature's

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ability to sustain and renew itself. The fact that socio-economic and cultural needs are met in a fair manner for all people in the world today and in the future is also a necessary goal for sustainability. Also for sustainable development, it is very important to establish the conceptual foundations of society and the socio-cultural structure and lifestyle of society, the elements of abstract or concrete cultural heritage and the physical and spatial reflection of their traditional urban textures, as well as the construction and building techniques in the social and cultural background of each society. The subject of this study is to examine the policies and principles of sustainable urban development, building and housing of public in Turkey around the conceptual framework described above.

Method

Firstly, conceptual explanations and definitions about the subject will be included. In the context of international acceptances, firstly sustainable urban development, secondly sustainable structure and third, sustainable housing will be defined. In the second chapter, urban development, construction and housing within the scope of sustainability policies in Turkey will be examined within the scope of laws, regulations and legislations. Also, the results obtained from the studies conducted by the researchers, including the author of the article, will be mentioned as supportive of the issue. The evaluation will be given in the results section. The findings will be explained in conclusion section.

Sustainable Urban Development

In the Earth Summit of 1992, the 7th section of Agenda 21, which is an international plan for sustainable development, emphasizes the importance of the development of "sustainable human settlements" for the purpose of sustainable development (UNCED, 1992). Almost all of the documents showing the results of the global summits and international meetings, including the 1992 Rio "Earth Summit" and the 1996 Istanbul ve Habitat II Summit 1992, have focused on the establishment of a sustainable settlement as a concept in achieving sustainable development (UN, 1996).

Concerning sustainable urban development, it is seen that there is an emphasis on the following issues in the definitions that separate or complement each other: increasing the quality of urban life, education, health, justice, safety, employment and housing with basic requirements such as providing equal and fair access to resources, public service and public space use of social justice and the provision of social justice, improving the quality of the city as a settlement, strengthening the ability to sustain and sustaining social diversity, protecting and developing the urban environment, promoting urban renewal, strengthening economic well-being and employment in urban areas, minimizing the consumption of environmental values, restructuring of patterns for transforming and consuming resources, the level of utilization of resources not exceeding the self-renewal rate of resources (European Commission, 1998; Osmanoğlu, 2019; Lautso, et al, 2004).

Sustainable Construction

In the recent past, in many developed countries, it is seen that the building and architecture sector has entered into a process of interpreting sustainability for its own purposes and in realizing the goals set forth in this agenda in international summits especially in Agenda 21 and Habitat II Agenda. Therefore, sustainable structure can be summarized as the reflection of sustainability and sustainable development on the building sector. In this context, CIB has set out a conceptual framework that defines the link between the construction sector and the global concept of sustainable development (CIB, 1999), emphasizing that the sustainable structure in developing

countries and the building approach in developed countries will not be the same (CIB, 1999), (CIB & UNEP-IETC, 2002).

Sustainable architecture is a superimposed header that covers previous architectural approaches and is a holistic, strategic, environmentally conscious, ecological and energy-conserving design and implementation that is supported as a solution to global environmental problems and development problems. Sustainable architecture is envisioned as an environmentally sensitive architectural practice with its contribution to the social, cultural and economic infrastructure of the region as well as its morphological features (Arsan, 2008); it aims to reduce the energy consumption of a structure, to minimize the pollution that it emits to the environment and to pay attention to the use of natural resources in the process of production, construction and use (Üstün, 2008). Sustainable construction is a holistic process that seeks to restore and maintain harmony between the natural and the built environment, while establishing settlements that are worthy of human dignity and promote economic justice (CIB & UNEP-IETC, 2002). Besides, regional and cultural differences are also important inputs for sustainable construction. When designing a structure, the physical texture of the city or the local area as well as the past and future damages on the socio-economic texture should be considered (Bourdeau, 1999).

In this context, the sustainable building approach has various levels, including national, regional and local levels. Principles that have similarities and differences to the international community regarding sustainable structure and architecture have been developed. Kibert defines sustainable building principles as minimization of resource consumption, maximizing reuse of resources, maximizing the use of resources, selecting renewable or convertible resources, ensuring the protection of the natural environment, creating a non-polluted and healthy environment, and maintaining the quality in creating the built environment (Kibert, 1994).

For sustainable construction by CIB; three main themes are proposed as reducing, preserving and maintaining/sustaining maintenance. The key issues and principles they contain are listed as energy, water, mining and land use reduction, reuse, recycling, efficient use, natural areas and biodiversity conservation and improvement, healthy indoor environment and built environment quality. (CIB, 1999) In the UK, the key topics of sustainable construction of DTI are expressed as design for minimum waste, lean structure and minimum waste, minimum energy in construction and use, not polluting, protecting and increasing biodiversity, conservation of water resources, respect to local environment and human, observation and report (DTI, 2004). SFC's themes include supply, design, innovation, society, optimal regulation, climate change mitigation, climate change adaptation, water, biodiversity, waste and materials (HMG&SFC, 2008).

Green building certification systems have been established in many developed countries in a very recent period with the criteria established to measure the environmental performance and sustainability of the buildings in accordance with their specific conditions in many developed countries. After the creation of BREEAM (1992) in the UK, certification systems such as LEED (USA), NABERS and GreenStar (Australia), CASBEE (Japan), HQE (France), Green Globes (Canada) etc. were established (Uher, 1999).

Sustainable Housing And Residential Settlements

The concept of sustainable housing and residential settlements emerges as a new concept that has become increasingly widespread nowadays. The first of the main objectives in terms of residential settlements necessitates a new and holistic approach in order to ensure the sustainability of the relationship between the natural

environment and the built environment. This approach means the redefinition of all aspects of the urban environment, structure and structure internal environment in the context of environmental, economic and social sustainability. In this context, various environmental assessment methods have been developed for sustainable housing in many countries. In the UK, the evaluation system of CLG consists of 9 main topics. These include energy and CO2 emissions, water, materials, surface water, pollution, health and satisfaction, management and ecology (CLG, 2008).

BREEAM's 7 main minimum environmental performance levels for sustainable housing are energy efficiency/CO2, water efficiency, surface water management, land/area waste management, domestic waste management, use of materials, housing (long-term) for life (BREEAM, 2010). Apart from these methods, the SBTool evaluation system, which is formed by international participation with the participation of many countries, includes a general evaluation method which requires the establishment of performance criteria based on many evaluations in accordance with different countries, regions or local conditions. By changing the general criteria, it is necessary to evaluate the structures by establishing criteria that are appropriate to the environmental and other parameters that come into play in disparate regional and local conditions. The evaluation system implemented in Canada by this system include 7 main themes and their sub-themes: site/land selection, project planning and development; cultural and perceptual principles; energy and resource consumption; environmental loads; indoor environmental quality; quality of service; social and economic principles (SBTool, 2007).

One of the most comprehensive of sustainable housing assessment systems is the LEED housing evaluation system. Sustainable housing and housing design approach is evaluated with theme and sub-themes in 8 categories in the housing evaluation system and the overall performance measurement of the system is performed. These topics are listed as: innovation and design development, location & connections, sustainable lands, water efficiency, energy and atmosphere, materials and resources, closed environment quality and awareness and education (USGBC, 2008). It is seen that the main issues that will enable sustainability in housing and residential areas are close to each other in all studies and evaluation systems.

Sustainability Policies And Sustainable Urban Development And Housing In Turkey

Cities in Turkey has entered into remodeling efforts through modern planning and architectural applications during the first years of the Republic. As a result of the economic policies pursued in the following years; urban plans became dysfunctional primarily due to immigration, illegal construction and squatting, and then zoning amnesties, urban transformation and renewal processes.

In Turkey, which began to experience rapid urbanization since the 1950s following the Second World War, unhealthy urban masses have been formed which cannot meet the needs of sustainability until today with uncontrolled and rapid urban development. (Çevre Bakanlığı, 2002). During this period, from 1948 until 1966; the zoning amnesty has been implemented for six times, the illegal structures have been forgiven and the development of unplanned development has been opened in the cities due to reasons such as prevention of slum construction, destruction of unlicensed structures, promoting building construction. In the 1980s, with the neo-liberal change experienced in the economic system all over the world, urban areas were identified as means of capital production, the central and local government policies that took the place of urban surplus instead of public benefit priority were dominant. From 1973 to 1988, the cities continued its unplanned development by implementing six zoning amnesties (Resmi Gazete, 18335) (Resmi Gazete / 18335, 1984). Since planning in

these periods is generally dysfunctional, it is impossible to talk about sustainability policy.

Although the concept of "Sustainable human settlements" is highly debated in terms of achieving sustainable development which is addressed on the results of the international meetings of all global summits including 1992 Rio "Earth Summit" and 1996 Istanbul "Habitat II Summit" in recent years in Turkey by public authorities or civil public opinion, it is difficult to say that adequate policies are developed related to sustainable urbanization and housing. It is seen that the studies for developing policies for the sustainability of the sectors related to the urbanization, planning, architecture and construction areas to be sustainable, and the studies for preparing the relevant laws, regulations, regulations, etc. infrastructure are still new, and the comprehensive studies aimed at a holistic sustainable development goal has not yet gained sufficient momentum. In the current situation, the physical development in the cities is managed and supervised by the Development Law No. 3194 and related regulations, which have been amended from time to time. However, it is seen that the standards, conditions and criteria stipulated by this law and regulations are not regulated by establishing adequate relations with natural environment data, climatic, topographic, geological, hydrological, landscape etc. conditions and socio-cultural structure (Resmi Gazete, 18479). These laws are inadequate in a country which is quite convenient location in terms of solar radiation and wind like Turkey.

According to the former regulation, the Article 6 of the Planned Areas Development Regulation, which came into force in 2017, which was enacted in 2017, has taken more attention to sunshine and natural air conditioning (Resmi Gazete, 30113). However, due to the insufficient side and rear front distances given in Article 23 of the regulation, the south-facing rear facades in the buildings cannot receive sunshine throughout the year. Similarly, the rules of article 9 which regulate the structure height and road relation of the regulation do not provide sufficient conditions in terms of natural conditioning and even sunbathing (Resmi Gazete, 30113).

It is not possible for a single zoning regulation prepared without taking into account the different climatic and geographical conditions in Turkey to respond to the planning and structuring requirements of 81 provinces. In countries with different ecologies, climatic, regional/local conditions and socio-cultural characteristics like Turkey, it does not seem possible to enable the urban and structural sustainability of the standard zoning laws, which do not draw general zoning regulations and general framework. 1/1000 implementation zoning plans and site development plans, which are commonly made by local governments, are making decisions based on city blocks, the building has been given direction by giving minimum drawing distance in the parcels, natural data such as daylight, orientation, air circulation, solar energy etc. are rendered impossible in the construction distances and locations, and also urban identity, cultural and natural heritage are denied.

Again, in the Law No. 3194 the plans, whose hierarchies, objectives and scopes are determined, are identified as "Regional Plans" and "Zoning Plans" whereas zoning plans are identified as "Master Plans" and "Implementation Zoning Plans". The regional plans are envisaged to be prepared to determine the socio-economic development trends, development potential of settlements, sectoral targets, distribution of activities and infrastructure; and Master Zoning Plan to show the main types of regions, future population densities of the regions, the density of the densities, the direction and size of the various settlement areas, principles of transportation systems and their problems, and set the basis for the preparation of the implementation zoning plans (Resmi Gazete, 18479). The failure to envisage any goals, objectives, principles or policies related to sustainability or sustainability in the

planning hierarchy, which is frequently amended, is a major deficiency. Although the related law was partially improved by the regulations, it caused a decrease in the quality in the structural environment, could not create sustainable safety spaces in the earthquake-sensitive regions, the control mechanism could not be operated well and the results were seen the worst in the 1999 Marmara and 2011 Van earthquakes.

After the earthquake in Van in 2011; "The Law on Transformation of Areas Under Disaster Risk" which started urban transformation and renewal process in cities came into force (Resmi Gazete, 28309). However, our cities have not been prepared for disasters in the last period and the projects and applications aimed at transformation carried out by the Ministry of Environment and Urbanization and TOKI and Municipalities have generally paved the way for the purposes of rent-related practices. In the cities and rural areas, it is observed that projects aiming to leave a healthy and sustainable built environment to the future generations will reduce the disaster risk with a holistic approach and the targets are not attained.

Environmental Plans, whose responsibility is given to the Ministry of Environment and Urbanization, is defined as plans to be prepared for "the rational use of natural resources that allow economic decisions in accordance with sustainable development targets and ecological decisions to be considered together, based on development plans and regional plans" and "plans that determine settlement and land use decisions such as housing, industry, agriculture, tourism, transportation, etc. in accordance with country and regional plan decisions and 1/25,000, 1/50,000, 1/100,000 or smaller plans" based on Article 5 of Law No. 3194 (Resmi Gazete, 24220). Although the definition of sustainable development, ecology and the rational use of natural resources are emphasized, it is necessary to make the development plans firstly sustainable with country and regional plan decisions, which are the high plan of this plan. Moreover, it is clear that the "Environmental Plan" will include the main themes or headings in order to be a sustainable plan, and no decision has been made to determine the criteria by which the performance of sustainable planning will be measured.

"Environmental Impact Assessment (EIA) Regulation", which took effect in 1993 based on the Article 10 of Environment Act No 2872 and which was revised in 1997, 2002, 2003 and 2008 is formed to determine the positive and negative impacts of the projects planned to be carried out to the environment, to prevent the negative effects or to minimize the environmental impact, to determine the alternatives to be taken in the determination of the selected place and technology alternatives and to carry out the activities in the monitoring and control of the projects, and provides a positive assessment method in terms of sustainable environment. However, the obligation for the project investments that are subject to EIA to have an EIA after the decision on a given place (Resmi Gazete, 26939), completely disrupts the system's connection with urban planning, treats the damages to the environment only at the scale of the enterprise, while the issues such as water, materials, resources, health, safety, efficient consumption of energy, etc., which are the criteria of sustainable building environment, are ignored.

Among the duties, powers and responsibilities of the metropolitan municipalities in the Law No. 5216 of the Metropolitan Municipality, topics such as "ensuring the protection of the environment, agricultural areas and watersheds in accordance with the principle of sustainable development; afforestation; taking measures; waste management and the necessary arrangements to do this" can be listed, which might have positive results in terms of sustainable urban development. Another problem is the multi-headed and control problem in planning. As all institutions and organizations such as the Ministry of Environment and Urbanization, Local

Governments, Provincial Bank, SPO, Regional Development Administrations, Ministry of Culture and Tourism have the authority to plan in their own fields, it is not possible to make holistic and sustainable planning at the country level and this situation has negative effects on urbanization.

In the context of sustainability, other units of the public, which concern the urbanization, planning and construction sectors, should also make positive initiatives in the areas of their respective fields of duty. The "Energy Efficiency Law" No. 5627 issued by the Ministry of Energy to ensure the management and efficient use of energy resources and energy under the responsibility of Ministry of Energy is enacted "to ensure efficient use of energy, to prevent waste, to reduce the burden of energy costs on the economy and to increase efficiency in the use of energy resources and energy for environmental protection" and it is an important and positive law in terms of sustainability approach (Resmi Gazete, 26510). With this law, it is obligatory to obtain Energy Identity Certificate (EKB) for the buildings. According to the "Energy Efficiency Law No. 5627" and the related "Energy Performance Regulation in Buildings" this document information to ensure the efficient and efficient use of energy and energy resources in buildings, to prevent energy waste and to protect the environment, and information on energy requirements and energy consumption classification, insulation properties and efficiency of heating and/or cooling systems as a minimum (Resmi Gazete, 27075). It is a positive development that these regulations target the purposes of classifying buildings according to CO2 emissions and primary energy use types, determining minimum energy efficiency criteria and applying these criteria to existing buildings, evaluating the use areas of renewable energy sources in new and existing buildings.

"Declaration on the issue of Environmentally Sensitive Accommodation Facility Certificate (Green Star Symbol) for Tourism Establishment Certified Accommodation Facilities" issued by the Ministry of Culture and Tourism in 2008 is another positive initiative that encourages and promotes sustainability regulating "the principles and procedures for the classification and certification of environmentally friendly accommodation facilities in order to protect the environment, improve environmental awareness, encourage the positive contribution of touristic facilities to the environment within the scope of sustainable tourism" (Resmi Gazete, 27005).

The "Regulation on the Spatial Plans Implementation", which was published in the Resmi Gazete in 2014, did not produce any decisions regarding sustainable planning and urbanization. In the urban, social and technical infrastructure table attached to the regulation, the rate of 10m²/person green space for urban planning and other urban infrastructure rates are very low and these ratios are insufficient for a healthy and sustainable urbanization" (Resmi Gazete, 29030).

Although the Ministry of Environment and Urbanization has the authority to make physical plans in Turkey, it is seen that housing development policies and practices are directly left to TOKI in the current situation. Unlike the practice in Turkey, in the examples in developed countries, it is seen that housing policies are handled on a national scale with holistic and long-term targets as part of sustainable development and sustainable national physical planning and related sustainable urban development policies.

Whereas Turkey has witnessed a great improvement in housing development policies in recent years, the subject is treated with a fragmentary approach with an emphasis on its numerical size. National physical planning, urbanization and housing policies on a national scale is not carried out in accordance with socio-economic, cultural and demographic objectives and development policies. Particularly, although the distance has been taken with the good intentions of the governments, it is observed that the

fragmentary approach continues. Politicians, managers and technicians who are in the process of producing and implementing policies cannot produce comprehensive and nationally integrated policies. All the housings in this process, in addition to the cities on the shores of metropolitan cities, have caused them to grow even more and to turn to speculative developments and turn the issue into an economy of rent (Şahin, 2004). Another negative aspect of the sustainability of housing projects is to consider decentralization in metropolitan cities and take into account national physical planning dimension in line with sustainable development targets instead of creating new urban development axes cause the problems of metropolitan cities such as Istanbul, Ankara, Izmit, Adana etc. and existing cities to grow and their problems become more complicated.

Two recent studies, which are currently up-to-date, provide clues as to whether public housing practices have met the criteria for sustainability. In the first study, the performance evaluation of the sustainability of mass housing areas was carried out by applying 8 criteria and sub-criteria to 3 different housing districts in TOKI, located in Ankara, Denizli and Kayseri (Sezer, 2009). The evaluation was compared with a sample of a sustainable mass housing in London. As a result of the evaluation under the topics of innovation and development in design, location & connections, sustainable lands, water efficiency, energy and atmosphere, materials & resources, closed environment quality, awareness and education, which are the criteria of LEED housing evaluation system in terms of sustainability, as well as the comparison with the London example, no criterion can be considered acceptable. The mostly negative evaluation of the positive-negative evaluation system in all systems and sub-criteria shows that sustainable design and construction approach are not taken into consideration by TOKI.

Another research is based on the findings of surveys conducted with users in 7 public housing districts located in the Halkalı Mass Housing Area in İstanbul (Osmanoğlu, 2018). According to research results, users stated that an innovative, creative and qualified design is not created, that unsuitable projects are used in the site selection, that the housings are not suitable and flexible to make changes over time, that energy saving and efficiency is not available in buildings, that the possibility of easy access to urban functions within the daily life due to the choice of location and negativity in transportation connections is very limited, that poor quality workmanship and materials are used, that the quality of the interior is negative, and that the security of life and property is not sufficient, that it does not reflect social background, tradition, social culture, social and cultural habits of individuals and society, that the relationship of neighborhood, cooperation and social interaction are not possible, that there are no common outdoor spaces of variety and richness to make individual-social actions and activities, that areas of social communication and the feeling of neighborhood cannot be created, and that it does not meet users' expectation of dignity, social image and identity. The negativities stated by users about the mass housing and housing environment reveal that sustainability is not taken as a reference in the mass housing settlement and structures. In the same way, while designing, it is understood that the concept of design and planning has not been revealed in which the human element is ignored, the concepts like street and neighborhood could not be created, and a sense of design and planning is not formed to create a feeling of neighborhood in the society.

In both studies carried out in TOKI houses, it is seen that sustainable design criteria and principles are applied rarely and unconsciously in the form of insulation and double glazing etc., and in addition, almost no sustainability criteria are met. In this context, it is not possible to say that TOKI has a conscious approach regarding sustainable housing or environmental, economic and socio-cultural sustainability

strategy. In terms of housing policies, the fact that the number of housing produced, cost and duration and even sales revenue is regarded as the most important target is another aspect of the problem. However, research shows that a sustainable structure can be built with small cost increases as a result of an accurate design, while its environmental, economic and social income and earnings are quite high. Another problem is that TOKI does not take into account all these data and the application of the same type of projects in regions with different climate, topography, orientation, sunbathing, geology, etc. with ecological and environmental conditions, socio-cultural characteristics. This attitude emerges as a very serious and unacceptable policy which ignores the environmental, social and cultural continuity consciously or unconsciously.

Apart from the mass housing problem, positive initiatives and debates on how to make Turkey's current building stock and the sustainable development of existing unsustainable urban development has become irrelevant with the declaration issued by the Ministry of Environment and Urbanization in 2018 as a result of the amnesty that was brought to the illegal construction (Resmi Gazete, 30443). While sanctions and remedies against illegal practices that are non-compliant with the Constitution and legal regulations should be demanded and public interest should be observed; the prospect of encouraging future illegitimate development is created by means of the zoning amnesty. Legalization of illegal structures in coastal areas, agricultural lands, urban and rural areas, where there is a natural and cultural heritage is a very negative attitude. This situation has threatened the sustainability of the natural and cultural heritage, the natural environment and the cities.

However, it is clear that the country has a mass reference, traditional structure and structural environment from the traditional past in the area of sustainable construction. It is possible to say that sustainable construction applications have increased rapidly both in the construction sector and society since the second half of the 1990s.

Accordingly, it has been observed that since the early 1990s, the issue of sustainability has been kept on the agenda in Turkey by academicians, professionals and the construction sector and a high awareness has been created in the public sector. Due to this consciousness, a large number of well-designed sustainable buildings/green buildings have emerged in Turkey for 15 years and have attracted considerable interest. In addition, it is seen that many principles such as the use of passive and active solar systems, green roof and facade applications, protection of rain water, attention to energy conservation, the use of environmentally friendly materials which are recycled, water conservation are applied in small-scale residential buildings. The development of many projects by international enterprises such as LEED and BREEAM (Osmanoğlu, 2019). the production of local or imported ecological building materials or environmental materials in the building market, and the relative interest in them are the developments showing the positive sustainable approaches in the architecture and construction sector.

Results

Considering the environmental, social, cultural and economic impacts of sustainability, it is clear that it is a concept that must inevitably take place in single structure design or mass housing design processes. To prevent the housing problem, which is one of the most important problems of Turkey, from becoming a part of the urban problems and unsustainable urban development in cities as in the current situation is also a very important policy for sustainability. However, as the studies carried out in TOKI houses, which are obliged to develop and implement housing policies in Turkey and have the power to directly affect the production of housing, the

sustainable housing strategy is not a fundamental policy taken into consideration by TOKI. Sustainable design criteria and principles are applied in the form of using insulation and double glazing etc., and no decision has been made that meets almost any sustainability criterion. Research shows that a sustainable structure can be built with small cost increases as a result of an accurate design, while its environmental, economic and social income and earnings are quite high. In addition, contrary to the attitude of the public administration in Turkey, it has been demonstrated by researchers that there is a great interest in the public against sustainable building and housing, and that the private sector has been experienced for many years in making green building by being sensitive to this issue.

Current laws and regulations do not have a scope to respond to current and foreseeable future sustainability issues of cities in Turkey. However, legal infrastructures to enable sustainability such as the EIA Regulation, the Ministry of Culture and Tourism Green Star Symbol, Energy Efficiency Law as well as the Metropolitan Municipalities Law and Environmental Planning Plan are modest but positive progress for a start, more comprehensive studies will be appropriate for the future.

In a way to support sustainable development in order to ensure sustainability at all levels from national development plans to zoning implementation plans in a certain hierarchy, it is necessary to establish systems and criteria for national physical planning, regional planning, urban planning, housing settlements and public open space planning in a systematic way. Considering the environmental, social, cultural and economic impacts of sustainability, it is clear that sustainability is a concept that must inevitably take place in single structure design or mass housing design processes. As the researches carried out in the houses of TOKI, which is responsible for developing and implementing housing policies and having the power to directly affect the production of housing in Turkey, sustainable housing strategy is not a fundamental policy taken into consideration by TOKI. In addition, it will be relevant and appropriate for Turkey to produce the existing building stock and unsustainable urban development solutions in a short time and to see traditionally produced solutions as an important reference.

Conclusion

It can be said that the systems created in many countries of the world in the context of sustainable urban development, architecture, building and housing have led to the development of sustainability in the architecture and building sectors of the country in which they were developed, and in the manufacturing and service sectors related to these sectors to make significant progress on the subject. Although it is being debated in public opinion in Turkey, it is possible to develop policies for the urbanization, planning, architecture and construction areas and the sectors that concern them to be sustainable, and that the studies related to the infrastructure preparation of the laws, legislations, regulations, etc., in this context existed partially. However, it is observed that comprehensive studies have not been carried out for a holistic sustainable development goal. Therefore, this situation requires that the relevant laws, regulations, policies and practices be reviewed and produced in a way to ensure sustainability.

From a holistic point of view, it is not possible to argue that in the conceptual framework there is no "sustainability culture" in public authorities, local governments, building owners, practitioners and society. On the other hand, it is seen that the sustainability is mostly raised by politicians and local governments as a political discourse. In order for sustainability to become a lifestyle and philosophy, and the society and the public to adopt a culture of sustainability as a conscious choice, it is

necessary to make clear the necessity of sustainability as an inevitable paradigm, from the global scale to the single building scale and even up to individual preferences, through the visual and written media, the provision of adequate promotional and awareness activities.

Without this awareness, it may not be necessary to create and implement an environmental assessment model for buildings and residences in Turkey. However, as the establishment and operation of such an evaluation system in accordance with national conditions requires a certain period of time, studies on the subject should start as soon as possible. To create a "national environmental performance system" for both single buildings and residences, it would be appropriate for TOKİ to demonstrate a pioneering effort as an organization that has great resources and powers in urban development and housing. This effort will contribute to the creation of sustainable architecture, building and residential culture in the country, the emergence of a sustainable healthy and comfortable built environment, and the prevention of damage to the environment by the construction sector which is undisputedly effective on the environment.

It is also evident that the country has a mass reference, construction and structural environment, and traditional texture in the area of sustainable construction. For Turkey which has a multiple ecology, it can be said that the traditional building stock has been classified into sustainable structures with features such as sensitivity to the environment, adaptation to climatic conditions, using recyclable, natural and low-energy materials, creating healthy living environments, sustaining socio-cultural characteristics, and in this sense it should be considered as an important reference and gain.

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