

Determination of Affective Criterions on Social Sustainability in Architectural Design

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Abstract — The concept of Sustainable development was presented formally by Brundtland commission into general literature in 1987. Based on this conception, sustainable development has three environmental, economical and social branches. Until now, social dimension of sustainable development was less under consideration than other two dimensions. In this article, first by reviewing background of subject, different definitions of social sustainability, kinds of its classification, general criterion of social sustainability in society and social sustainability criterions which has been investigated in different subjects, criterions for improving social sustainability by architectural design are presented.

Keyword — social sustainability, architectural design, social interaction, participatory design, flexibility.

1. INTRODUCTION

The concept of Sustainable development has been appeared in different international speeches in 1960 [1] and generalized with definition of sustainable development by Brundtland commission [2]. Based on this theory, sustainable development includes three pillars which are environmental, economical and social sustainability. But in comparison with two environmental and economical dimensions, there are a few documents that are concentrated on social dimension of sustainability and it seems that social dimension of sustainability has been neglected to some extent till now. For example, it could be only found some reports from 1999 that are concentrated on social sustainability politics and theories [1]. From that time till now, researchers in different fields, presented indexes in their specialized field of study for social sustainability development. For example we can refer to the presented index for social sustainability in urban subjects, Factories andbut in spite of the high potential of social sustainability development in architectural designing, until now, few researches were done in this field of study for determination of indexes in order to improve social sustainability.

In this paper, various definitions of social sustainability and some researches which had been done for clarification of social sustainability, its features and different categories are overviewed. Then the criterions proposed by researchers for socially sustainable society has been expressed. At the next stage, by reviewing researches in special fields and case studies, criterions for developing social sustainability through architectural design are purposed.

2. DEFINITIONS

Sustainable development is a development that will respond to nowadays requirements without annihilating future rights for removing their own needs. Different definitions were expressed about social sustainability by different researchers. Sachs explains that the comprehensive definition of social sustainability should be based on equal values and democracy that means dedication of all human rights, politics, civic, economical, social and cultural rights to all people [3]. From Griebler and Litting point of view, social sustainability was gotten if the work inside the society and official arrangement that respond to a wide spectrum of human requirements take form as if nature and its potential capabilities are protected in a long-term, and common claims about social justice, human dignity and partnership should be responded [4]. From Biart point of view, the purpose (of sustainability) is characterizing the minimum social requirements for long-term development (that sometimes it is called critical social capital) and characterizing operational challenges of society in long-term [5]. Polse and Stern define social sustainability as a development (or a growth) that is compatible with evolution of civil society and prepare and environment that is beneficial for compatible common life of different social and cultural group and promote social union synchronously with improvement in life quality in all part of society [6]. Dumreicher and Kolb considered sustainability as a local process that is informative, participatory and balancing that is done with local sustainability budget and removes harmful imbalances from society and in this way open opportunity and probabilities space [7]. Mckenzie defines

social sustainability as a positive circumstance inside the society and it is a process in a society that this circumstance can be gotten [8].

In general, it can be said that social sustainability is sustaining social dimension of development including social justice, identity, dignity, welfare and ... in a society. Social sustainability increases social capital and causes improvement in life quality in all parts of society.

3. CLARIFICATION OF SOCIAL SUSTAINABILITY CONCEPT

Different researchers has been interpreted the concept of social sustainability from different point of views. Spagenberg investigated social sustainability in two micro-levels including education, breeding, income, social respondent, communication, partnership and social security and macro-level like economic growth in society [9]. From Bramely point of view, social sustainability will be improved in society if the sustainability of society is increasing including pride and possessive sensation to neighborhood, social interaction among neighbors, security and safety, perceptive quality from local environment, satisfaction from dwelling and stability and these facilities are divided among people equitably [10]. Dumreicher and Kolb interpreted the concept of social sustainability from a different point of view. They studied on social sustainability and mentioned that spatial experience amplitude occur in 7 interference spaces which are humans, home, street, village, region, generation and earth. Then they presented solutions for development of social sustainability in each of these 7 spaces [7]. Chiu divided different interpretations of social sustainability in form of three different groups which are social limits, ecological limits and equality. She also mentioned social equity as one of the major principles of social sustainability and divided it in two groups: horizontal level which means equal encounter with people in equal position and vertical level which is unequal encounter with people in unequal position [11]. Valance presented a triple model of social sustainability. Based on this model, social sustainability can be divided into 3 groups, development social sustainability that shows the substantial requirements like improving social capital, justice and ..., bridge social sustainability that concerns about changes in behavior for getting the purpose of biophysical environment and maintenance social sustainability that returns to conservations, like for example cultural traditions [12]. Cuthill clarified social sustainability with 4 following elements:

- 1) Social capital that is threshold of theory for social sustainability
- 2) Social justice and equality of rights that is a moral case
- 3) Active government that provides the participation method
- 4) Social organization that provides operational purposes [1].

As mentioned, social sustainability has different dimensions and aspects and can be investigated from different point of views. But the main issue is that social sustainability is not a point but a process. Furthermore, it is strongly related to time and place and taking equal politic is not possible in all time and for all places and this politics are intrinsically with uncertainties.

4. CRITERIONS OF SOCIAL SUSTAINABILITY IN SOCIETY

Different criterions are expressed for society which is socially sustainable by various researchers. It can be said that majority of this criterions are mutual between all researchers to some extent. Some of the most important criterions that can be mentioned are social capital and welfare, human health, safety, social interaction, access to facilities and adaptability, unemployment, health, equality, democracy and participation. Various criterions for evaluating social sustainability in a society which are expressed by different researchers are shown in Table 1.

Table 1, criterions presented by researchers for social sustainability in society

Researcher(s)	Presented critrions
Dave [13]	Availability to facilities and compatibility, life space rate, dwellers healthy, society spirit and social interaction, safety sensation, satisfaction from neighbor
Bramely, Dempsey, Power, Brown, Watkins [10]	Availability to services and opportunities, shop, school, healthy center, recreational opportunities, general transportation, job opportunities, affordable housing, pride and possessive sensation to neighborhood, social interaction among neighbors, safety and security
Spagenberg [9]	Social indexes: human poverty index, unemployment rate
Weingartner, Moberg [14]	Human capital, social capital and welfare
UNSDC [15]	Equality including poverty and genus equality Health including feeding situation, morals, hygiene, drinking water, healthy transfer Education including education level and literacy Housing including life circumstances Security population
Takaoka, Tsuda [16]	Environment, economy, security, healthy, peace and gladness
DFID [17]	Capacity, equal rights, poverty

Sachs [3]	Equality, democracy, human rights, social homogeneity, income equality distribution, employment, proper availability to sources and key services
Hans –Boeckler [18]	Voluntary works, sustainable requirements, social security, equal opportunity for partnership in democratic society, ability of social innovation
Oman, Spagenberg [19]	Education, skill, experience, consuming, income employment, partnership
Baines, Morgan [20]	Substantial requirement, personal incapability, requirements of future generation, social capital, equal rights, social and cultural diversity, partnership
Bramely [21]	Social interaction in society and social networks, social partnership, satisfaction and sense of a place, stability, security

	opportunities and equity, Housing and community stability, Connectivity and movement, Social justice, Sense of place and belonging, Mixed use and tenure, Attractive public realm, Local environmental quality and amenity[14]
Companies and products	Equal opportunities, Education and training, Governance, Health and safety, Employment, Security, Human rights, Indigenous rights, Labour practices, Fair operating practices, Cultural heritage, Community involvement and development, Consumer/product responsibility, Technology development[14]
Sustainable neighborhoods	Cumulative decision-making, common place, school and park, local problem solving [24]

4. CRITERIONS OF SOCIAL SUSTAINABILITY DEVELOPMENT IN SPECIAL FIELDS AND DIFFERENT CASE STUDIES

In addition to the aforementioned criterions, there are some researches that presented index for evaluation and development of social sustainability in special fields and different case studies. For example, Hutchins and Sutherland promulgated Labor equity, Healthcare, Safety and Philanthropy as measures of social sustainability in supply chain decisions. Similarly, there are some researches in other fields like urban development, neighborhoods, company and products and ...which some of them are shown in Table 2:

Table 2, criterions presented by researchers for social sustainability in special fields and case studies

Subject of study	Presented indexes
supply chain decisions	Labor equity, Healthcare, Safety ,Philanthropy[22]
Vancouver city	Security, adaptability, inclusion, equity[23]
Housing in Hong Kong	Vertical inequity, Horizontal equity, Housing choice, mobility and distribution of Disbenefits [11]
Urban development	Accessibility , Social capital and networks, Health and well-being,Social cohesion and inclusion, Safety and security, Fair distribution of income, employment, local democracy, participation and empowerment, Cultural heritage, Education and training, Equal

In general, it can be said that the principles of social sustainability is approximately limited, clear and ocular and theorist have coincidence more on these principles and their differences is on their weighting on different subjects. In the researches in special fields and case studies, the art of a researcher is the ability of finding criterion and indexes that in their special field there is great potential for developing social sustainability. As mentioned, in spite of high potential of social sustainability development by architectural design, till now few research has been done clearly by researchers or architects for identifying criterions of social sustainability development in this field.

5. CRITERIONS OF SOCIAL SUSTAINABILITY DEVELOPMENT BY ARCHITECTURAL DESIGN

Sustainable design is design that aims to respond to today's needs without harming future generations resources [25]. In sustainable design, social dimension is as important as environmental and economical dimensions. In spite of numerous studies and researchers on environmental sustainability and decrease of energy consumption in buildings, it can be said that social sustainability in architectural design has been neglected in large extent till now. According to the principles and basics of social sustainability and the indexes presented for its development in society and some special fields reviewed, the criterions for developing social sustainability by architectural design can be expressed as follows:

Social interaction in place: in order to develop social sustainability, one of the subjects that should be regarded by architects is designing for increasing social interactions in buildings. Human need for social interaction is not hidden to anyone and designing skeletal space for this interaction is architect's duty. Sociability of

architectural space can increase or decrease the rate of social interaction between people in places and buildings and in the following causes increases of social capital and as a result, social sustainability development.

Architectural identity: architectural design, however that land differences had influence on its shape, has intrinsic dynamic and gradual properties that is called identity[26]. Building designs that is rooting from culture and history of society, is a unique property of each land. Designing places with architectural identity will increase the sense of social identity and in contrast, the imported architectural design that is not in accord with social culture and values will decrease this sense.

Social security: another criterion for social sustainability development by architectural design is increasing the sense of security in buildings. Designing must be in a form that raises sense of controllability in users, designing secure urban walls and designing defendable spaces are some points that should be considered in architectural design in order to improve social sustainability in society.

Hierarchy: different aspects of hierarchy play a role separately on social sustainability development. formal hierarchy, functional hierarchy, spatial hierarchy, visual hierarchy and ...will increase sense of social order in society and can play a role in development of social sustainability.

Participatory design: participatory design is a kind of design process. Participatory design approaches are considered to reflect design as a social process, illustrating that the sphere of design activity extends beyond the designer. When engaged in a participatory design workshop the people who attend are part of the social process of design and play an active part specially in early design stage of project [27]. This design process integrates two radical propositions about. The first is the moral proposition that the people whose activity and experiences will ultimately be affected most directly by a design outcome ought to have a substantive say in what the outcome is. The second is the pragmatic proposition. It is that directly including the user's input will increase the chances of successful design outcome [28]. In fact, participatory design process is a form in which the design process can be democratized and since democracy is one of social sustainability criterion, it can improve social sustainability in design process.

Flexibility: architectural designing should be in a form that the capacity of flexibility, variability and conformability of building be high according to the high rate of economic and social changes and technology improvements and in the following, change of beneficiaries needs, so, flexibility in designing can increase buildings potential for conformity with new conditions and this potential will help social sustainably development in society.

It should be mentioned that this criterions are generally interfered and increase or decrease in one of them will have influence on others. For example, increase of social

interaction rate in society causes increasing social capital in society and this will cause social security increasing. furthermore, sustainability criterions should be interpreted in terms of their time and place and presenting general principles for all places in all times seem bootless. These concepts should be flexible because sustainability concepts intrinsically require flexibility. Participatory design process can be a proper option for socially sustainable design process.

6. CONCLUSION

Social sustainability is a one of three pillars of sustainable development and it has been less regarded till now. In architectural designing, few researchers were concentrated on this dimension of sustainability. This article, by reviewing on basics and principles of social sustainability and its criterions in society and some special fields which are presented by different researchers, expresses the social interaction, Architectural identity, security, hierarchy and flexibility as a social sustainability criterion in architectural design. It should be mentioned that social sustainability criterions are intervened and have influence on each other and the same solution is not possible for all times in all places. In addition, these concepts should be flexible and should have proportionally conformability with conditions. Participatory design can be appropriate design process for developing social sustainability.

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