

Sustainable Urbanization And Ecocities

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Abstract

Nowadays, fears about leaving a liveable world to next generations are increased. While sources are decreasing rapidly, demands are increasing more swiftly. In order not to restrict next generations' right to live, some measures must be taken. At this point, sustainable urbanization concept came forward. Therefore the governments brought ecocities to agenda. In this study, the phenomena of urbanization, sustainability, sustainable urbanization are examined briefly. Problems caused by urbanization are detected. And the ecocity approach that implemented for the realization of sustainable urbanization is discussed. Lastly, sample ecocities from different places are dealt with.

Keywords: Sustainability, Sustainable Development, Urbanization, Sustainable Urbanization, Ecocity

1.INTRODUCTION

Urban settlement dates back to five thousands of years before present day. Along with the population growth and industrial revolution, migration from the countryside to the cities increased greatly and this brought out the phenomenon of rapid and unplanned urbanization. This kind of urbanization brought about conclusions such as troubles faced for the use of resources, increasing environmental pollution, global warming and extinction of some plants and species. Due to the fact that resources in nature are not limitless and their uncontrolled use leads the world to the deprivation of resources rapidly, sustainability approach which is based upon balanced use of current resources occurred.

The term ‘sustainability’ came up first at the conference on Human Environment held in Stockholm in 1972. In the conference, the capacity of the environment and the rights of the future generations were emphasized and the relation of economic and social development with environment was realized. In 1987, sustainable development was identified in a report called ‘Our Common Future’ arranged by Earth and Environmental Development Commission. According to this, sustainable development is to meet today’s needs without restricting the abilities and possibilities of future generations oriented toward covering their needs. Sustainable development has brought with sustainable urbanization as well.

Unplanned growth of cities leads to serious destruction not only on the natural environment but also on the human nature. A successful sustainable urbanization is possible on condition that both physical and social sustainability studies are accomplished in integration with each other. Cities have continually been destroying nature due to the lack of recycling technologies, unplanned settlement and desire for constructing houses to green areas, air pollution and unhealthy infrastructure. This also reveals the importance of physical sustainability. As a result of the quests and efforts oriented toward physical sustainability of cities, the idea ‘Ecocity’ emerged.

Ecocity is a city designing and application approach in which human, city and environment issues are handled in relation and interaction with each other. The word (ecocity) was first used in 1987 by Richard Register in his book ‘ Ecocity Berkeley: Building Cities For a Healthy Future’. In Ecocity design, some principles such as reducing the effect of cities on environment, the use of renewable energy sources, the lowest level of waste production and the use of renewable energy sources have been taken into consideration. Dongtan and Tianjin in China and Masdar cities in Abu Dhabi desert are a few samples being built with Ecocity logic. In this study, sustainable urbanization phenomenon and ecocity approach put into effect for the realization of this phenomenon will be discussed.

2.CITY AND URBANIZATION CONCEPT

The term “city” might be identified in different ways according to the areas it has been used. In general, cities are settlements the cultural activities, management structure, intrasocial

relations and population density of which differ from country sides where living sources of the population is out of agriculture and stock raising (Şentürk, 2008).

Urbanization, in its narrow meaning, means the increase in the number of cities and the population who live in the cities. Yet, it is wrong to identify urbanization only with the increase of population. While urbanization in demographical sense means the migration of the population from the country sides and agricultural areas to the cities, urbanization in economic sense is the move of the population working on agriculture and stock raising, mainly industry, toward sectors out of agriculture. As for urbanization in socio-cultural sense, it means adopting of the population the norms and living standards of cities becoming cities demographically and economically as a style, living it, that is to say, to become urbanized (Ulusoy, Vural 2007). Urbanization phenomenon is a complex process in which sociological, technological, economic and political factors affect each other. Via the effect of these factors, urbanization has not been realized in the same style in every region of a country.

3.PROBLEMS CAUSED BY URBANIZATION

Urbanization phenomenon, appearing as a result of the population increase and industrialization, has brought along many problems as well. In addition to socio-economic effects of urbanization such as stress, noise, rising in rental prices, it also has negative effects on environment such as air pollution, water pollution etc.

We can examine the problems brought by urbanization in four sections (Ulusoy, Vural, 2007). The initial one out of these is the cost of population increase (Getting crowded). The cost of getting crowded caused by dense population in cities is on a level that can not be neglected. For instance, that millions of people change places continually in central transport lead both to loss of time due to the traffic jam and waste of fuel oil. In addition, the stress experienced causes the fall of productivity and decrease in production in conclusion.

Secondly, the excessive rise in rental prices. Housing crisis caused by dense population paves the way for building site speculation right along with causing an increase in rental prices. Unjust incomes of building site speculators could not be taxed sufficiently; income distribution has been affected negatively as a result.

Thirdly, the houses put up quickly without proper permissions. Owing to improper housing in cities brought by haphazard growth and deformations occurring on aesthetic appearance of the city are such samples. In the solution of problem of the houses put up quickly without proper permissions, decisive attitude of the politicians is also needed in addition to technical, administrative and financial precautions.

The final one is the increase of costs. Immeasurable and excessive growth in cities and increasing costs all bring a supplementary burden both economically and financially. That is to say, while communication difficulties in local administrations exceed a certain magnitude, dense bureaucracy and the number of staff increasing as a result of political pressures drop productivity, it leads to an increase in costs gradually. In the solution of these problems caused by urbanization, several methods have been suggested. While some parts of these are called the reducing of dense population in cities and the movement for preventing expansion (development of cities), some studies suggest constructing new cities.

4.SUSTAINABLE URBANIZATION

In the process of moving from agriculture to industry in developing countries, sustainable urbanization phenomenon makes itself felt as well. Gradually increasing problems of outskirts, appearing of infrastructure problems as a result, increase in the rates of crimes, lack of education and health services etc. all make cities places that cannot be lived by degrees (Gürlük, 2001)

Sustainability concept was identified in Bruntland Report published by United Nations Environment and Development Commission in 1987. According to this definition, sustainability means to be able to meet the needs of current generations without making a concession from the needs of future generations (Ertan, 2007).

Sustainability concept has entered into scientific studies through sustainable development concept. For that reason, one should initially examine the meaning of sustainable development concept in order to identify and apply sustainable urbanization and sustainability concepts in all other fields. Sustainability in every field is directly related to this concept (Ertan, 2007).

Sustainable development concept was initially adopted by Earth Protection Strategy dated 1980. Later on, it has been identified with the concept of sustainability in a report in 1987. Additionally, Rio Summit, Agenda 21 Document and World Businessmen Council have adopted sustainable development concept in their policies and applications (Ertan, 2007). Sustainability concept began to be used widely in many areas such as security, energy, city planning etc. in the years of 1990. It was put forward as an alternative way of application in the solution of problems occurring out of mutual interactions of concept, economy and environment (Ertan, 2007).

One of the most significant problems of sustainability is excessively increasing population. For meeting the needs of the increasing population, the need for supplementary service in cities reveals the definition of sustainable development on its own. This concept which envisages a full integration of environmental, economic and social goals meets the needs of present generation and covers being taken notes of the demands of future generations to natural sources as well (Bursa Yerel Gündem 21 1997-99 Raporu, 1999). For the realization of sustainability, four important approaches exist:

1. Eliminating poverty and deprivation. This situation draws the attention of poor persons who have no remedy but to destroy the environment.
2. Development which does not drop environmental quality. This situation provides the continuation of the removal of poverty.
3. Widening the idea of the necessity of attempts the centre of which is human.
4. Combining economy and ecology at decisions in every stage, in other words, realization of institutional change (Richardson, 1995).

Sustainability urbanization consists of harmonious and balanced growth of the city with ecological system in a way to be reflected toward future. This understanding aims at leaving cultural, historical and natural inheritance to future generations in addition to living in a humanely urban environment of societies today (Ertan, 2007). The most important problem occurring on this stage is at which rate the sustainability of cities could be realized. Because,

horizontal and vertical growth of cities lead to damages both in nature and human's nature dependent upon the recovery of living conditionals. The presence of sustainable urbanization is possible on condition that both physical and social sustainability are integrated with each other (Şentürk, 2008).

For providing the continuation of physical sustainability; one should prevent unplanned construction, save up infrastructure investments providing vertical growth of cities not horizontal, prevent building houses to green areas, change the transport system (using transport by sea or tubes instead of highway vehicles) and use recycling technologies in every field.

Social problems experienced by city human must be removed through social sustainability (disappearance of contemporary relations among humans, becoming ghetto, the existence of street gangs).

According to Gow and Pidwirny, in order to become sustainable, a city should attempt to implement the following practices: (Gow and Pidwirny, 1996)

- Reduce Urban Sprawl: To meet the necessity for housing of a constantly increasing population urban areas should grow upwards rather than outwards. In order to achieve this, development must shift from single detached homes to multi-storey houses that more than one family live.
- Conserve Natural Habitats: Lots of species live in habitats like wetlands and marshes. Wetlands are important in controlling flooding and filtering out water pollutants and sediments and trees and other forms of vegetation help to purify air.
- Develop Areas With Respect to Environmental Protection: When an area is developed natural features should be taken into consideration. Urban development should be continued in areas which are not vulnerable to erosion or other types of natural hazards. Cultivated areas should be protected.
- Provide Ample Green Space for Urban Citizens: Growing trees in the city can improve air quality, moderate climate, stabilize soils and provide habitat for bird species, etc. Plants that grown in rooftops and window sills serve to supplement food sources, provide habitat for wildlife species, and are aesthetically pleasing.
- Encourage Water and Energy Conservation: People consuming too much water and energy urban areas. In order to diminishing problems of supply and environmental degradation, the conservation of these two resources should be promoted.
- Discourage the Use of Motor Vehicles: Motor vehicles, require a lot of energy, contribute to air pollution and require large amounts of land for roads and parking lots. By designing a sustainable city that is compact with most things within walking distance, reduces dependency on motor vehicles. Using fewer vehicles decrease energy consuming, reduces air pollution, and saves land.
- Initiate Recycling Programs to Reduce Waste: Many different types of wastes products are produced in large quantities in cities. Recycling is possible for them. Sewage effluents, solid waste, and hazardous waste can be also be recycled for other uses.

5.ECOCITY

Although city areas cover only 2% of earth, they consume four third of the sources. For instance, the city of London needs 125 times more earth of its area so as to meet its own consumption. According to many environmentalists, cities are the main source of many environmental problems such as pollution and carbon dioxide oscillation. The solution is to protect the rest part of nature and to start building cities with a new understanding. According to specialists, city understanding needs a radical change. For that, environmentally friendly cities that meet its own consumption with its self production must be created (Habitat).

In any way; governments, planners, architects and engineers have begun to realize this idea and have started to search new ways for environmentally friendly cities. Their approach depends on two main principles: recycling of anything possible and minimizing the use of cars. As well as developing energy-activated buildings, it has been paid attention to arrange integrated working and living areas in a way to form common environments in cities instead of increasing mass transport and dividing into settlement, trading and industrial areas.

Ecocity concept has occurred as a result of efforts and quests oriented toward the sustainability of cities. It is a city designing and application approach in which human, city and environments are taken into consideration in relation and interaction with each other. The first source of the word used is the book called “Ecocity Berkeley: Building Cities For A Healthy Future” by Richard Register published in 1987. Four main elements take place on the basis of Ecocity. These are; making soil, water and air alive and keeping heat under supervision (Şen, 2008). Ecocity approach is based on two main principles the basic goal of which is to protect nature and elevating the quality of life standard in developing countries; recycling anything possible and reducing the use of automobile to minimum. However, building productive buildings about the use of energy; developing designs paying attention to climate factor; widening mass transport and approaches such as making working residential areas close to each other instead of dividing the city into residential area, trading area or industrial area (Cyprus Newspaper, 2010).

One of the cities aimed to be built with Ecocity logic in the world is the city of Dongtan in China. The city, just outside of Shanghai, has been thought to be built on Chong-ming island which is on the bed of Yangzi river. According to the project, the ecocity is going to produce zero carbon as it is self-sufficient on the issues of energy and water. This settlement to be built on Chong-ming island had been used for agriculture beforehand and there was an important park for birds. Via the plan, transforming some parts of the agricultural areas into forest and making the whole agriculture organic has been aimed. In the city, producing energy out of agricultural wastes and wind tribunes and recycling of wastes have been planned. In the project, by giving permission only to electrical vehicles in the city centre, it has been thought that transport would be provided by buses and water taxis working with solar energy and hydrogen (Zaman, 2009). The building of wind tribunes began in 2006 but only 10 wind tribunes have been set so far, the first stage of which is thought to have been completed in the year 2010. The project could not reach at the desired target.

Another ecocity planned to be built in China is Tjanjin which is going to be a product of China-Singapoure partnership. Tianjin Eco-city, which is going to shelter totally 350.000 persons under its body, stresses strongly the balance of residential towers rising among valleys, walking tracks and green areas and the features of landscape design. As for urban

transport infrastructure of Tianjin is going to be solved with light railway system at a great ratio. The regions will be integrated into each other through light railway system. This, at the same time, is an application to drop carbon oscillation in the city. In addition to the use of dense landscape and green areas, in the scope of the project, many sustainable technologies, mainly an effective infrastructure system, oriented toward accumulating solar energy wind energy and rainwater. The project is still in charge (<http://www.tianjinecocity.gov.sg/index.htm>, <http://www.yapi.com.tr>)

Another environmentally friendly city is Masdar set in Abu Dhabi desert by United Arab Emirates. The building of the city to cover 7 km² area in total for 50.000 persons began in February, 2008. The city to host both trading centers and little industrial businesses has been aimed to be completed in 2016. Through “Masdar Initiative” developed with supports of American Massachusetts Technology Institute (MIT), a city with clean energy has been envisaged. Railway system is to be used instead of cars. The energy need (82% solar energy) of the city is to be met with a system recycling the food wastes (17%) by burning and wind tribunes (1%). In the city, the distance of closest local transport vehicles has been designed to be 200m at most. As for the public inhabiting the city where vehicles with petrol are forbidden to enter the city, persons are going to wander around with private vehicle or mass transport systems using clean energy (Zaman, 2009). Rapid Transport System (PRT) is going to be composed of an electrical vehicle without 2500 drivers in which four persons could travel 150.000 journeys by following the receptors extending along the railways down the pedestrian walk. The cars, the buildings and everything else is expected to be powered by solar photovoltaic panels on the rooftop of every building, solar thermal power plants (which use the sun to heat liquids that spin turbines and generate electricity) and waste-to-energy plants (CNN, 2008). Sea water refining system is going to provide some water of 5000m³ and 60% of the water to be used is going to be recycled. Trees to provide clean air and desert wind to the streets are going to be settled round the city strategically and when thrown into the litter, vacuum pipe is going to sweep it to a central area and some thrash decomposed there is to be re-gained (Zaman, 2009).

6.CONCLUSION

Sudden and scary climate changes and the issue of environmental damage experienced today have become more visible and sensitive in great walks of society. In fact, limitless consumption of limited sources to create for future generations was on agenda since 1970's. However, large scale measures taken on the levels of government suit to closer duration of time. In this frame, the concepts “sustainability”, “sustainable development” and “sustainable urbanization” that are connected to each other for leaving a more livable world to future generations have been started to be pronounced. The application of these three concepts which cannot be envisaged different from each other will be possible on the level of urbanization with environmental new cities mentioned as ecocities. Despite the fact that it has not been completed yet, ecocity projects, still in charge, are promising applications that can partly remove the ecological problems of future generations if they succeed.

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