

Explaining the Components of Sustainability in Urban Communities

¹Hamed Moztarzadeh, ²Seyed Majid Mofidi Shemirani, ³Vahideh Hodjati

¹ Islamic Azad University, Shiraz Branch, Department of Architecture, Shiraz, Iran

² Assistant Professor, Iran University of Science and Technology, Tehran, Iran

³ Islamic Azad University, Shiraz Branch, Department of Architecture, Shiraz, Iran

Received 17. 04.2012; Accepted 17 11. 2012

ABSTRACT: Community is the main pillar of the urban body; and balance of social life in cities depends on preserving communities. During the twentieth century, the idea of residential-centered community has been offered in many modern theories and has been widely accepted for solving urban various problems such as management, social and human relations, health and welfare issues and aspects of meaning and identity.

On the contrary, the concept of sustainable urban development has been considered a scientific issue in all societies in recent decades, when much of the literature on urban development has been allocated to the issue. The main argument of this paper is two issues of sustainability and urban communities, as well as how to link them in a topic.

The paper will describe the necessity and importance of creating sustainable communities which have been originated from the consequences of climate change. Then, the concepts of sustainability and community are clarified; and finally the components of creating a sustainable community will be examined.

Keywords: Community, Sustainability, Sustainable communities, Component.

INTRODUCTION

After the energy crisis in the 70s, a new era, was established in urban development which is known as "sustainable era". In this era, full attention was paid to the environmental efficiency, and then the man-made environments so that human can make best use of resources available on the nature and minimize the amount of pollution generated.

Today, sustainable urban development is considered among the theories of recent times to which a main part of the literature on urban development has been allocated. However, this theory is not properly explained at the local scale, and can be examined as the subject of some research.

This research is looking for the discovery of the structural components of sustainable urban communities which will be achieved through exploring the ideas of different experts and summarizing their views. The issue has been seen from one angle; and local conditions, of course, would not be ineffective in explaining the components as McLaren argues, a set of indicators that are designed to determine progress in achieving the goals of urban-local sustainability in a society may be not useful to evaluate progress in another society (McLaren, 1996). It should be noted here that sustainability (and sustainable communities, at urban micro-scale) has a wide scope; and we have tried to find the key components of sustainable urban communities in this study.

Necessity of Research

Until three decades ago, there was a sense of optimism that the technology will solve all problems on earth; however

the technology relating to non-renewable resources has been followed by climate change through the development of a phenomenon such as global warming. Pollution, increased environmental pollutants, loss of biodiversity and the increasing growth of population have left their adverse effects on the earth.

Following the extensive discussions on sustainable development, a particular attention was also given to the sustainable urban communities. Since urban communities consume a great amount of energy, it is necessary that more attentions are paid to how to sustain these areas.

Although many definitions have been presented on the concept of sustainable development at the macro level, its concept is not yet clear with certainty at the local scale, while the urban communities are significantly important, and their strengths or weaknesses can spread to the entire city for different aspects so that its performance can be affected. Lack of research resources in this very important area is one main cause for study of sustainable urban communities.

MATERIALS AND METHODS

Community plays important role in social life balance in cities as main element of urban space. If life quality changes in communities, it will be rapidly effective on the entire city. In early century 20, attention to residential communities was regarded as the main topic of new urban development theories such that these theories have been welcomed in order to deal with different urban problems (such as problems of management, social relations, hygienic issues, welfare issues and semantic and identity dimensions).

✉ *Corresponding Author Email: hamed.moztarzadeh@gmail.com

On the other hand, when issues of sustainable development were raised, different scales have been introduced for executing them in city. Although many definitions of sustainable development have been given in large scales, its concept has not been certainly classified in local scale while urban communities have been very important and their strengths and weaknesses can be communicated to the entire city in different dimensions and can affect its efficiency.

In this article, to reach the components of a sustainable community, most international valid references about sustainable communities has been used. Thus the main ideas of theoreticians about sustainable communities has been studied, and finally their opinions categorized and summarized by analyzing method. The theoretician's research considered as materials of this article.

Climate Change and Its Effects

At the beginning of the industrial revolution, the concentration of carbon dioxide in the atmosphere was 270 parts per million.

This concentration, which has now risen to 377 parts per million, has been unprecedented not only in the past 740 thousand years, but also perhaps even 55 million years ago (Farshchi, 2009, 65). Two main reasons have been mentioned in relation to climate change: "natural causes" arising from changes in the orbit of the sun and in the parameters of Earth orbit, and human-related causes, the most important of which is excessive emissions of greenhouse gases through human activities (Azizi, 2004, 55-56).

The continuing phenomenon of climate change has the adverse effects, which includes:

Ecological effects: changes in population and reproduction of different species with a rate of more than normal;

Impacts on ecological management: the impact on agricultural production or distribution of its resources;

Impact on human health;

Changes in infrastructure due to flooding and movement of the earth layers;

Increased storms in temperate zones;

Forest fire;

Flooding rivers and rising sea levels drier climate within the continents and more humid coasts Increased moisture in winter, with a reduction in summer.

Destruction of the ozone layer (Steinfeld, 2001, 123-125)

Considering the fact that much of the climate change is related to destructive measures of human, it is absolutely necessary to prevent further this phenomenon. The new environmental movement is also a consequence of this phenomenon.

Following the environmental crisis and subsequently the environmental movement, the paradigm of sustainability was raised, which was shortly drawn to the cities. Today, cities attract resources and materials from around the world to themselves, which result in the loss of source and damage in their development process.

Studies show that over 75% of global energy is consumed in cities, and about 80% of all global emissions is spread in the urban areas, while only 3% of the world's lands is formed by the urban areas (Mofidi Shemirani, 2008, 123).

As main components of cities - urban communities play a significant role in creating such adverse conditions. In fact, this is the point where the issues of sustainability arise, and its importance is felt especially at the local scale.

Sustainability and Sustainable Development

More than 50 different definitions of sustainable development have been presented throughout issues the world, which studying all of them could be subject of further research. The most famous definition of sustainable development was presented by Gro Harlem Brundtland, Prime Minister of Norway, in the World Commission on Environment and Development (WCED) in 1987 under a report entitled "Our Common Future" as follows:

'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs'

Most of the definitions provided on sustainable development have also critics, proponents and opponents.

The following main objectives must be considered for sustainable development:

Meeting basic human needs both today and future;

Upgrading and improving living standards for all;

Preserving ecosystems for a safer future;

Taking into consideration the species' habitat; and

Providing intellectual and technological tools and capabilities (Ibid, 131).

Considering the purposes intended for sustainable development, it can be defined as:

"It is a type of development that protects and uses environmental resources and biological systems with using tools and technology, and hence will focus on better quality of life for today and future generations."

Concept of "Mahalleh"

In English, four words are used for the concept of "Mahalleh" in Persian which include neighborhood, district, quarter and community. These words have differences with each other in terms of the dominant type of activity, scale and performance. Characteristics for these four words are given in Table 1.

Considering the four words above, a general definition can be found for "Mahalleh":

"Context of urban communities is a combination of socio-cultural, economic and physical relations; and the main structure of the city is created by getting together the communities. The house is the smallest cell of an urban community that has all components of the socio-cultural, economic and physical needs, and the main structure of community is formed during its evolution."

Sustainable Community

Different principles and criteria can be taken into consideration in the form of existing theories and experiences on a global scale for sustainable urban communities. In this regard, various scholars have stressed various parameters and components, which are impossible to review all of them; however, the comments from some eminent thinkers who have had numerous studies on the principles of local sustainability are mentioned here and ultimately are summed up.

Anne Power

According to Power, the following are the principles governing in these communities:

Meeting the needs of today and future generations;

Creating a balance and safety between environmental;

Economic and social components of the same community.

Table 1: The words equivalent to the word “Mahalleh” and their characteristics

1 Neighborhood
<ol style="list-style-type: none"> 1. Clarence Arthur Perry entered its concept in urban development 2. It has some common services like primary schools. 3. Some senses of control in public affairs are created for citizens through it. 4. It is considered an element for a larger whole and a distinct entity.
2 District
<ol style="list-style-type: none"> 1. An activity has mastered in it. 2. It is larger than a neighborhood. 3. One of its functions is that it allows citizens to participate in the management of urban services and future decisions of the city.
3 Quarter
<ol style="list-style-type: none"> 1. Identifying quarter is a way of strengthening local individuality. 2. Each quarter has its own center 3. It has all the daily activities of urban life. It has an area of approximately 35 hectares with a population of 1,500 people.
4 Community
<ol style="list-style-type: none"> 1. Desire, belief, preferences and needs affect the degree of affinity among its residents 2. It is composed of a combination of ten to twenty neighborhoods. 3. It is not the product of place

Respecting and accepting the needs of other communities on a larger scale and a comprehensive approach to ensure sustainable the community.

Meeting the needs of individuals in the community

He introduced the criteria of community sustainability as follows:

Active, inclusive and safe;

Fair for everyone;

Environmentally sensitive;

Well designed and built;

Well served;

Well connected;

Creating the potential for development, job creation and benefiting from the potentials; and Appropriate management (Power, 2004, 4-18).

Power argues that sustainable communities are diverse, depict local conditions and characteristics, and take advantage of local potentials to achieve its quality objectives; and also environmental structure of society shows traits and spirit of residents and ecological characteristics and climate.

These communities have a public participation in achieving common goals.

The following are the main components of these communities,

Having a prosperous, progressive and suitable economy;

a healthy environment where persons have public health, mental welfare, vitality, dynamism and pleasantness in the neighborhood environment,

Having an efficient management, as well as voluntary and effective participation of individuals and groups (Power, 2004, 4-18).

Claire Bonham-Carter

For Bonham-Carter In the pursuit of sustainability, we must rethink built environments according to their impacts on natural and social environments. Major aims in the present global circumstances include both mitigating and adapting to climate change, ensuring the security of long-term water and energy resources, protecting and restoring the planet's biodiversity, cleansing ecosystems damaged since the industrial age, providing for economic growth and security, fostering social equity and cohesion, and preserving and

enhancing cultural diversity. All of these things must be taken into consideration holistically, and ultimately, we must provide appealing, safe, and comfortable places for people to live.

According to him, the main components of a sustainable community are:

Density and transit – development must be concentrated around mass transit routes to create communities in which low-carbon transportation is the most attractive option, open space is conserved, social cohesion is promoted, and energy sources can be shared to the greatest possible extent.

Mix of uses – incorporating retail, residential, recreation, and social infrastructure allows people to spend most of their time within their local neighborhood, reducing the need for transit and improving a sense of community.

Variety of housing types and tenures – in addition to architectural variety, this allows for a community of multiple ages and socioeconomic strata.

Walkability and cyclability – ensuring safe and attractive routes to places people want to go, which decreases the need for automobiles, ties a community together, and promotes a healthy and happy lifestyle.

Water-sensitive urban design – this practice embraces the entire urban water cycle, including stormwater management, wastewater minimization, and potable water conservation.

Energy efficiency – reducing energy demand as much as possible through appropriate design, and supplying remaining needs as efficiently possible through low or zero-carbon techniques with a focus on providing community-level systems wherever possible.

Ecology and open space – the provision of open space enhances the built environment, reduces the heat island effect, enables water-sensitive urban design, provides the potential for carbon sequestration, and preserves habitat primarily for wildlife but also for recreation.

Public realm – the community must have shared iconic spaces that draw people together and establish a memorable and distinctive sense of place.

Cultural responsiveness – communities must be planned and designed in dialogue with their adjacent communities and their cultural and historic heritage, the modern building drawing from rather than replacing the past.

Distinctness of character – in achieving these aims, communities must each be their own place, recognizable and distinct from others. Community governance – the community has an important role in contributing to long-term management and governance of the place (Bonham-Carter, 2010, 136-137).

Hugh Barton

For Barton The implications of the principle of sustainable development for locality are fourfold: Firstly, sustainable development demands that we rediscover the link between places and their context, seeing the design and management of every area reflecting its locale in terms of landscape, ecology,

water and energy. This is to adopt an ecosystem approach to locality. Secondly, the decline in the functional significance of locality, and the concomittent rise in car reliance, is unsustainable in that it means increased transport emissions, health impacts, transport inequities and excessive use of land/energy resources. Sustainable development points instead to localization. Thirdly, the locality has a role in maintaining the ‘social capital’ of community networks based on local activities and propinquity. Fourthly, under the auspices of LA21 citizens and community groups are being invited to be partners in the process of devising plans and programmers for their neighborhoods (Barton, 2000, 10).

Table 2: A sustainability checklist, applied to neighborhoods (Barton, 2000, 9)

Global Ecology	
Climate stability	
Energy in transport	Locations that minimize trip lengths, and are well served by public transport Design that fosters walking and cycling and discourages car reliance
Energy in buildings	Energy-efficient built form and layout Development of community renewable energy
Biodiversity	Wildlife refuges and corridors
Natural Resources	
Air quality	Traffic reduction and air quality management
Water	Local sourcing and demand management Local surface waterhewage treatment, aquifer recharge
Land and soils	Higher densities to reduce urban land take Local composting/organic recycling schemes
Minerals	Locally-sourced and recycled building materials
Local Environment	
Aesthetic quality	Attractive pedestrian-scale local environment
Image and heritage	Legible environment with a sense of place Design reflecting distinctive landscape and cultural heritage
Social Provision	
Access to facilities	Accessible, good quality health, educational retailing and leisure facilities
Built space	Diverse, affordable good quality housing stock Adaptable, good quality commercial/institutional space
Open space	Accessible, well run parks/playgrounds/playing fields/allotments
Infrastructure	Adaptable, easily maintained road and utility networks
Economic Sustainability	
Job opportunities	Diverse and accessible job opportunities with good local training services
Economic buoyancy	Encouragement for local offices/workshops, home-working and tele-centres
Social Sustainability	
Health	Pollution-free environment facilitating healthy exercise, local food production and mental well- being
Community safety	Safe traffic-calmed streets with good visual surveillance Neighborhood social balance and continuity
Equity and choice	Access to housing for all social groups All facilities easily accessed by foot or public transport, with special attention to needs of children and the disabled

He offers a table for sustainability at the local level, which is as follows,

Mark Roseland

Roseland tries to create the assumption that community capital as a foundation for sustainable community development. This perspective on community capital includes natural, physical, economic, human, social and cultural forms of capital (Roseland, 2005, 5).

According to him, there is no single accepted definition of sustainable communities. Communities must be involved in defining sustainability from a local perspective. The dilemma is how to encourage democracy (e.g., participatory local processes) within a framework of sustainability. For him, elements of this framework include minimizing consumption of essential natural capital and improving physical capital, which in turn require the more efficient use of urban space. This sustainability framework also includes strengthening economic capital, increasing human capital, multiplying social capital, and enhancing cultural capital. However an additional element is necessary to coordinate, balance and catalyse the others and that is “Community Mobilization”.

Mike Raco

For Raco, the Sustainable Communities plan, in particular, has had a profound effect on the discourses of spatial planning across the country. Whereas, he did his researches in the England, believes that it sets out a vision for new-build settlements in the England (Raco, 2007a, 170). According to him, a sustainable place is one in which a ‘balance’ of employment, housing, and social facilities are co-present and available to a range of socioeconomic groups. It is argued that with an appropriate mix of different social groups, employment opportunities, and accessible built environments, sustainable communities will play an increasingly significant role in tackling social exclusion at the same time as they underpin new forms of place competitiveness (Raco, 2007a, 172).

He divides communities into two categories of sustainable and unsustainable, and then compares the characteristics of the two communities.

Patrick M. Condon

Condon believes that, the most cancerous illness in the body of the world is carbon, and for decreasing of this illness all groups such as responsible planner, architect, landscape architect, politician, or developer must change the way he or she does business in report. He raises some questions : but change what? Make building more efficient? Make cars operate on batteries? Erect new windmills? And say yes to all of the above, but that is not enough. No amount of technological fixing can solve this problem if our per capita energy use continues to climb, if the percentage of our gross national product devoted to transportation systems of all types (not just cars) continues to increase , and if our way of building new communities ignores the fundamental rules of sustainable city planning (Condon, 2010, 161).

He considers seven laws and rules to create sustainable communities:

- Restore the streetcar city;
 - Design an interconnected street system;
 - Locate commercial services, frequent transit, and schools within a five-minute walk;
 - Locate good jobs close to affordable homes;
 - Provide a diversity of housing types;
 - Create a linked system of natural areas and parks; and
 - Invest in lighter, greener, cheaper, and smarter infrastructure.
- According to him, this principles represent the elements of a whole. Achieving one without the others – particularly if it is at the expense of the others – will be limited value and could be counterproductive (Condon, 2010, 14-15).
- Compiling Components Associated With the Sustainability of Communities from the Perspective of Experts.
- By recognizing the principles introduced by the various experts, some components can be extracted and classified in relation to any of the comments. Although it is clear from this

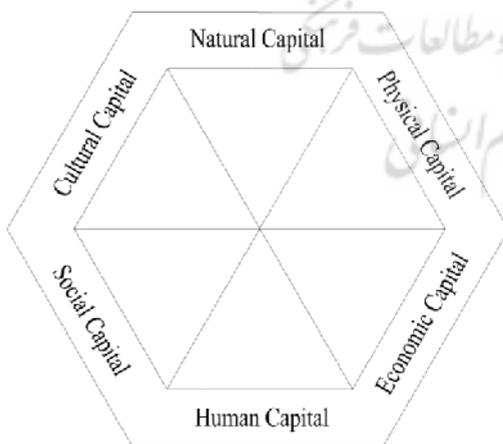


Fig. 1: Community capital is the foundation for sustainable community development . Each triangle represents the ways we can strengthen that form of capital. (Source: Roseland, 2005, 13)

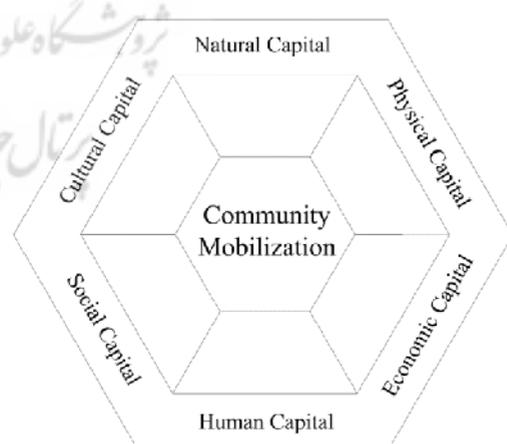


Fig. 2 : A Framework for Sustainable Community Development. Sustainable development requires mobilizing citizens and their governments to strengthen all forms of community capital. Community mobilization is necessary to coordinate, balance and catalyse community capital. (Source: Roseland, 2005, 27)

Table 3 : Comparison between sustainable community and unsustainable community (Raco, 2007 b, 308; Raco, 2007a, 171)

Criteria	A sustainable community	An unsustainable community
Economic growth	Flourishing economic base; built on long-term commitments; stable; and inclusive of broad range of workers.	Domination by dependent forms of development; lack of employment opportunities; vulnerable; insecure; short-term; and divide.
Citizenship	Active citizens and communities; long-term community stewardship; effective political engagement; healthy voluntary sector; and strong social capital.	Passive and dependent citizens and communities; lack of community engagement or ownership; low levels of voluntary activity and/or social capital.
Governing	Regulatory, responsive, and responsible systems; strategic balance; impractical top-down policies and emphasis on bottom-up inclusion	Non-responsive and limited governing systems; Relying too much on the passive forms showing democracy; and lack of impractical policies; Restrictions on local ideas
Community characteristics	Broad range of skills within workforce; ethnically and socially diverse; mixture of socioeconomic types of inhabitants; balanced community; well-populated neighbourhoods.	Absence of skills within workforce; ill-balanced communities of place; high levels of (physical) separation between groups; lack of diversity; formal and informal segregation; lack of population.
Urban design	Diverse architecture; accessible public spaces; higher urban densities; provision of broad range of amenities; buildings that cater for a range of needs; self-contained communities; the creation of 'place'.	Uniform, zoned architecture; closed, gated, and inaccessible public spaces; absence of community facilities; urban sprawl; 'placeless' suburban development.
Environmental dimensions	Re-use of brownfield sites; minimization of transport journeys; good-quality public transport.	Expansion into greenfield sites; maximization of transport journeys; car dependence and the absence of public transport.
Quality of life	Attractive environments; high quality of life; strong pull for a range of social groups.	Low quality of life; strong push for a range of social groups.
Identity, belonging and safety	Belonging of place and realizing the identity of place, tolerance, respect and engagement with people of different backgrounds, low levels of crime and anti-social behavior	lack of culture of local participation and ownership of public spaces, local policies segmented by prejudice; high levels of crime, disorder and fear

classification that there are overlaps in the views of various experts, they have emphasized some aspects of them that can be caused by differences in local conditions and principles of their thoughts with each other. The components associated with the sustainability of communities from the perspective of experts were summarized in the following table.

RESULTS AND DISCUSSION

Given the review done and understanding of the views of global experts, some critics can be mentioned about any of the views, which will be discussed below.

Power has conducted one of the most comprehensive studies on the subject by giving his definition for the sustainable community and identifying its components. Although he included all aspects of sustainable community, the human components, such as education and health, were ignored in his definition.

Carter is another scholar who has conducted studies in relation to sustainable community, but he did not give attention to economic components as well as human components of sustainable community. In contrast, special attention was paid to environmental and social issues, to which most of the components of sustainable community, from his point of view, are related.

Barton is also another scholar who wrote a comprehensive book on sustainable communities; but he has emphasized less the services, political-administrative as well as human components. He regards natural resources, environment, social

components and economic sustainability as the main criteria of sustainability at the local scale.

Service, political-administrative, transport and communications components have been ignored in the views of Roseland. He believes that serious determination at the local scale is necessary to achieve a sustainable community. An important point in Roseland's studies is the attention that has been paid to capital - as the basis of the constituent components of a sustainable community.

Raco, who has done most of his studies in the UK, particularly emphasizes the role of sustainable communities in providing opportunities to escape social disparities. Therefore, socio-cultural components are very important to him. However, he stressed less the significance of services, human, transport and communications components in these communities. In a comparison that he made between a sustainable community and unsustainable community, some parameters (such as health or education), which are necessary in a sustainable community, cannot be seen.

As the last global expert in the study, Condon has mostly focused on transport and communications components, and has strongly denied the use of private cars. He has presented various applied ideas for travel within cities, which have been classified into seven general rules. Condon ignores the importance of socio-cultural, political-administrative, and human components.

As a final point, it is noteworthy that each of the above experts has a special perspective on sustainable community

Table 4 : Structural component of sustainable communities from the perspective of experts

physical	Transport and communications	Human	Political-administrative	Environmental	Services	Economic	Socio-cultural	Component
*	*		*	*	*	*	*	Anne Power
*	*		*	*	*		*	Claire Bonham-Carter
*	*			*		*	*	Hugh Barton
*		*		*		*	*	Mark Roseland
*			*	*		*	*	Mike Raco
*	*			*	*	*		Patrick M. Condon

for which some components have been designated. With a little thought, it is clear that the differences between the studies can be derived from different conditions and the diversity of environments in which they have raised their own ideas. The result of their opinions can provide a more accurate summation about the constituent components of a sustainable community.

CONCLUSION

The phenomenon of climate change has affected many environmental factors necessary for life from micro to macro, so that existing communities in cities are affected by this destructive impact. Therefore, to deal with and reduce this phenomenon, it is inevitable to consider solutions for the communities, one of which is to use of the concept of sustainable development and create ways to sustain urban communities. It was determined by examining the views of experts that sustainable communities have the components, by which some criteria can be defined for such communities. These components are classified into eight categories, as follows:

- Economic components;
- Socio-cultural components;
- Political-administrative components;
- Physical components;
- Transport and communications components;
- Service components;
- Environmental components;
- Human components.

It should be noted that these components have a hierarchical relationship with each other, so that some of them may take some priority depending on local conditions.

Considering what has been discussed in this paper, especially with regard to understanding of their components, a sustainable community can be defined as follows, "the communities in which people of present and future, have a high quality of life, have equal opportunities and different options for environmentally friendly use of natural resources, produce less waste, respect to local-scale

ecosystems, and ensure that their environment will be strengthened and improved by sustainable participation."

In summary, although the climate change phenomenon has existed in the past until now, and will continue in the future, human activities and unsustainable developments in the short term has intensified it in the way that it has had adverse effects on human life.

These effects become ever more severe and more diverse. It should be noted that if no attention is paid to the solutions to deal with it, the most important human achievement - civilization and urbanization - may be destroyed. For this purpose, we must start from the smallest part of the city,

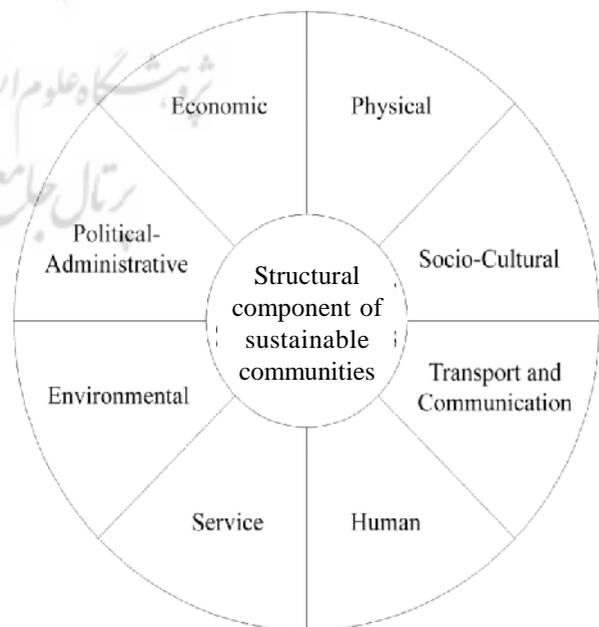


Fig. 4 : Components of sustainable communities

which are indeed communities. To solve problems and damages faced by the communities, it is necessary to discuss them further as a main element of cities in the form of sustainability.

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