

FROM A PLANNED CAPITAL TO A SCATTERED URBAN FORM: ANALYSING THE SUSTAINABILITY IN ANKARA

Ozge YALCINER ERCOSKUN, Res.Asst.*
Cigdem VAROL, Ph.D
Nilufer GURER, Res.Asst.

*Gazi University, Faculty of Engineering and Architecture, Department of City and Regional Planning,
06570 Maltepe-Ankara, Turkey,
ozgeyal@gazi.edu.tr, cvarol@gazi.edu.tr, ngurer@gazi.edu.tr

Keywords: compact cities, decentralization, urban macroform, urban sprawl, urban sustainability, Ankara.

Summary

Sustainable development has a strong relation with urban form. A sustainable city, should have a form suitable to walking, cycling and should contain an efficient public transport system. However, especially in developing countries, rapid increase in urban population causes high rates of urban sprawl that increases distances among urban functions like residential areas, work places, social and cultural spaces as well as recreational areas. Scattering of such functions horizontally on the land causes difficulties in providing urban services, infrastructure and loss of arable lands. Thus, in the recent years, for overcoming such problems some theoretical approaches like compact city forms, mixed use developments, garden cities supporting urban sustainability have become part of the discussions. The aim of this paper is to analyse the advantages and disadvantages of compact and decentralize city forms and to explore urbanization process in the capital of Turkish Republic, Ankara within this theoretical framework. To achieve this aim, in the first part sustainability related with the urban form is being discussed theoretically; in the second part, Ankara and its urban form is examined within a historical spatial perspective from a view of urban sustainability supported with maps, plans and satellite images; and in the last part urban sustainability of Ankara is analyzed in environmental, economic and social perspectives.

1. Sustainability and the Urban Form

Since the Industrial Revolution, urban structures have changed dramatically and characterized as sprawl of urban concentrations. When first towns began to emerge 10.000 years ago, they were concentrated in a city wall for protective purposes, but with the development of industry and transport with the 19th and 20th centuries, cities have expanded out of the walls. In the process of industrialization, population patterns in larger contexts began to concentrate in cities and cities began to grow rapidly. Although this process of urbanization for the leading countries of industrialisation was more controlled, it was often uncontrolled for developing countries. The rapid population increase in the capitals and in industrialising cities of developing countries brought unrestrained urban settlements and overloaded urban densities. Such spatial developments caused environmental problems threatening the natural resources, thus urban sustainability.

In the recent years, city researchers have tried to find strategies and different planning approaches for urban sustainability in order to leave the future generations an inheritance of livable cities. There are some debates on urban planning and design of strategies that evolved currently like centralization, decentralization and concentration-sprawl. In some cases, urban planners support compactness or compact cities whose benefits are mostly seen for urban sustainability. In a sustainable development having several smaller compact towns and cities are favourable (Hoyer et al. 2003). On the other side some urban planners support the idea of decentralization for providing better urban quality. Considering these two point of views, Naess (1997) defines two competing models of sustainable urban development. On the one side, there are compact cities, on the other side there are decentralized cities with large green areas. Both approaches have some environmental, economic and social advantages and disadvantages that are listed in Table 1.

Table 1. Comparison of Compact City-Centralization with Green City-Decentralization

	Advantages		Disadvantages
Compact City-Centralization	Environmental	<ul style="list-style-type: none"> * protection of rural and green areas * neighbourhoods within walking and cycling distance * low emission level by decreasing the use of vehicle * less automobile dependency * lower levels of air pollution * less energy consumption 	<ul style="list-style-type: none"> * loss of green and open areas in the city * parking problems and congestion * noise pollution * negative effects on health
	Economic	<ul style="list-style-type: none"> * re-use of built land and infrastructure * better accessibility * short travel time * economic attractiveness by supporting small firms and local entrepreneurs, * enhancement of business and commercial facilities 	
	Social	<ul style="list-style-type: none"> * better public transport services * social and cultural diversity and activity, more alive, safer, socially mixed and equal environments * exchange in information, friendship, goods, culture and skills in social life * support of emotional, psychological and spiritual support 	<ul style="list-style-type: none"> * loss of privacy with increased urban densities * increase in urban rent, land prices * increase in crime * crowded environment * rejection of suburban and semi-rural living, neglect of rural communities
Green City-Decentralization	Environmental	<ul style="list-style-type: none"> * increase in green areas in the city centre * reduction of congestion in residential areas * sufficient parking areas 	<ul style="list-style-type: none"> * more energy consumption * more water consumption * visually monotonous environment * increase in automobile dependency * loss of rural areas by sprawl * occupation of hazard-prone areas (floodplains, steep slopes, vacant land near to industries)
	Economic	<ul style="list-style-type: none"> * cheaper and affordable land 	<ul style="list-style-type: none"> * difficult to serve public services and infrastructure * absence of adequate public transport * increase in the squatter settlements by zoning the industrial areas * higher cost of public services, collection * waste of time in transportation, commuting
	Social	<ul style="list-style-type: none"> * safer environments for children in the accessibility to the schools 	<ul style="list-style-type: none"> * no cultural activities, loss of public life * social segregation * unsafe places in the evening

Source: (Frey, H., 1999, Oktay, D., 2004, Leitmann, J., 1999, TÜBA, 2004, Jenks, M. et al., 2000)

It is seen from Table 1 that there are several advantages and disadvantages of both city forms. Within this theoretical framework, Ankara is examined historically by its changing urban macroform in the second section. In doing this, a general location of Ankara is defined and the development plans are analysed in details.

2. The City of Ankara and Its Changing Macroform

The city of Ankara lies in the centre of Anatolia on the eastern edge of the high Anatolian Plateau with an altitude of 850 m. The city is mainly situated in the bowl-like topographical structure surrounded by mountains on three sides and opening as a plain towards the west (Figure 1a, 1b). Towards the west runs Ankara Stream which divides the settlement area of the city into two as northern and southern parts (Altaban, 1987:11). Archaeological explorations show that Ankara has been inhabited since the Old Stone Age (Buluç, 1991:13). The earliest document about the physical appearance of Ankara is the sketch of Dernshaw drawn in 1555. It is seen from this sketch that Ankara was an open city settled on the plain surrounding the hill where a castle was placed (Aktüre, 1992: 34).



Figure 1a. Topographical structure of Ankara
Source: MTA web site



Figure 1b. IKONOS Satellite Image of Ankara
Source: TMMOB Chamber of Architects, 2004

Until the beginning of 20th century, the macroform of the city has not changed much. The importance of Ankara changed to great extent at the beginning of the 1920's; as it became the capital of Turkish Republic in 1923 (Bademli, 1985:10). A rapid transformation in the city macroform can be observed due to the attempts to enhance the image as the new capital and due to the increase in population. The population of the city increased rapidly in a short time and 20.000 inhabitants in 1920 reached to 75.000 in 1927. For the increasing population, Lörchere prepared a local plan, opening a new settlement area in 1925. This was the first attempt in realising the development of the city on new lands, apart from the old city; creating a dual structure (Bademli, 1987:105).

The increase in the population caused changes in the intensity in the old city, thus new development areas began to evolve towards the south of the old city. "Within this era there is no frame that would determine and guide development and integrate the old and new settlement areas" (Tankut, 1993:44) thus, the need for a development plan for this rapidly growing city was obvious.

Since being the capital Ankara has lived five planning experiences. These five plans till now are:

- Jansen Plan (1928)
- Uybadin-Yücel Plan (1957)
- Metropolitan Planning Office Plan (1970)
- Ankara 2015 Structure Plan of METU (1985)
- 2025 Plan of Ankara Greater Municipality (1996)

• **Jansen Plan Period:** An international competition was arranged and among three plans, Jansen Plan with its modest approach was found to be more compatible determining the image of the new capital and the new regime (Günay, 1988). The plan proposed a development in the north-south direction with a single artery connecting north to south, and a secondary artery parallel to the railroad for east-west extension of the new town (Günay, 1988:30). Neighbourhood units were forming the basis of the plan and these units were designed to have an organic internal pattern following the Garden City approach. The plan emphasised the pedestrian routes and aimed at minimising the motorized traffic routes. Jansen utilised a green belt around the city, and integrated this green belt with the city through the protection of riverbeds, valleys and hills protecting the topographic, morphological and microclimatic values. This responsive plan for natural values showed the importance of green areas such as 1490 ha green area for the population of 300.000 (49.66 square meters per capita).

Jansen proposed a reserve area in the northern slopes of the old city for further growth; however the development pressures that were not compatible with the plan caused squatting in certain portions of the city and comprised density increase in the city opening up of new land for urban development (Tankut, 1993: 243) (Figure 2). The plan reached its target population already in 20 years period thus a new competition is held to produce a new master plan for the city.

- **Uybadin-Yücel Plan:** The winning plan was an extension of Jansen plan, which brought an organic internal pattern as the follower of the Garden City tradition. It emphasised the north-south axis and the limits of development reached to higher altitudes. A contribution of the plan was the peripheral road in the west of the city connecting to other arteries as intercity highway network (Günay, 1988: 34). Jansen's determination of the new city as the administrative centre caused the development jump into the southern part of the city. The old city expanded its central functions, and the major artery, which was proposed towards south axis, gained too much importance with residential and commercial functions in the new city (AMNPB, 1977: 321-322).

The plan remained insufficient in bringing solutions to the problems of the city and failed in providing a form and structure of the city to guide further development. The plan rather than directing the future developments, stood as a plan directed by the past and the present developments with a limited point of view (Bademli, 1987:107). The plan was insufficient in dealing with the speculative pressures started in the 1960s and it was disturbed by local plans aiming at density increases. The increments in building densities brought an overloaded population in the plan area. The plan could not cope with the demands of the ever increasing population thus it lost its context and the form of the city was destroyed. The idea of low-density garden city was used to create a high density, dull and monotonous city (Günay, 1988:38). The city in this era, continued to grow in an oil-drop form and environmental problems like air pollution emerged in the late 1960s (Figure 2). The continuous increase in population and development pressures necessitated a new plan.

- **Metropolitan Planning Office Plan-1990 Master Plan:** The new plan which has recently been the legal document directed the development towards the western corridor including the squatter prevention zones, new housing developments and industrial zones (Bademli, 1987:110). The present macroform of Ankara was rather irregularly shaped and compact though there exist linear extensions along the main roads to the city. The main part of the city, apart from the new linear development areas, was quite compact and did not show discontinuities. Akçura (1971:72) relates the compactness of the city to topography and other natural properties of the settlement area, which did not force the city to break and to spread around. The breaks between the main part and new development areas were ignorable in the metropolitan scale.

During this plan period, the city spread continuously over the higher edges of the bowl-like entity and also exceeded outside the bowl to the valleys around it. The city extended along its boundaries in every direction and at the same time linear growth along the main roads to the city came into existence in the last decades. In order to overcome the disadvantages of the centralised macroform, new planning strategies directed the growth along axes; most densely along western corridor (Figure 2).

- **Ankara-2015 Structure Plan of METU:** After the three plans, Ankara-2015 plan which was prepared by academicians of Middle East Technical University (METU) brought a different perspective to the growth of the city. Decentralization was determined as the primary aim for the future developments of Ankara in this plan. The population estimations for 30 years period showed that, the city would double and would reach to a population of 5 millions, so it was no more feasible to concentrate this population in compact macroform. Furthermore the macroform was definitely limited geographically in the north, south and east; and by extensive public uses in the southwest and west. Günay (1988:46) states "the new macroform is based on six growth directions where geographically suitable western corridor is still the bulkiest. In between the growth directions, green belts are proposed". The new plan proposed a parallel system to the existing road network to provide new hierarchy in the transportation. With this structure plan, the dense structure of the city was being decentralized and an axial development structure was aimed (Ceylan, 2003). Green belts and open green spaces were forming a green system. Large green parks in the city and water basins were thought as parts of this green system. Although 2015 plan was not put into force, it acted as a guide especially in the peripheral developments (Figure 2).

From 1985 to 1997, city macroform of Ankara has expanded to higher altitudes of surrounding mountains to the north, southeast, and to valley bottoms and basin floors to the west and southwest. Therefore some parts of 1985 macroform expanded to altitudes of 1500 meters in 1997. The

continuous expanding after 1985 has reached to unsuitable lands by unplanned squatter developments settled on periphery of planned development and cheap land markets.

- **2025 Plan of Ankara Greater Municipality:** The 2025 master plan, prepared by Ankara Metropolitan Municipality but not become a legal document, enlarges the city towards the limits of the ring road, even goes beyond the ring road in the northwest direction. At the plan, especially in the areas between the ring road and the city were suggested new settlements, forestation and recreational uses. With the plan, it is aimed that, the expected population for the year 2025 would be 6.5 million, which is quite high for the city whose population increase is slowed down since 1990s. The areas including the universities towards the south are defined as huge green areas of the city and natural valleys and mountains in the south are offered as tourism recreation centres. These areas have to be accepted as a main data for the metropolitan plan of Ankara and should be protected and developed. Although the plan determines conservation areas and defines the methods for preserving the Metropolitan Area, some of the proposed residential developments like in southwest development may results in unsustainable development due to the excess land development in the ecologically sensitive areas (Figure 2).



Figure 2. Five development plans of Ankara
Source: Bademli, 1990; Ankara Büyükşehir Belediyesi, 1998

The changing macroform of Ankara metropolitan city can be understood more clearly when five development plans are overlaid (Figure 3).

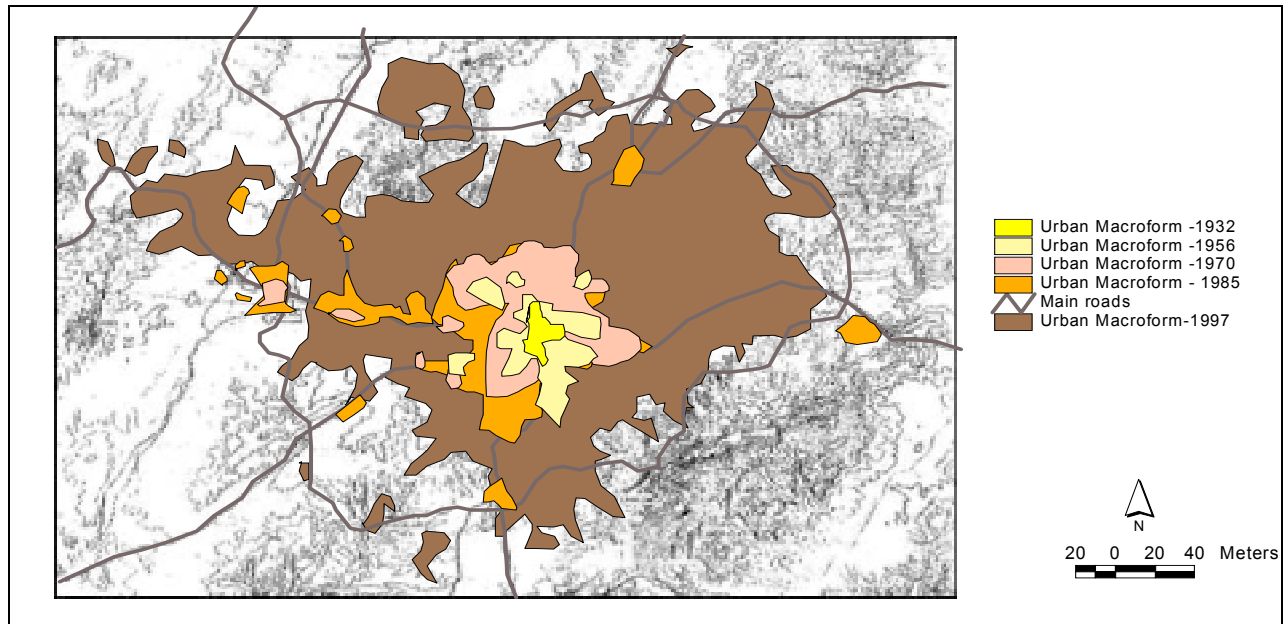


Figure 3 The changing urban macroform of Ankara due to five plan periods
Source: Günay, 1988; Greater Municipality of Ankara 1997 land use map

Conclusion

A rapid urban growth still takes place in the developing countries. Urban population of developing countries has increased 7 times between 1950 and 2000, from 300 millions to 2 billions (Burgess, 2000). Ankara as being the capital of Turkey also has been living such a rapid urban growth. This growth has tried to be guided by development plans which define the urban macroform. The city has experienced five planning periods, which consist of compact and decentralized forms. The first plan of Jansen proposes a compact organic development form and the second plan of Uybadin continues this compactness. The third plan of Metropolitan Office which is the current legal document brings linear extensions over the existing compact form. However, 2015 METU plan proposes a different approach bringing decentralization point of view. Although the plan proposes a decentralized form, the rapid increase in population fills the transition areas with illegal settlements thus causes the current form transformed into an oil drop development. The last 2025 plan of the Greater Municipality, which has not been accepted as a legal document yet, proposes excess development areas. Considering all of these plans it is seen that Ankara has become neither a compact nor a decentralized city. In the Republican period, Ankara grew rapidly and spread out over a wide area as never reached throughout its history. Thus, the city is no more situated on and around the hilly area where the castle existed, but it has grown towards the limits of the bowl-like topographical entity; even to the inhabitable steep slopes of the hills and valleys around it with squatter zones in three directions, and further on the plain towards west with planned developments.

In regard to the urban sustainability in Ankara referring to Table 1; environmental, economic and social evaluations are made. It is seen that because of the rapid population growth and insufficient guidance of the development plans, Ankara has developed in an oil-drop form expanding in the west and northwest (Figure 3). Within the environmental approach, such an oil-drop development has caused loss of natural areas and the sprawl brought more energy consumption. It is seen that energy savings can rise up to 150 percent in cities by changing the form, size, residential density and the location of activities (Leitmann,1999). The changing form of the city has not been efficiently supported by the transportation systems. Especially, the quality and quantity of public transportation system in Ankara have become insufficient, so the percentage of the usage of private cars has increased gradually. This has caused lots of environmental problems like air, water and noise pollution and traffic congestion. Besides, the green areas in Ankara have decreased because of rapidly growing population and the density increment in the city centre. Consequently, the quality of life reduces and urban sustainability of the city runs a risk. However, in the recent years local authorities have realised that green areas need to be given extra attention to ensure a better quality of life in their cities. Thus, they try to increase this ratio by activating new projects in the urban periphery.

From the point of view of economic consideration, Ankara as being the service centre of Turkey continuously has been attracting population. The development of the city in the oil-drop form increases the cost of infrastructure. In contrast to the rapid increase in population, the development of land is quite slow that causes illegal settlements especially in the fringes. The density increment in the centre of the city and the land demand especially in the western corridor increase the land prices and urban land rent. As a result, it is seen that Ankara has become one of the cities with the highest land prices in Turkey. The linear development of the city towards west causes linear commercial and public activities along two main axes and the formation of shopping malls in the new development areas. This development trend goes towards a polycentric urban structure.

With the sprawl of the city, many new residential areas have emerged in southwest and northwest parts of the city. Northwest districts have middle income and southwest districts have high income inhabitants. Illegal settlements located in the periphery of citadel and industrial areas located in different sides of the city generally have low income inhabitants. Such decentralised housing policies bring a social segregation in Ankara. Also, zoning of residential areas has protected the privacy in these areas. Coming to the social interaction, it can be found in the main city centre, in the urban square with meeting and shopping activities. Also there are some cultural facilities in the city centre like cinemas, theatres and some festivals but it is quite limited for a metropolitan city and for a capital.

As a result lower levels of economic development, smaller urban budgets, and shortages of environmental infrastructures, shelter and basic services in developing countries have resulted in a different pattern of urban development and environmental degradation which looks as unsustainable. Similarly for Ankara, when three approaches are evaluated the development seems quite unsustainable. However, economic, environmental and urban sustainability could be achieved by applying sustainable principles by strategic planning. A strong emphasis should be given to urban management. There may be a shift away from development planning on controlling and limiting development towards strategic planning using proactive and flexible measures based on a consensus of city interests. They should be incorporated within existing structures for strategic urban planning like strategic plans for the CBD and periphery, urban transport strategies, urban regeneration, urban compaction, suburbanization etc. Polycentric cities whose centres contain mix-use land pattern and connect to different subcentres by effective and environmentally sound public transport infrastructure should also be encouraged within metropolitan areas where the central cities are unable to function efficiently if they retain their original monocentric spatial structures. Environmental issues should be integrated into the planning system on spatial, land use, energy and transport dimensions considering economic and social decisions. Sustainability principles should be incorporated into effective implementation on the city to build a 'city vision'.

References

- Akçura, T., 1971, Ankara - Türkiye Cumhuriyeti'nin Başkenti Hakkında Monografik Bir Araştırma, ODTÜ, Ankara
- Aktüre, S., 1992, Osmanlı Döneminde Ankara'nın Ticaret Merkezi Hanlar Bölgesi, in N. Şahin (ed.), Ankara Konuşmaları, TMMOB Chamber of Architects, Ankara Branch, Ankara
- Altaban, 1987, Ankara'da Kentsel Alanın Doğal Çevreye Yayılımı, in Ankara 1985'ten 2015'e, ed. İlhan Tekeli, Ankara: Ajans İletişim
- AMNPB, 1977, Ankara Metropolitan Nazım Plan Bürosu Raporu, pp. 321-322
- Ankara Büyükşehir Belediyesi, 1998, İmar Daire Başkanlığı Metropolitan Alan Nazım Plan Şube Müdürlüğü
- Bademli, R., 1985, 1920-40 Döneminde Ankara'nın Yazgısını Etkileyen Tutumlar, Mimarlık Journal, Vol.121, pp.10-16, Ankara
- Bademli, 1987, Ankara'da Kent Planlama Deneyi ve Ulaşılan Sonuçlar, in Ankara 1985'ten 2015'e, ed. İlhan Tekeli, Ankara: Ajans İletişim
- Bademli, R., 1990, 1990'dan 2000'li Yılların Ankara'sına Bir Bakış, Ankara Dergisi, 1(1), pp:35-44
- Buluç, S., 1991, İlkçağda Ankara, Ankara Dergisi, Vol.2, pp.13-22, Ankara

Burgess, R., 2000, A Compact City Research Agenda for Developing Countries, Globalization Urban Form&Governance First International Conference Alfa-Ibis Proceedings, Carmond, M., Drewe, P., Rosemann, J., L.van Duin (eds.), Delft University Press, The Netherlands

Ceylan, A., 2003, Structural Tools in The Making of Cities: Form as a Development Control Mechanism, unpublished Msc thesis, METU, Ankara

Frey, H., 1999, Designing the city: Towards a more sustainable urban form, E&Fn Spon, London

Greater Municipality of Ankara, 1997 landuse map, http://ankara.spo.org.tr/ankara_05.php, visiting date: 28/02/2005

Günay, B., 1988, Our Generation of Planners, The Hopes, The Fears, The Facts; Case Study: Ankara, Paper Submitted to Scupad 88, 20th Anniversary Meeting, Salzburg

Hoyer, K., Holden, E., 2003, Household Consumption and Ecological Footprints in Norway- Does Urban Form Matter?, Journal of Consumer Policy, 26, pp.327-349

Jenks, M., Burton, E., Williams, K., (eds.), 2000, The Compact City: A Sustainable Urban Form?, E&FN Spon Publishers, London

Leitmann, J., 1999, Sustaining Cities: Environmental Planning and Management in Urban Design, McGraw Hill Professional Architecture, USA

MTA web site, http://www.mta.gov.tr/mta_web/fizikiharita.asp, visiting date:28/02/2005

Næss, P., 1997, Fysisk planlegging og energibruk (Physical planning and energy use), Oslo: Tano Aschehoug.

Oktay, D., 2004, Urban Design for Sustainability: A Study on the Turkish city, Int. Journal of Sustain. Dev. World Ecology, 11, pp. 24-35

Tankut, 1993, Bir Başkentin İmarı: (1929-1939), Anahtar Kitaplar, İstanbul

TMMOB Chamber of Architects, IKONOS Satellite Image of Ankara, 2004 Calendar

TÜBA, 2004, Quality of Life Indicators, A proposal for Turkish data system, The Turkish Academy of Sciences Reports, Environmental Work Group (Yasam Kalitesi Gostergeleri, Turkiye icin bir veri sistemi onerisi, Turkiye Bilimler Akademisi Raporlari, Cevre Calisma Grubu), Vol. 6, Ankara