

A Review on the Transformation Problem of Inner-Urban Industrial Areas; Case of Elazig-Turkey

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Abstract: Especially in recent decades, urban transformation projects is the main agenda of urban policy in Turk's cities. One of these issues is to define the new uses and users by introducing urban industrial areas into urban transformation. This research examines the basic urban planning approach for transforming inner-city industrial regions in the case of medium-sized Anatolian cities. The scope of this study is the industrial area that uses cement factories in the Elazig urban settlement area. The primary materials of the study are the development plans, plan description reports of these plans, and legal rules related to construction. The method of the research is based on a comparative analysis of the situation of the pre-and-post urban transformation plan according to social sustainability criteria. Initially, urban transformation projects aim to improve the quality of the environment and meet the demands of new urban spaces. This process has deeper social, environmental, and spatial problems. The main reason for this is the desire of projects to transform the human-made environment. This approach also poses many barriers to social sustainability. As a result of the study, it is emphasized that the traditional zoning plan approach is insufficient to manage a sustainable urban transformation process. Within this framework, suggestions are being developed to contribute to the transformation of the urban cement factory area.

Keywords: Urban planning, social sustainability, identity, Elazig.

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I. INTRODUCTION

As it is known, urban transformation defines as a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change (Roberts, 2000). The concept includes the aims of urban development, as well as the conservationist aspects that advocate the continuity of improvement and revitalization (Couch et al. 2003). On the other hand, urban transformation, in essence, intends to change the nature of a place by involving residents and other stakeholders, embracing multiple objectives and activities, with partnership working among different stakeholders (Ozcan, 2006). It can be said that the idea of current urban transformation started for the first time in the form of interventions aimed at rebuilding the unhealthy urban environment that emerged during the industrialization process. As a matter of fact, the significant rebuilding of the city centre of Paris with the applications that come into the literature as Haussmannization can be considered as the first actions in this context. Later, this approach was modeled for other European and Turkish cities (Turok, 2004).

Following the Second World War, the urban transformation agenda is the physical restoration of housing in the context of the reconstruction of damaged cities. This was followed by the clearance of the slum zones, which are called poor neighborhood units. In the 1960s, the concept of urban transformation is considered as a means to improve economic growth and to increase employment. Public thought is prominent in this period, instead of welfare-oriented programs that require extensive rehabilitation and large appropriations (Harrington, 1962; Gibson and Langstaff, 1982; Carmon, 1999). After 1980, specific neighborhoods and cities were directly involved in international company investments. Fanciful and costly projects were carried out in this period, where globalization was effective (Gale, 1984; Thorns 2002). In the 1990s, social life has come to the fore in urban transformation interventions. The social divisions became an important problem for cities. So, the policies to reduce urban social-segregation come forward in this period. These actions, which initially conducted under the leadership of the private sector, were gradually replaced by the public, private sector, and non-governmental organizations. It can be said that the actions of urban transformation have evolved towards evaluation within the framework of the principles of sustainability, after the 2000s years. This approach basically considers accounting the balance between social, economic, natural, and human-made environmental dimensions (Carmon, 1997; McCartney, 2007; Lichfield 1992).

Especially in the last decade, the spatial development and growth of Turk's cities have managed through urban transformation projects. The first examples of this process focus on the restructuring of illegal

housing or squatter districts, which are heavily observed in metropolitan cities such as Ankara, Istanbul, and Izmir. This approach is the redevelopment of the built or human-made environment in the framework of free market conditions by increasing the density of buildings (Yenice, 2014). While the physical structure of the cities are changed in line with the expectations of value increase and value sharing; it has been subjected to many criticisms in terms of ignoring social and environmental dimensions.

Today, the spatial development and growth of medium-sized cities has also begun to be managed by urban transformation projects, as in metropolitan cities. The main focus and priority areas are residential areas. Also, the industrial areas within the urban settlement have also become the central theme of the urban transformation projects. The industrial zones initially established outside the urban areas have remained within the urban settlement area with migrations, growth and sprawl of cities. These areas have become a source of many problems in cities, including transportation, air pollution, and visual pollution. As a solution to these problems, local administrators suggest that inner-city industrial areas should be moved away from the settlement areas and they revise the city development plans for this purpose. One of the main problems in this process is the limitation of financing opportunities. This leads local administrators to increase the urban density in the old industrial or factory areas to make them more valuable and thus to meet the financing problem of the urban transformation with the income to be obtained. However, although this process is claimed to be carried out with the focus of public interest, it is clear that the conditions of functioning and construction towards the industrial area will create a number of new problems. Some of these problems have many negative effects in terms of social sustainability.

This study aims to develop a critical perspective on the re-planning and design of the cement plant area in the city of Elazig, a medium-sized Anatolian city in Turkey. The evaluation of the Elazig Cement Plant within the scope of the urban transformation scenario with different functions will make this area an important trade and attraction of the city. However, it should be emphasized that the planning approach will have many adverse effects on social and environmental sustainability aspects such as landscape character, identity, and urban memory.

II. METHODOLOGY

The scope of this study is the investigation of the urban transformation approach of the industrial areas within the city, especially in the field of the Elazig cement factory, which started production in 1957 in the city center of Elazig. The scope of this study is to investigate the urban transformation approach of the industrial areas within the city, especially the case of the Elazig cement factory, which started production in 1957 in the city center of Elazig. Elazig city, in the Eastern Anatolia region in Turkey, is located in the Upper Euphrates (Firat) basin section (Fig.1). Today, Elazig is the third largest city in the Eastern Anatolia Region, with a population of approximately 500,000 (Unal, 1989).

The city was founded in 1834 at the present site because the historical town of Harput was not suitable for settlement and the natural conditions were difficult. The place where the cement plant was founded is also known as Aksaray in the northeast of the city. Aksaray region, which had a rural character at the beginning, has become a new attraction point for urban development with the establishment of a railway connection. Workers' dwellings and neighborhoods surround the factory area.



Figure 1. Location of Elazig city and Elazig Cement Factory

Problems related to air pollution in Elazig city center have come up many times (Unal, 1989; Gurtekin, 2008; Aydogu, 2014; Anonymous, 2017). With the 1990s, the factory area brought to the agenda, especially for air and visual pollution. In particular, it stated that the main reason for the high amount of SO₂ in urban air was the cement factory.

The primary materials of this study consist of the zoning plans prepared in different scales that envisage the transformation of the industrial area within the Elazig urban settlement area and the plan disclosure

reports of these plans. In the study, a method based on comparative analysis of the zoning plans aiming at the transformation of the industrial area was followed. These analyses were developed based on social sustainability criteria. Indicators are addressed in the context of accessibility, equality, and cultural continuity-identity. In this context, the urban transformation area and its close surroundings were evaluated together. The additional population calculated according to the construction conditions in urban transformation projects. The obtained results and the changes in urban land use rates were compared and interpreted.

III. HISTORICAL BACKGROUND

Elazığ cement factory was established in 1956. In time, workers' housing was built in the immediate vicinity of the factory area. The area in which it is located is defined as industrial use in the current 1/1000 and 1/5000 scale development plans (Fig.2).

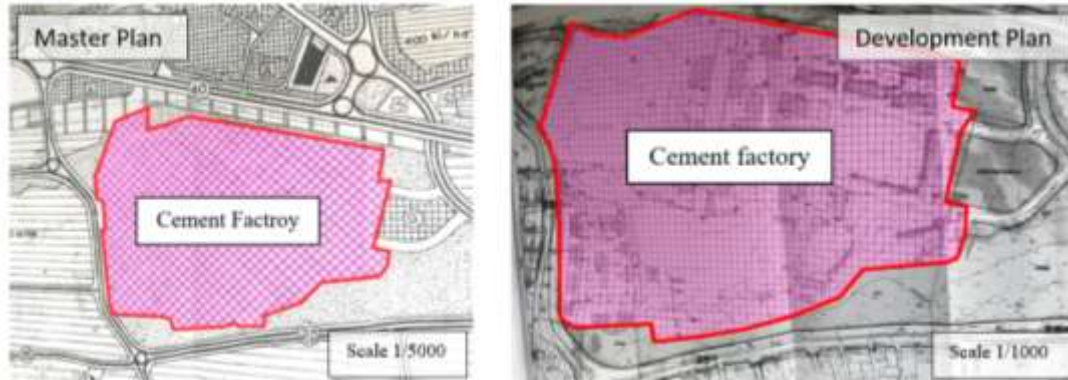


Figure 2. Development plans of the Elazığ cement plant area prior to urban transformation project

In the Elazığ-Malatya-Bingöl-Tunceli Region, 1 / 100.000 scaled Environmental Plan, which was approved by the T.C. Ministry of Environment and Urban Planning, the Directorate General of Spatial Planning in 2015, the area where the cement plant was changed as an urban settlement area (Fig. 3). According to the description report of this plan, housing, educational facilities, health facilities, indoor and outdoor sports areas, green areas, public institution areas, transformer etc. such as social and technical infrastructure areas, trade areas, small industrial site areas, tourist facilities such as urban use can be done in urban settlement area.

Urban Settlement Areas in Implementation Provisions of Environmental and Urban Planning are defined as areas that are mostly built, even though they contain empty spaces. It is stated that the construction conditions in the same provisions will be determined in the sub-scale plans. Therefore, as a macro decision, the need for the use of the industrial-use factory area to be located outside of the urban settlements. In the report of plan, after the completion of the economic life of the industrial facilities within the urban settlement areas, it is stated that the industrial zones proposed in this plan will be moved to the new organized industrial zones where the existing or location is selected. On the other hand, it is defined that development plans for urban residential areas can be prepared in these areas where industrial use ends. It is considered that the definitions made allow the urban settlement-oriented transformation of the industrial-use area within the scope of the upper-scale plans for the area in question.

IV. EVOLUTION OF THE CITY PLAN

The development plans in Turkey has two stages as a 1/5000 and 1/1000 scale. 1/5000 scale plan is defined as a master zoning plan. It covers general urban land use decisions. The 1/1000 scale plan is theplementary zoning plan. Building conditions are defined according to this plan. The cement plant area was transformed into a commercial + residential (mix use) area with a large scale in the 1/5000 scale zoning plan. There is also a small amount of training facilities, green areas and roads.

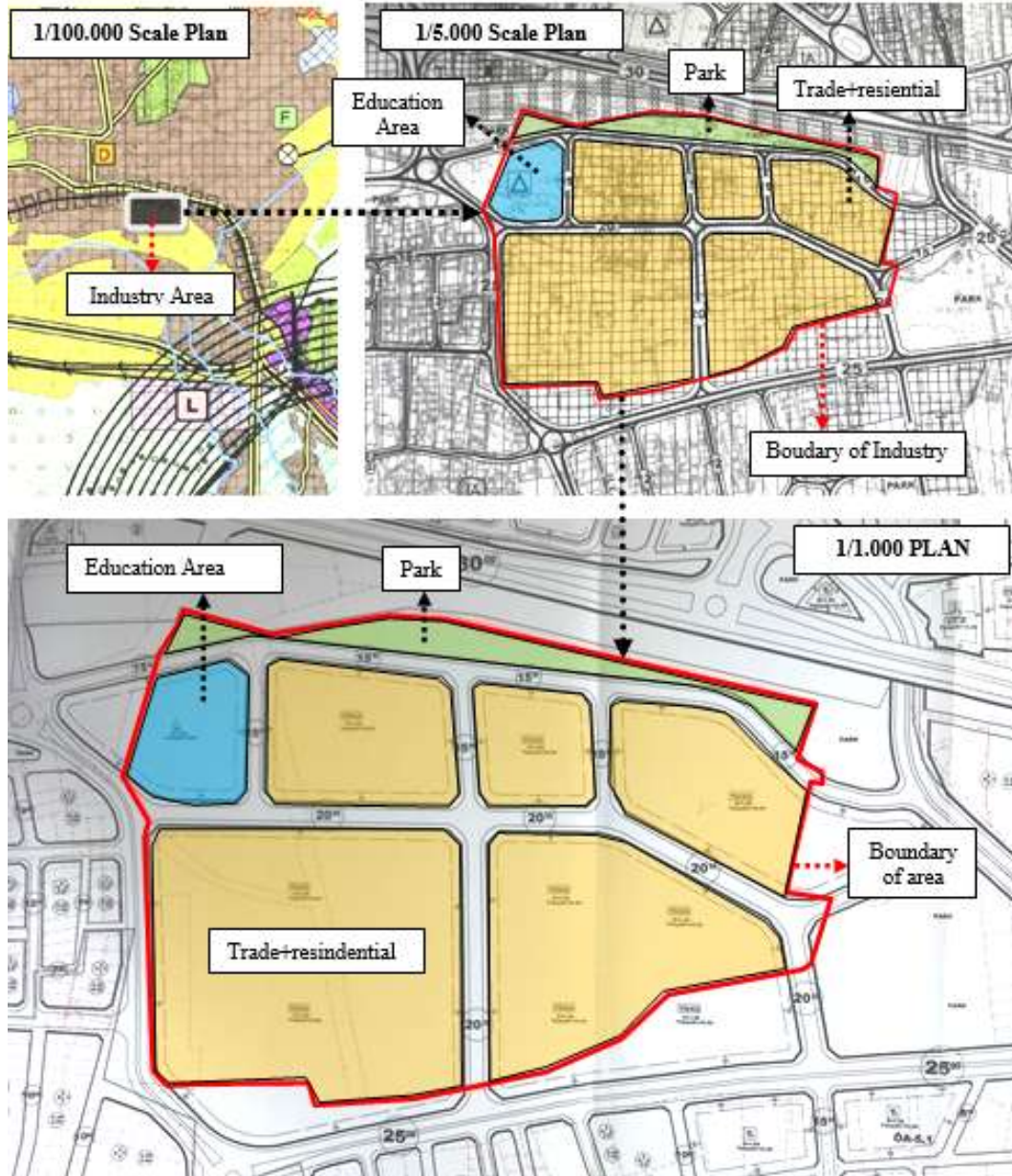


Figure 3. Development plans of the Elazig cement plant area after the urban transformation project

The area for subject to urban transformation is about 19.5 ha. 7% of this area is divided into residential and commercial mixed-use areas. 16% of the remaining areas are divided into roads, 6% are open-green areas and 5% are allocated to the training facility area (Table 1).

Table 1: Distribution of urban land use

Urban land-use	Area size	Rate
Education Areas	10273 m ²	0.052445
Open-green Areas (Parks)	12261 m ²	0.062594
Roads	31976 m ²	0.163241
Trade and Residential	141372 m ²	0.72172
TOTAL	195882 m ²	1.00

The construction conditions in trade + residential-use urban blocks are stated as E: 1.50 (building site coefficient) and the maximum building height is 15.50 meters. However, it is stated in the Plan Implementation Notes that max. 50% of these areas can be built housing, and that the value of the peer value greater than 10.000 m² can be set to 3.00 and building height can be released. Considering the size of the existing urban blocks, the precedent is defined as the building height is free. Therefore, construction density can be doubled. This also means that the number of populations to be added to this area is doubled.

The transformation shows that both the functional and the physical environment are focused on rent. In addition to the trade proposal, it is predicted that there will be a permanent population in the area with the suggestion of housing function. Therefore, it is clear that new urban social-technical infrastructure areas will be needed with population growth. Minimum standards for urban social infrastructure areas, urban areas in Turkey is defined in the Spatial Plans Construction Regulations. These standards are measured by the size of the social reinforcement areas, accessibility, and the amount of space per capita. In order to make these evaluations within the scope of the study, an additional the population was calculated with the urban transformation.

V. ASSESSMENTS

Within the scope of the study, evaluations regarding the transformation process are discussed within the framework of social and environmental sustainability of public interest. In this framework, two issues appear. The first of these is to analyze the new functional and spatial usage decisions with respect to the available environment and texture. Another is to evaluate the attitude of public space. Public space standards in the areas to be searched; walking distance, urban social infrastructure per capita size, and the amount of reinforcement area are evaluated. These principles are based on the evaluations made within the scope of the study.

Suitability of Existing Land Structure

Elazig cement factory has made significant contributions to urban and regional economy with its 70 years of history. Besides, the factory has an essential place in the memory of the city. It has contributed not only to production and economy but also to the social and cultural activities of the city and its surroundings. In addition to the production facilities and storage areas within the factory area, there are large open green areas, social facilities, and mosque and parking areas. Therefore, this area includes not only factory buildings but also essential landscaping and identity elements (Fig. 8). When the environment of the urban transformation area is examined, it is seen that there is no such large landscape area.



Figure 4. Cement factory area and complementary zoning plan decisions

When the urban transformation plan decisions and the existing land use form are matched, it is seen that the green texture or even the existing mosque structure hits the road and Trade + Residential use urban blocks. This indicates that the current land use structure is not taken into account in the planning process. The landscape character of the factory area can meet the needs of almost all open-green areas and the social-cultural facility area of the neighborhood and its surroundings. It will have a more sustainable approach to the conservation of this character as part of a new plan and design scheme. Otherwise, a significant urban open and green area presence and decades of tree stock will be lost. The transformation of some

of the existing buildings into common areas that will be re-functionalized will contribute to the environmental sustainability as well as economic sustainability.

The cement factory area has a history of about 70 years and has become one of the critical elements of the city. The actions of urban transformation should mainly be evaluated within the framework of sustainability and the concept of public interest. The existing cement factory can cause environmental problems due to air and image pollution, traffic, and exhaust emissions from heavy vehicle vehicles. The desire to move the factory area away from the city can be considered within the public interest. However, it should be expected that the type and intensity of the new structures to be formed at the site of the factory buildings will include the public interest. Considering this process as purely functional transformation and zoning rights, it is considered a very primitive approach.

Evaluation of the amount of public space per capita

One of the indicators of the urban transformation approach in the context of public interest and sustainability is the change in the amount of public space per capita. If the urban transformation project is claimed to improve the quality of life, it should provide evidence that the amount of public space has been improved. The minimum criteria for public spaces falling per capita in Turkey, Spatial Plans are described in the Construction Regulations. The relevant regulation defines criteria such as minimum 10 m² open-green area per person in urban areas, 1.60 m² health facility, 1.54 m² social and cultural facility areas (Table 2).

Table 2. Amount of public space per capita in the area of urban transformation

Public Facilities	Urban Transformation Area m ² /person	Standard in Regulations m ² /person
Education facilities area	1,20	5,80
Open-green area	1,54	10,00
Health facilities area	-	1.60
Social-Cultural facilities area	-	1,00
Worship area (mosque)	-	0,75
Technical infrastructure	-	0.50

Considering the land use decisions and the additional population, the area of public spaces per capita is calculated. According to this calculation, it is seen that the minimum public space per capita is well below the standards specified in the related regulation. In the area of urban regeneration, there is only an education facility area and an open-green area as a public service area. In these areas, the amount of space per person is below the minimum criteria. In this context, it is considered that the urban transformation approach does not provide minimum public spaces.

Accessibility

The criteria for accessibility and walking distances are defined in the Regulation on Spatial Plans. The regulation emphasizes that the walking distances of the zoning plans will be planned by taking into account the population, access distance, topography, construction, density, existing texture, natural and artificial thresholds. In this context, walking distance for children's playground, playground, outdoor sports area, family health center, nursery, kindergarten, and primary school functions are approximately 500 meters. Walking distance for Secondary schools is about 1000 meters. For high schools, this distance is 2,500 meters (Table 3).

Table 3. Distance of accessibility and minimum parcel size according to Regulation on Spatial Plans.

Urban land-use	Area size	Accessibility distance
Park	-	500 meters
Children playground areas	-	500 meters
Sport area	-	500 meters
Medical centre	750-2000 m ²	500 meters
Primary School	4.000-7.000 m ²	500 meters
Secondary School	5.000-9.000 m ²	1.000 meters
High School	6.000-10.000 m ²	2.500 meters
Small mosque	1.000 m ²	150 meters
Mosque	2.500 m ²	250 meters
Grand mosque (Kulliye)	15.000 m ²	400 meters

The railway and 35-meter cross-section road to the north of the urban transformation area constitute an artificial threshold in terms of pedestrian accessibility and walking distance. Therefore, it can be considered that public spaces should be met in the south of this line. In the projected area of urban transformation there is only educational facility and green area. Apart from this, it is seen that there is not any health, social, cultural and religious facility areas to be added to the area as well as to serve its immediate surroundings.

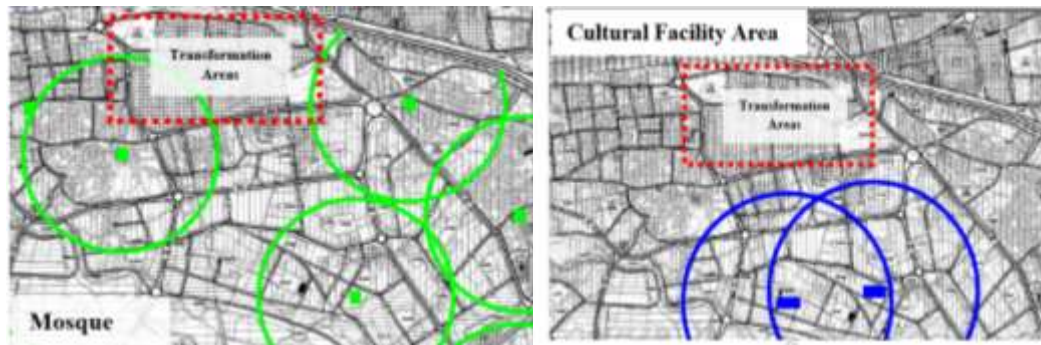


Figure 5. Accessibility and service area of mosque and cultural facilities

When the health, social-cultural and mosque areas in the southern part of the cement factory are considered in terms of walking distances, accessibility or walking distance is outside the scope of influence. Therefore, it is considered that the social reinforcement areas brought by the plan for the area of urban transformation and its close environment are insufficient in terms of walking distance.

As a result of the evaluations made, it is seen that the area subject to urban transformation is deprived of urban public service areas in terms of accessibility. Not only this area, but also the immediate surroundings of this area lacks public service areas. Having a built-in texture compels the creation of a new public sphere for land ownership. For this reason, the new public service areas to be developed within the area of transformation are seen as an important opportunity for both the area and its surroundings.

VI. CONCLUSIONS

In this study, a critical point of view is developing on the essential planning approach for the transformation of industrial areas within the city, especially in the medium-sized Anatolian towns. As a result of the research, it has been determined that these areas, which are foreseen to be spatial and functional transformation within the framework of public interest, contain some simple and inaccurate approaches which are in fact not suitable for public interest. The main focus in the transformation of inner-city industrial areas, especially on air-image pollution and traffic problems, is stated as environmental sensitivity and protection of public interests. Comparing the two processes related to the transformation process and its aftermath, it is determined that a new spatial organization, which is contrary to the public interest, has emerged. In the interest of public interest, this creates new environmental problems with the incompatibility of existing land and the high density construction scheme it will create. However, another critical issue in terms of public interest is the approach developed by the urban public service areas.

In the examined example, it is determined that urban areas are designed in terms of area per capita in terms of urban technical infrastructure and on the other hand, rather poor urban areas have been designed for accessibility. Another issue, however, is the cultural sustainability dimension. The complete destruction of the structures that have created images in urban memory can be considered as a very primitive approach. The fact that there is no trace for the next generations after the transformation of the field is an action that will create a cultural disconnect between generations. However, many buildings such as places of worship, social-cultural facilities, dining halls in the factory area can be transformed into similar public service structures such as health facilities, cultural facilities, kindergartens, and made available to the local people. Besides, the chimney structure of the cement factory can be transformed into an important landscape element and urban image by integrating it with the green areas which have a dense tree texture. All these actions can contribute to inter-generational cultural continuity as well as to support the creation of a new urban environment.

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