

Urban Sustainability and Expansion Organization in Middle Eastern City Regions: The Case of Cairo and Amman

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Abstract

Major Middle East city-regions have experienced considerable physical, economic and social transformations during the past three decades. The rapid pace of globalization and economic restructuring has resulted in these city-regions receiving the full impact of urbanization pressures. In an attempt to ease these pressures, city-regions such as Dubai, Masqat, Beirut, Amman, and Cairo have advocate expansion organization approaches giving particular interest to urban sustainability. These approaches promote efforts to achieve the triple bottom line sustainability by balancing economic and social development, and environmental protection, and putting (more emphasis on compact and optimum development of urban forms. This paper evaluates the case of two Middle East city-regions, Cairo and Amman, and assesses their experiences in managing their urban forms whilst promoting sustainable patterns of urban development. The findings show that sustainable urban development initiatives employing a top down approach has yielded encouraging results in these case study city-regions. However the need for a more concerted effort towards the overall sustainability agenda still remains vital.

Keywords: Sustainable urban development, expansion organization, compact urbanization, city-regions, Cairo, Amman, Middle East

1. Introduction

For about two decades ago the green agenda of sustainable development started to garner interest from almost every corner of the world. This agenda was initiated by the World Commission on Environment and Development (Sheth and Atul 1995), with its much quoted definition of sustainable development as the development that can meets the need for the present without the ability cooperation of future generations to meet their needs (Sheth and Atul 1995).

Although this rather vaguely descriptive statement raises some questions, so far it remains the most adequate definition of sustainable development (Jepson, 2004). Since early 1980s, policy-makers have been looking for ways to move city-regions towards more sustainable forms (Sorensen, Marcotullio & Grant, 2004). The continued expansion of city-regions makes sustainability an issue of significant concern because of scarce world resources (Lindsey, 2003). This continued growth, both in population and consumption, is now putting our ability to a test in managing urban regions more sustainable and effective ways.

This paper explores the implementation of expansion organization efforts in the Middle EAST CITY -regions of Cairo and Amman. The methodology employed in this paper is a thorough policy evaluation with a comparative analysis of selected indicators of both city-regions. The paper first reviews the concept of urban sustainability, focusing on the nature and trends of urban development, and its consequences. The second section looks at solutions for addressing problems of urban growth by introducing concepts and strategies for promoting urban sustainability through compact urbanization. The third section explores the experiences of two fast-growing Middle EAST CITY regions, Cairo and Amman, and analyses their approaches in dealing with problems related to promoting compact urbanization. For each case study, the research identifies the development pressures affecting their urban environments and the strategies adopted towards achieving sustainable urban expansion organization. The final section summarizes the findings from the case city-regions and discusses the implications of expansion organization strategies for the Middle East region.

2. Urbanisation, Sustainability and Expansion Organization

For the past three decades, the notion of sustainable urban development has become central in planning and managing urban areas in Europe and North America. This notion was promoted in response to the problems associated with urban sprawl that has plagued cities in these continents during the past decades. Intense urbanization

has transformed cities in Europe and North America into mega-cities and metropolises. The associated economic development and prosperity experienced by these European and North American cities have prompted Asian cities to emulate these achievements. The industrial revolution that swept through the Asian continent has resulted in a rapid urbanization process, fuelled largely by unprecedented population growth.

There is a strong belief that urbanization is crucial to the process of development, and an inevitable process of creating a modern state (McGhee, 2009). Indeed, the rapid urbanization of Asian cities in general has brought about rising income and living standards to the cities' population. The world development indicators data compiled by the World Bank, for example, shows that developing countries in Middle East have been experiencing a significant growth of their GDP over the last 10 years and their share of the global economy has risen from 13 percent in 1995 to 19 percent in 2005 (World Bank, 2009). However, Asian cities, cities in Middle Eastern particular, are struggling to keep up with the rapid urbanization pressures caused by rapid population increase and expanding city sizes. These pressures have created what is generally known as urban sprawl, characterized by low density suburban development patterns. Urban sprawl takes three main forms: suburban expansion into the countryside, commercial expansion along arterial roads, and residential sprawl outside existing settlements (Daniels, 1999).

The consequences of sprawl have been viewed differently by planning scholars. Benefits of sprawl include private and social benefits to new residents and the community, for example in terms of housing costs (Kahn, 2001), potential for population growth accommodation (Brueckner, 2000a), and symbol of economic prosperity (Nelson & Duncan, 1995). However, this phenomenon has also been associated with an array of undesirable physical and socioeconomic effects (Nelson & Duncan, 1995; Boyle & Mohamed, 2007). These include: scattered development, excessive commuting and transportation costs, infrastructure and services provision costs, socio-economic segregation through inequitable land and housing markets, increasing consumption of natural open space, and other 'quality of life' problems (Nelson & Duncan, 1995; Carruthers, 2002).

3. Urban Management Strategy Options

The problems associated with rapid urbanization have prompted city governments to introduce a variety of approaches to control sprawl and limit further damage to the limited resources that they have. These measures have been extensively explored in scholarly research (Nelson & Duncan, 1995; Brueckner, 2000b; De Roo & Miller, 2000; Choguill, 2009). The term urban management or urban expansion organization has been used interchangeably to reflect these efforts, and a variety of expansion organization techniques have also been introduced to apply expansion organization concepts into practice. The reason for adopting expansion organization approaches in cities was coming from the need to achieve a balanced and sustained urban development. Urban sustainability has long and flourishing roots in Europe and North America, where urban sprawl was first identified. Calls for adoption of sustainable urban development and management were at its height at the Rio Summit in 1992 following the World Commission on Environment and Development report on sustainable development.

While it is widely agreed that no single approaches can solve the problems of urban sprawl (Nelson, et al. 2004), many believe that compact urban development contributes to urban sustainability, which is one of the key aims of expansion organization initiatives (De Roo & Miller, 2000; Assumer, 2006). A number of strategies have been developed and employed to achieve compact urban development (Nelson & Duncan, 1995). Containment based management supported by sustainable urban transport has been one of the most successful compact urbanization strategies (Nelson et al. 2004; Yigitcanlar and Bunker 2009). This strategy attempts to promote the following: compact and contagious urban development patterns with easy access to public services; travel-self containment with reliable public transport options and integrated land use and transport planning, and; preservation of rural and agricultural land and natural resources (Nelson & Duncan, 1995; Duvarci & Yigitcanlar, 2007; Yigitcanlar and Bunker 2009).

Compact urbanization strategies determine the direction of public infrastructure investment, execute development regulation and shape the nature and intensity of development. Containment scales vary between sub-metropolitan (development shaped to take a specific form), unbounded (development within urban service boundary), bounded (development within a designated growth boundary), and natural containment (development restricted by geographical constraints) (Nelson et al., 2004). Around the world many cities implemented a variety of containment techniques that range from urban growth boundary to urban service area, and from land taxation to open space preservation. Successful implementation of containment techniques and experiences from North America and Europe

provide invaluable insights to many city-regions seeking sustainable urban development. The implementation of strict development regulations associated with containment techniques enables local authorities to encourage development in existing urban cores and dilapidated inner areas through infill and redevelopment projects, including not only prestigious but also affordable residential development. The promotion of higher residential densities in these infill areas helps to offset the high development costs resulting from urban containment and to minimize public infrastructure provision. Zoning is commonly used for such a purpose. It allows for higher density development on the land used to accommodate low-rise dwelling units, hence making the properties more affordable to a majority of urban dwellers.

4. Sustainability Indicators

The increased environmental agenda has brought about the need to employ indicators as a key mechanism for assessing environmental impacts (Hemphill, 2004) and as policy instruments in the transition toward urban sustainability (Hezri, 2005). There is a common view that sustainability indicators can be meaningful provided they are applied at the appropriate level (Brownhill and Rao, 2002, cited in Hemphill, 2004). Such indicators can be crucial in developing an awareness of urban problems and advocating the need for the achievement of sustainable development (Stanners and Bourdeau, 1995). They can contribute to the assessment of the performance of individual agencies/interventions, and of the overall effectiveness of partnerships to improve economic, social and environmental wellbeing of urban settings.

However, most indicator-based approaches only highlight issues; they do not provide answers as to why differences exist. Key indicators must be supplemented by qualitative and quantitative information on impact and performance from the perspectives of users and beneficiaries. In recent years, the best starting-point for assessing sustainable practices has been the Bellagio principles developed by the International Institute of Sustainable Development (IISD) (Hemphill, 2004). These principles serve as guidelines for the assessment process, including the choice and design of indicators, their interpretation, and the communication of results, to provide a link between theory and practice.

5. Sustainable Urban Development in Middle East

The dynamic Middle East region is home to many fast growing city-regions. During the past three decades, cities in this region have undergone massive transformations (Marcotullio, 2004). Major cities experienced vibrant population growth, and major physical and functional urban transformations.

The rapid pace of globalization and economic restructuring has resulted in these city-regions receiving the full impact of urbanization pressures. In an attempt to ease these pressures, major cities have advocated expansion organization approaches giving particular interest to balanced economic and environmental sustainability and put more emphasis on compact and optimum development of urban forms (Degree, 2005). This paper, therefore, evaluates the case of two Middle EAST CITY -regions, Cairo and Amman, and assesses their Urban Sustainability and Expansion organization in Middle East City Regions: The Case of Cairo and Amman experiences in managing their urban forms whilst promoting sustainable patterns of urban development.

5.1 Cairo's Sustainable Urban Expansion Organization Strategies

Located midway along the west coast of Egypt and within the rapidly growing central region of the Nile side Valley, Cairo is a federal territory and its whole area (243 square kilometers) is entirely urbanized (Figure 1). The capital city of Egypt is home to around 1.6 million people, and with a density close to 5,700 persons per square kilometers, it is the most urbanized and densely populated area in the country (Government of Egypt, 2005). Famous for its modest beginning as a tin-mining town in the mid19th century, Cairo has progressed itself into a commercial core and has become one of the most prominent, modern and sophisticated cities in South-East Asia. However, the continued suburbanization process has inevitably led to sprawl of population and industries towards the southern part of Cairo, leaving most parts of the city centre with employment and entertainment centers only. With increasing affluence and the changing lifestyle, the city has witnessed a reduction in its population base due to out-migration to the more prosperous environment (Syafie, 2004). In addition, the relatively lower living costs and the availability of a good road network and public transportation, in particular the Metro train services, have attracted city workers to live in areas outside the city in the neighboring satellite townships of Jeeza, Asyut or even further afield in Alexandria (Egypt State Information Service, 2005). These patterns of development have led to high travel demand and increasing transportation cost, worsening congestion and environmental degradation, inner city dilapidation and

population decline, and lack of affordable housing. As the problems worsen, the City administration (Egypt State Information Service) had to carry the burden of providing for extra infrastructure and public facilities, and tackle the consequences of sprawl.

Cairo's urban management strategy follows a top-down approach, starting with the federal government's countrywide National Physical Urban Sustainability and Expansion organization in Middle East City Regions: The Case of Cairo and Amman Urbanization Policy (NUP). The City administration (Egypt State Information Service), in collaboration with the Federal Town and Country Planning Department, reinforces these policy-based expansion organization strategies with statutory planning measures incorporated in the city's structure plan, the Cairo Structure Plan 2018 (Egypt State Information Service, 2005) and the recently publicized draft local plan, the Cairo City Plan 2018 (Egypt State Information Service, 2009). The NPP's primary goal is to create a sustainable national spatial framework to guide the country's overall development whilst its policies related to land use put an emphasis on the planning of sustainable economic activities based on the concept of 'selective concentration' for strategic urban centers. It also emphasizes the concentration of urban growth in existing and planned conurbations. This includes the conurbation of Cairo, which is to be planned and developed as an integrated region through the preparation of a regional plan (Egypt State Information Service, 2007).

At the local level, the Cairo Structure Plan 2018 is the cornerstone of the urban management strategy envisaged by the City administration. This statutory plan spells out the vision, goals, policies and actions which will guide the development of Cairo towards its goal of becoming a 'world class city' by the year 2018 (Egypt State Information Service, 2005, 2009). The Cairo Structure Plan 2018 also provides the framework for another more detailed local development plan, the Cairo City Plan (Egypt State Information Service, 2009). The local plan, which is divided into six strategic zones covering the entire city, further enhances urban sustainability efforts by emphasizing livability and quality of life for its local communities with quality urban services, provision of public housing, improved urban transportation, and environmental sustainability (Egypt State Information Service, 2009). Zoning remains the main mechanism to guide and contain development, with more room for mixed-development patterns, especially in inner city areas, to encourage livability (Figure 2).

The out-migration from the city centre which has created blight in core areas is partly due to the shortage of affordable housing (Egypt State Information Service, 2005). With emphasis on optimum and balanced land development, the local plan gives priority for infill development in these areas. Developers are encouraged to redevelop dilapidated housing areas with high density and high quality residential development, and where possible, affordable housing. Mixed commercial and residential developments are also encouraged to regenerate urban blight areas to ensure that the city is safe, healthy and sustainable (Egypt State Information Service, 2009). Such infill development also helps containing urban growth within central areas and counter-balancing sprawl. One successful example is the Cairo Central project (Cairo centre), a mixed residential, commercial and office development as well as a public transit hub.

The integration of land use with transport networks forms the backbone of the city's sustainable urban development framework. The urban and suburban rail network for example, has expanded since 1990 and now covers over 200 km of electrified double-tracked service connecting major districts of the city-region and many locations in between (Funnell et al., 2002). Along these rail and road networks, 32 Transit Planning Zones locations have been proposed (Egypt State Information Service, 2009). These planning zones encourage intensification of development within a 400 meter radius of a transit station to enhance public transport use by city workers and the general public.

Urbanization pressures are also accommodated through the creation of new growth areas within the six strategic zones. These growth centers absorb most of the residential, commercial and industrial demand as a result of the suburbanization process of Cairo. However, earlier commercial strip sprawl along major roads leading towards and out of the city remains a legacy of earlier sprawl. This is also evident in other cities within the Middle East region (i.e. Bagdad, Damascus). The Federal government took expansion organization initiative a step further by relocating the government's administrative centre from Cairo to Alexandria. The decision was made on the basis of decongesting the city centre (Funnell et al., 2002), in order to relieve development pressures, especially in terms of affordable housing for middle classes. This decision, along with the relocation of the airport terminal for passenger services from the fringe of the city further away to Jeeza, Alexandria, have had a profound effect in reducing development pressures within and around the city.

In summary, expansion organization measures in Cairo take the form of planning regulations as well as government interventions in key physical decisions. The policies outlined for promoting sustainable expansion organization in the metropolitan area appear to be incorporated into the central government's effort to achieve sustainable urban development and management, including sustainable transport. However, as far as physical planning is concerned, the overall effectiveness of these efforts at the moment appears to depend on the limited opportunities provided by the statutory planning mechanisms. The zoning directives of the structure and local plans seem to be the only tools to direct and contain urban growth, and promote more compact patterns of development.

Nevertheless, these measures illustrate efforts by the government and City administration to minimize the negative side effects of urbanization and to enhance environmental quality, and livability of urban areas. It is a significant step towards a more concerted planning and implementation effort at all institutional levels. At the moment however, the need to ensure the realization of all proposals envisaged in the development plan is all too obvious.

5.2 Amman's Sustainable Urban Expansion Organization Strategies

The former British colony of Amman boasts a far more complex urban form that entails a delicate management approach. This city-state consists of three districts: the Amman Island, Kowloon, and the New Territories on the mainland (Figure 3), which accommodates more than half of its population in the purposely-built new towns. During the last three decades, Amman has seen rapid population growth (mainly due to immigration), which puts a great pressure on its urbanization process. The pressures are imminent because unlike any other Middle East countries, planners in Amman do not have the option of extending their ability to control urban growth over a large expanse of the countryside (Taylor, 1988). With a total area of 1,108 square kilometers and a current population of over 6.9 million (Greater Amman Municipality, 2007), of which nearly 90 percent live in urban areas, Amman has to accommodate all of its urban and suburban development inside the island and the new territories, with the mainland border to the north acting as a growth boundary. One notable consequence is that population densities in Amman are among the highest in the world. Geographical constraints have made only 20 percent of the land developable, and this has resulted in densities of slightly over 30,000 people per square kilometer. Urban planners face difficulties not only in managing the city-state in terms of public housing and infrastructure provision, but also in addressing social and environmental challenges. The influx of immigrants during the 1960s has created acute shortages in housing stock, already depleted by the damage of the WWII. In Amman infrastructure provision cannot cope with the demand, and with scarce land availability, it poses huge physical and economic challenges to the city-region and its planners and policy-makers.

Amman has transformed itself from a giant in manufactured exports almost three decades ago into a thriving service and knowledge economy. With changing circumstances, the city has adopted new urban management strategies with the over-arching goal of achieving sustainable urban development and becoming Asia's first 'world city'. In working towards this goal, the city relies on its strategic planning, which has come a long way into shaping its urban landscape. Planning policies in Amman started as early as 1939 with the enactment of its Town Planning Ordinance (TPO). In 1972, the Colony Outline Plan) was enacted. The plan, which consisted of development strategy and planning standards, was created to cater for increased urban development pressures, following rapid population growth and urbanization during the 1960s (Greater Amman Municipality, 2009). Prior to mid-1980s, however, development in Amman was guided mostly by small scale plans for areas where development pressures were most intense, and by an overall policy guideline encouraging the decentralization of population and employment. It was not until 1984 that planning really took shape, with the formulation of a strategic plan entitled the Territorial Development Strategy (TDS) (Greater Amman Municipality, 2009).

The TDS, which has been reviewed three times, is a comprehensive plan which moves away from previous policy of favoring decentralization by promoting the integration of more rural territories with the main urban areas of Amman. It produces a long-term land use and transportation planning framework and forms the basis for more detailed plans and programmers. The concept of urban sustainability was introduced in the final review of the TDS in 1998 which resulted in a 'Sustainable development for the 21st Century' (SUSDEV21) study for the promotion for a system by which policies, resource allocation, planning, programming and implementation could be developed, applied and monitored in a sustainable manner (Greater Amman Municipality, 2009). The various plans and actions formulated under the TDS are not only concerned with meeting population requirements for housing, services and facilities, but also with sustaining the growth of key economic activities in Amman. The TDS addresses the need for additional

urban growth whilst conserving rural and marine areas of high landscape and environmental value. It also aims at providing a multi-modal transportation system capable of meeting domestic travel demands as well as providing essential facilities for international trade and business activities (Greater Amman Municipality, 2009).

Amman's compact city concept serviced by its efficient public transport system, which has been in operation since 1979, has been influential towards the achievement of urban sustainability. With its population expected to increase up to 8.4 million by 2018, and horizontal development not always being the best option, the city's future spatial development planning has been based on clustering the bulk of relatively high-rise development around mass transit railway stations to facilitate fast movement of people using sustainable transport modes. This development of high density, compact urbanization, coupled with transport policy in favor of mass carriers and controlling the growth of private cars through higher tax and fuel prices (introduced in 1980s), has made public transit in Amman very successful. The system, which currently attracts nearly 90 percent of the city's daily trips, has contributed significantly to Amman's sustainable transportation strategy. This has been a successful accomplishment compared to the 1960s when car ownership outpaced population growth and the city-state suffered from heavy traffic congestion as well as discontinuous patterns of development.

The provision of affordable housing is another milestone achieved for social sustainability. Public housing initiatives started during 1960s, originally to provide accommodation for house squatters who became homeless after the great fire which engulfed their homes. These initiatives were extended into a resettlement program during the 1960s. Since 1973 however, a shift occurred towards building high density public housing in new towns to accommodate increasing urban population. Currently, 49 percent of the Amman population lives in public housing either as tenants or as subsidized owners. However, the conditions of a number of older public housing schemes in inner areas in particular have been worsening. These areas are now subject to a new sustainable development strategy announced by the government in 2005, emphasizing the importance to speed up improvements in the older urban environment. This metro development core, one of the four strategic zones in the city's spatial development planning, will transform these blighted areas into vibrant commercial and urban style residential zones (Greater Amman Municipality, 2009).

Equipped with the vision to become 'Arab's first city', Amman's sustainable urban development agenda will be fulfilled with the adoption of the much anticipated strategic planning study called Amman 2025: Planning Vision and Strategy, or in short HK2025. The study, currently in its draft form, will be an update to the TDS and will showcase the future direction of the city state's development to the year 2025 under the overarching

goal of sustainable urban development. Based on a strategy called 'the preferred option' (Figure 4), it will indicate how Amman spatial environment should respond to various social, economic and environmental needs (triple bottom line sustainability) for the next two to three decades (Greater Amman Municipality, 2009).

In summary, Amman's experience in terms of expansion organization appears to have a strong foundation, backed by statutory planning regulations. The city-region's geographical constraints, acting as natural containment, combined with the concerted efforts towards promoting high frequency public transport, as well as the strict zoning regulations in place, have contributed to create a compact city-region with high density urban development. This is a desired result of sound planning by the central government, in pursuit of optimum land development in a constrained environment.

6. Discussion and Conclusion

The sustainability argument for urban expansion organization is inclined towards safeguarding of scarce resources and promoting social equity and economic development (Lindsey, 2003). Both case studies of Cairo and Amman display their concerns and efforts towards a more sustainable use of their resources. A number of parallels and differences can be identified as to how these efforts translate in practice and can be best compared in terms of the environmental, social and economic achievements of both city-regions towards a more sustainable urban future (see Table 1).

In terms of 'environmental aspects', both Cairo and Amman have different geographical contexts, with Cairo sitting on a rather flat geography and having more available land for development, whereas Amman development is constrained between the mountains. Both city-regions are highly urbanized, with no specific delineation of their urban footprint. Urbanization is accommodated and, where necessary, controlled via the use of statutory zoning plans.

However, in terms of urban form, Amman is a good example of a compact city-region served by efficient and sustainable public transport services. Cairo is less compact, as the development of the city-region is not entirely a government matter, but rather responsive to market forces. Cairo has no specific containment strategy, except for the use of statutory development plans, which guide the development within a specific area over a stipulated period of time. The plans are mandated by the City administration; however actual development still rests with the market forces. Even with the existence of such plans, the prevention of urban sprawl is not guaranteed, whereas the geographical setting of Amman in itself contains urban growth naturally.

Both city regions are experiencing the impact of climate change due to global warming from greenhouse effect of human activities including rapid urbanization. The level of per capita CO₂ emission in Amman for example stood at 5.2 metric tone while Cairo at 6.3 metric tone (World Bank, 2006), with vehicles emissions remains the highest contributor. Even though Egypt is moving towards sustainable energy production (electricity sources: 70% natural gas, 20% coal, 6% hydro, 4% oil), this is yet to reflect the true environment in Cairo.

The new master plan for the city, the Cairo City 2018, is expected to contribute positively to climate change with better traffic management measures to reduce private motor-vehicle use in the city, and green infrastructure agenda which includes waste management. Similarly, although Amman is actively exploring alternative energy sources including solar and wind-based energy, fossil fuel currently remains the main sources of electricity (60% coal, 40% natural gas, 1% oil) (World Bank, 2006). The fact that per capita energy consumption is one of the highest in Middle East (EIU, 2008) and poses a greater challenge to sustainable energy use in the country.

Looking at the ‘social aspects’, both city-regions have evolved into high rise and high density residential and commercial entities. Social infrastructure and housing are given high degree of attention with their inclusion in the respective development plans. Conventional planning however has also been exercised with a high degree of success in Amman, with the achievement of high standards of public housing, infrastructure and services. What contributes to this huge success is that Amman’s status as a city-state permits the nation’s substantial resources to be channeled into urban development, including regenerating core inner areas. Cairo on the other hand has to rely on funds sourced locally through rates and taxes, plus limited federal grant to finance most of its development and regeneration/renewal exercises. That is why provisions such as affordable housing and efficient public transport remain to be solved. It is only recently that the idea of transit oriented development started to gain recognition after its inclusion in the Cairo Structure Plan and the draft Cairo 2018 City Plan. Amman, however, has had a very good track record with its efficient rail-based public transport system. Amman residents also have realized that there is very limited land available for development, and therefore, are more willing to accept tougher controls over the land development/allocation. Hence, local authorities are able to manage the scarce resources effectively to ensure a sustainable development. In contrast, apart from expensive gated condominiums, a majority of the population in Cairo still associated with high rise urban living with relatively low income. High rise living is still considered as ‘have to’ rather than ‘sought after’ phenomenon.

In terms of ‘economic performance’, Amman adopted a strategy of enhancing its economic competitiveness through its strong service sector. Its superior economy thus makes urban management more effective. The fact that the government owning almost all the land in Amman makes the formulation and implementation of (sustainable) development plans a much easier task. Land use optimization has always been the key factor in its planning for development by maintaining an efficient intensity of land uses. Cairo is also gearing itself towards the tertiary sector with a focus on enhancing its role as a knowledge-based economy, taking advantage of the Federal Government’s Multimedia Super Corridor (MSC) project spanning over 50km from the city centre to Jeeza and then to Cairo International Airport. In terms of land use optimization, there seems to be limited success at the moment. However, the idea is being promoted in the Cairo draft local plan. Whilst high density development is a must in the land-stricken city-state of Amman, developers in Cairo find low-rise suburban housing scheme very attractive, due to the low land prices and higher demand. This explains the reason of compact urbanization being less successful in Cairo compare to Amman.

In conclusion, within the context of resource constraints, sustainable urban development has been a key factor in the adoption of urban expansion organization initiatives promoting viable use of scarce resources for urban expansion whilst at the same time minimizing uncontrolled urban sprawl. Within this context, the use of a whole range of policies designed to control, guide, or mitigate the effects of urban growth is seen as a practical way to promote

compact development (i.e. Nelson & Duncan, 1995). The rapid population growth and urbanization in Middle EAST CITY -regions has indeed placed great pressures on their environments. Whilst a few cities in the region, as discussed in this paper, have adopted some form of urban management policies towards minimizing or alleviating these pressures, many other cities within the region are still without suitable urban expansion organization strategies (i.e. Dubai, Manama, Doha, Bagdad and Damascus). In these cities, higher land consumption, expansive and discontinuous urban development will continue into the future. Local authorities and planners should, therefore, look into the possibilities of implementing sustainable urban growth/development management strategies for their cities. Both case studies investigated in this research display top-down approaches to ensure that planning at the district and local levels is properly guided to achieve state and regional standards and goals. In both Cairo and Amman cases, urban development is facilitated and governed by statutory planning legislation and flexible planning processes and approaches. This ensures that all development will have some degree of standardization and will occur in harmony with existing development. It seems that from these cases, a top-down approach is a key factor to trigger sustainable urban management practices. However, these top-down approaches need to be balanced with bottom-up, collaborative strategies in order to provide a more transparent and democratic platform for citizen participation in the urban planning and development process.

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Figure 1: Cairo city-regions and strategic zones



Figure 2: Cairo 2018 Draft City Plan (Egypt State Information Service, 2009)

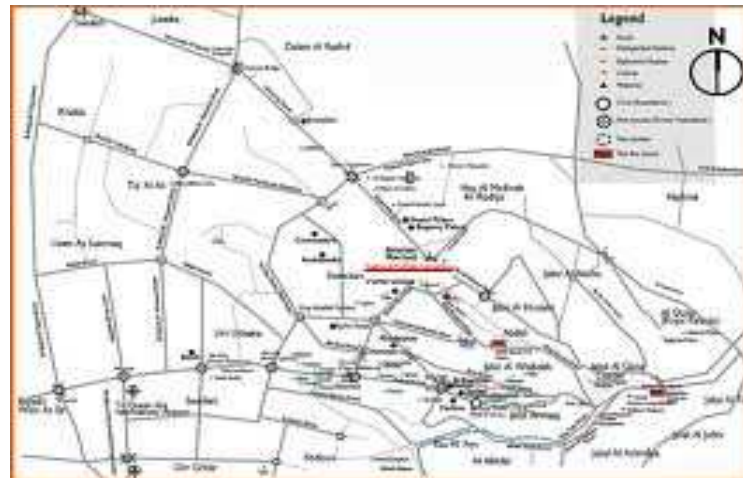


Figure 3: Amman city-regions (Greater Amman Municipality, 2009)



Figure 4: Amman 2025 Draft Plan (Greater Amman Municipality, 2009)

Table 1: Comparison of the expansion organization strategies of Cairo and Amman adapted from (Teriman et al., 2009)

FACTS	CAIRO	AMMAN
City Type	Capital city	Capital city
Area In Km ²	3085.12	1,680 km ²
Population -Millions	19,9 ⁽¹⁾	2.8 ⁽¹⁾
Average Population Density	6450	1666
Per Capita Gpd	\$6,200 ⁽²⁾	\$5900 ⁽²⁾
% Journey By Public Transport	51 % ⁽³⁾	17 % ⁽⁴⁾
Sustainability Factors		
Transportation Road	Road development includes a network of highways efficiently connecting major economic activities; car restraint policies have been successfully implemented to curb private vehicle usage.	Road development includes a network of highways efficiently connecting major economic activities; car restraint policies have been successfully implemented to curb private vehicle usage.
Transportation-Rail	Mass Rapid Transit MRT as anchor public transportation system connecting residential, industrial and commercial land uses	-
Information Communication Technology	Little investment in ICT with the National Information Infrastructure despite its importance.	Medium investment in ICT with the National Information.
Port and Airport	Cairo Airport is among the world's crowded airports.	Queen Alia Airport is still under construction and the authorities are willing to put it in the level of developed countries air ports
Energy	Sustainable Energy production initiatives; ongoing effort to a cleaner energy production; current sources of electricity: 75% natural gas, 25% oil.	Sustainable Energy production initiatives; ongoing effort to a cleaner energy production; current sources of electricity: 25% natural gas, 60% oil, 15% renewal energy
Waste	Incineration-based, 60% waste incinerated; 3R (reduce, reuse, recycle) waste management practice in full swing; no waste will go into landfills in 50 years	Incineration-based, 80% waste incinerated; 3R (reduce, reuse, recycle) waste management practice in full swing; no waste will go into landfills in 50 years