

Urban Planning in Terms of Local Development and the Discussion on Erzurum Sample of its Relationship with the Ergonomics

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Abstract: There is no suspect that qualified human capital has positive effects on sustainable development. In particular, on local and regional development, it comes to the fore. In this respect, when it is evaluated, the importance with regard to this will come out in terms of regional development issues. In this regard, it is believed that the urban settlements which has a large portion of the human population is a very effective element and it has been come forward. Ergonomics in the creation of sustainable cities, can be considered as an important tool. If this problems that arising from environment and human conditions is not minimized, the formation of conditions threatened to lives of individuals are likely to increase. Consequently, this study is expressed that along with current problem by developing a variety of solutions, providing more qualified urban life in Erzurum will make a great contribution to sustainable local development.

Introduction

Industrialisation and high urbanization, increasing population brought soil, water, air, noise, electromagnetic and radioactive pollution as serious environmental problems. As these problems increase, they affect urban life and ongoing local development negatively. When the subject matter is taken up to Erzurum, which is the biggest city of Eastern Anatolian Region as the changes made without taking the topographic structure of the city into consideration after immigrations from neighbor cities and town caused unplanned urbanization in recent years. It is seen that the city is unplanned areas are affected by especially air, water, noise, soil and electromagnetic pollution. And also the deeds of municipalities such as roads, pavements and lightning are not enough and effective. Those problems are the most important things that cause special investments to escape from the city and region. Therefore is not seen that Erzurum reach an ongoing local development potential due to losing special investment and taking immigrations. As it can be seen in this research which some approaches and uses in the centre of ergonomics those problems can be both solved and the city and region's ongoing development increased.

The Cities in the Centre of Ergonomics: The City Ergonomics and Environment

It is seen that the process of urbanizations is under bad conditions in developing countries. In such countries, it is a fact that the people who live in big urbanized and populated cities find out their own living are as which are out of health conditions economic, social and above and below structures. Whereas cities survive as they contain dynamic structures like living organisms. Thus, if it is wanted to changed the process and tendencies back in cities it is possible to make positive changes with serious plans.

Engineers generally define ergonomics that the process of changing acts and needs of human being into physical forms of engineering or structural systems. (Wolf 2003) Of ergonomics, if one object, one system or one environment is planned for use of people. It is a fact that this plan should depend on physical and mental characteristics of the people who use this object, this system or this environment. (Pheasant 2003) The approaches of ergonomics help the process of urbanization. The city ergonomics aims to adapt city areas and

under construction systems to people according to biological, sociological and psychological characteristics and their life health and security.

In this study the concept of "The Green Ergonomic Cities" is suggested as a solution to wipe out local environmental pollution. As its concept and meaning is large the existence of below constructions and their performance and characteristics (Wolf, *ibid.*) are the elements of City Ergonomics. It includes a large scale from height level of the pavements, lightning of the streets, bicycle roads and recreation areas. But, below constructions about environmental pollution of cities in which urban people are affected physically, socially and mentally in great deal, is a limited area. On the other hand, this study is handled in this limited area.

Because of the cities in which the population intense, showing complicated features the presence of the extremely planned systems are necessary for providing of services for each dwelling commercial entity and citizen. (Wolf, *ibid.*) Especially with these systems which will be made in the cities of countries passing fast unplanned process, the green ergonomic cities will be created. The presentation of green infrastructure services is crucial with this aspects. This process needs to save, plan and manage the naturel units and naturel qualification which includes the feature. (Wolf, *ibid.*) "Living (green) roofs" being are of the integrated managing systems, "living walls" filtrating the air particules and bettering the air quality "the usage of the grey waters" made of a simple pipe system or "gathering the rain drops" are forming some systems. (Arieff, 27.04.2009) Absolutely reviewing the plans of the cities and its being suitable to green infrastructure providing benefit in citizens disposing the unplanned urbanization, coming out with near environmental pollution, and meeting the requests in this aspects can be considered.

Precautions are being taken by inactivating the negative conditions of near environmental pollutions which may threaten the safety and health of humans in habitats. In the green ergonomic cities in which the human activities are made suitable by the rules of nature and nature of human. As is known near environmental pollutions like traffic jam, air pollution, water pollution and wastes in crowded urbans are affecting the physical or spiritual health of human in a direct or indirect way on this point of view, the green ergonomic cities approaches, mentioned with the aim of raising the quality of urban life and making the cities and city tissues suitable for the public health must be activated.

By a good planning or constructing healthy habitable cities, near environmental pollution can be overcome, while making urban plans, it must paid attention to hand over the plans in the aspect of solving the environmental problem in appropriate to urban mental and details. Urban infrastructure systems dumping and destroying fieldings must be reviews. While considering the placed functional fields and the relation between them, the issues environmental problems must be paid attention. A healthy environmental which presents a possibility of reaction with a fresh air among the basic necessities of citizens, a drinking water, public gardens and green fieldings being multiple requirement can be called an important place on reducing the air pollution. To prevent air pollution of traffic, more publics transports must be need to be developed. The settlement mustn't be established nearby water resources for the underground and overground not polluted; also for protecting the drinkable water resources, their around must be wooded. The achievement of the noise the human can be reduced by modern construction technologies plant screening systems, precautions like in sources and the managing the urban systems.

The role of the local councils in the transformation of the cities is indisputably important with a condition must of cooperation of public institutions and particular institutions about services intended for protecting the environment and preventing the near environmental pollutions, the most important duties and responsibilities are the people's who live in those habitats and the local counsils'. Thus, many valid rules about environmental issues like municipal and environmental rules, regulations and precepts gives varius duties the local councils. Despite the exiting legal regulations, it is seen that the efficiency and effectiveness cannot be provided in practice in cities. In the councils of complex urbans, and on the analyses of physical structurizes, not getting enough support from landscape architects, architects, environmental engineers, city developers who are experts on those issues, is considered. Whereat, when creating the ergonomic cities consider of human and environment, it is important for the local councils to get the opinions of experts with a participatory management approach.

Urban Pollution and Ergonomics in Erzurum

Erzurum, which is in the east of Turkey an done of the most important cities of Turkey has been affected by urban pollution. In that city with harsh winter conditions, air pollution is of primary importance. In the city, water pollution, garbages, unplanned urbanization, soil pollution, erosion, noise pollution, visual pollution, acid rains and degradation of pastures have been ordered as other environmental problems. (T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı 2008) To make a healthy urban planning in Erzurum the urban ecosystem and environmental problems are to be

understood firstly. This, also, is going to enlighten the dynamics of sustainable development.

1. The Air Pollution in Erzurum

In Turkey, air pollution, which was not be able to be defined until 1970s, emerged especially in 1970s and affected all cities between 1970-1995 and was alarmed in more than 30 cities in 1990s. (Okutan 1996) It is seen that the case is not very different in 2000 in Erzurum. As it reached to the threat dimensions about human health especially in the winter, it is in the agendum of Erzurum as primary concern which needs a solution. According to the report about The Assessment of Environment Problems and Priorities of Turkey,³ Erzurum is among 24 cities for which air pollution is the primary issue. We can say that the quick and unplanned urbanization, unqualified use of fuel, unconscious use of fuel, not to burn the boilers suitable for the techniques, use of unsuitable technology at industry, wrong choice of the places of industry, structure of meteorology, not to make an environmentally friendly investment or project in urban communication, traffic concentration and destruction of forests have the most important effects in it. (Gürel 2008) Because the industry systems are insufficient as it can be seen in Table 1. There has been a little effect of the emissions left to the atmosphere from these systems on air pollution. But according to the data of the year 2009, when the contaminators of air have been ordered, the industry is in the first and the traffic and domestic warm up (T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı, ibid.) is in the second place. As for it shows that the use of natural gas in city and the other precautions have been applied successfully.

	SO ₂ (ton/year) (sulphur dioxide)		P M (ton/year) (particle material)		NO _x (ton/year) (oxides of nitrogen)		C O (ton/year) (carbon monokside)		C _m H _n (ton/year) (hydrocarbon)	
Derived from Housing and Service Sectors	3600,7	% 86,4	3046,2	% 88,11	598,2	% 28,0	5743,9	% 58,2	7873,9	% 80,2
Derived from Industry	442,6	% 10,6	382,9	% 11,07	47,3	% 2,2	484,2	% 4,9	975,0	% 9,9
Derived from Vehicles	121,8	% 2,9	28,0	% 0,81	1491,0	% 69,7	3638,5	% 36,8	690,9	% 9,7
TOTAL	4143,1		3457,1		2136,5		9866,7		9809,9	

Source: Demircioğlu N. & Kılıç A. (2005), Erzurum İli Çevre Sorunları, Atatürk Üniversitesi Çevre Mühendisliği Bölümü, Erzurum, p. 82.

Table 1: Air Pollutants and Resource Allocation Be Seen in Erzurum as Connected to Emission Factors Used in Turkey

In Erzurum placed on a broad plateau covered with Planadöken and Kargapazarı Mountains, due to the inversion layer placed on the city and called "black cloud" the density of air pollution increased considerably in 12 days in winter in spite of all precautions because of the topographic structure of the urban prevents the contaminators of air from spreading and falling of speed of wind increases the air pollution. Concerning the cleanness of natural gas and decreasing of pollution, infrastructure works started at the end of the year 2005 and the natural gas began to be used to worm up in 2006. Even after that application, although SO₂ and PM values decreased in air pollution, (Eren, Turan 2007) it is seen that the air pollution is in the highest level. In quick and unplanned process of urbanization in Erzurum the scarcity of green areas has an important role in pollution. With the increasing of the new settlement regions, the contaminators have increased in the air and these contaminators worsen the quality of air by moving through the centre of the urban.

³Erzurum'un yanı sıra, Adıyaman, Ağrı, Ankara, Burdur, Çorum, Denizli, Diyarbakır, Elazığ, Gaziantep, Hatay, Iğdır, Isparta, Kahramanmaraş, Karabük, Kars, Kayseri, Kırıkkale, Kütahya, Malatya, Mardin, Sivas, Yozgat ve Zonguldak'tır; T.C. Çevre ve Orman Bakanlığı (2008), Türkiye Çevre Sorunları ve Öncelikleri Envanteri Değerlendirme Raporu (2005-2006), Ankara, p. 9.

In Erzurum the population of which is nearly 400.000, it is emphasized that the air pollution has reached to be a threat dimensions for the people and the environment. It can easily be seen that the air pollution has a negative effect on lifeless beings in Erzurum. It produces negative effects on metal, stone, wooden parts of buildings and machines by turning into composition of acid. (Keleş, Hamamcı 2005)

2. The Water Pollution in Erzurum

The need for the city of Erzurum's drinking water largely provided by the ground water. Moreover; Palandöken Dam, although its having been completed, was built to fulfill the need of the city's drinking water for 50 years in the near future and hasn't been functioned yet effectively. (Sarsan et al. 2004)

Excessive usage of natural resources, uncontrolled and disorganized industrialization activities and urbanization as well as domestic, industrial and agricultural based activities have been pointed out among the primary reasons for the deterioration of the quality of water supply in Erzurum. The lack of sewerage system or its being inadequate, not increasing domestic future waste water at the settlement, big industries' not refining waste water, no mass refining in small industries, cesspool waste's not being built effectively, unloading cesspool wastes to randomly places after having been withdrawn by sewerage truck, uncontrolled usage of pesticides, usage of chemical manure, inadequate capacity and efficiency of purification facility and the crew's being inadequate in purification facility, are the reasons for water resources' pollution. (T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı, ibid.) Reservoirs constantly have been disinfected by municipality in order to avoid negative consequences of the polluted water. (Sarsan et al. 2004) In spite of this; because of the pollution of the water resources and city water supply in Erzurum, water based diseases can emerge such as typhoid, cholera, hepatitis A, salmonella species, bacillary dysentery, amoebic dysentery, acute bloody diarrhea.

3. The Soil Pollution in Erzurum

Erzurum city in which soil pollution is the fifth primary problem has been indicated among seven provinces in the country, although soil pollution comes right after the water pollution in the city.⁴ Although agricultural activities, urbanization, wild storage and industrialisation claimed to be responsible the soil pollution at the period of 2007-2008, (T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı, ibid.) concrete data haven't been produced about soil pollution. Besides, due to the fact that the city lands are not used properly for their own futures, this emerges as another important problem concerning the city lands. For example, it has been pointed out that the place which have mainly the tourism and agricultural potential and which supposed to be used for the settlements were given reconstruction permit. (Sarsan et al. ibid.) However; liquid, solid, gas contaminants of industrial establishments must be managed in accordance with legislation of the Ministry Environment and Forestry, in order to avoid soil pollution. There has been a remarkable effort in terms of enhancing regular storage places, providing urbanization in accordance with town planning and supplying fertilisation, disinfestation as well as irrigation in accordance with legislation of the Ministry of Agriculture and Rural Affairs. (T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı, ibid.)

4. The Noise (Acoustic) Pollution in Erzurum

The noise pollution in Erzurum, especially in the last twenty years, has occurred as a problem regarding the increase in the number of vehicles connected with population growth and economic development in the city. The most important noise sources for Erzurum is the vehicular traffic that result from transport within the city. In this regard, it has a huge impact (Yılmaz, Özer 2005) which the wrong behavior of the drivers, horn, roads disorder, sudden braking and technical problems, rapid departure and the influence of noise caused without muffler, ragged and old vehicles.

If you take into consideration the noise measurement did in various residential areas within the city limits in 2007 and 2008, as seen in Table 2, it is seemed that the high noise level on the streets shaping the basic transport network of the city. Accordingly, the noise level in this street was over 70 dB.

[⁴] Erzurum'un dışında, Bolu, Iğdır, Isparta, Manisa, Tokat, Van bulunmaktadır; T.C. Çevre ve Orman Bakanlığı, **Türkiye Çevre Sorunları...**, p. 15.

The Location of Measuring and the Coordinates	Measurement Period	The Noise Level is Determined (dBA)
1- Havuzbaşı Vilayet Street	The Average Monthly Value in 2007	79
2- Havuzbaşı		77
3- Havuzbaşı Hastaneler Street		78
4- Eski Hük. Bin. Cumhuriyet Street		79
5- K. Karabekir Street		72
6- Gürcükapı Junction		78
7- Eğitim Fak. Junction		74
8- Çaykara Street		79
9- Aliravi Street		67
10- Terminal Street		66
11- 1. Marketler		58
12- Ebu İshak Street		59
13- Kayak Yolu		50
14- 46. Street		59
15- Yenişehir Junction		56
16- 2. Marketler		58
17- Yıldızkent		52
18- Alparslan Street		56
19- Dadaşkent		54
20- Yenişehir Üst Yol		52

Source: T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı (2009), İl Çevre Sorunları Ve Öncelikleri Envanteri Araştırma Formu, Erzurum, p. 58.

Table 2: The Noise Measurement did in Various Residential Areas within The City Limits in 2007 and 2008

In a survey made to determine the sensitivity of public on noise pollution in the city of Erzurum, it has been identified within the city of 50 % of the citizen, within the workplace of 20 % of their and within housing of 30 % of their disturbing due to the noise. (Yılmaz, Özer 2001) It has been control that small businesses such as industry associations, businesses, workshops, workplaces and indicate that in reconstruction plan's works the measures taken in the direction of industry organizations, workplaces and workshops must be creation outside of settlement areas. (T.C. Çevre ve Orman Bakanlığı Çevresel Etki Değerlendirmesi Ve Planlama Genel Müdürlüğü Çevre Envanteri Dairesi Başkanlığı, ibid.)

Conclusion

Today, environmental problems in cities have come to the fore. This problems with this aspect is prevented the city and the region's sustainable development at local level. Because in cities have been concentration of air, water, soil and electromagnetic pollution and the heavy living conditions qualified human capital is almost impossible to keep. A region retain in the qualified human capital that the most basic elements of sustainable development at local level does not seem possible to be on increase.

In this study, in Erzurum province, with an ergonomics perspective, air, water, soil and noise pollution were included. The important deficiencies and problems in Erzurum in terms of these elements are there. The false in terms of administrative decision-making process, the errors in land use decisions, illegal housing and inadequacy of economic is to structural changes often adversely affect and create existing structures an inappropriate tissue of a settlement and unplanned urbanization. In this regard being a charm center in terms of qualified human capital of the city is impossible. For this, all parties such as municipalities, public institutions and civil society organizations, especially by accepting a milestone before of 2011 Universiad Winter Olympics, in the framework of an emergency action plan should meet at a common point. To be done should start and be applied with the requirements of the ergonomic city, namely focus on human and environment, functional,

planned and contemporary activities.

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